APPENDIX A

FIELD SUMMARY REPORT

Little Dalles,
Northport, Washington

Field Summary Report

Upper Columbia River

2019 Phase 3 Sediment Study

Kettle Falls, Washington, to Lower Arrow Lake, British Columbia

Project Number: 60600843

January 2022

Teck American Incorporated
501 North Riverpoint Blvd, Suite 300
Spokane, WA 99202

Field Summary Report

Upper Columbia River

2019 Phase 3 Sediment Study

Kettle Falls, Washington, to Lower Arrow Lake, British Columbia

Prepared for:

Teck American Incorporated
501 North Riverpoint Blvd, Suite 300
Spokane, WA 99202
Contact: Kris McCaig

Prepared by:

AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101

January 2022

Executive Summary

The 2019 Phase 3 Sediment Study was conducted by Teck American Incorporated between 10 September and 23 October 2019. Sampling was conducted in three Areas of Interest in the Upper Reach Operable Unit of the Upper Columbia River Site[1] in Washington and 18 reference sampling locations on the Columbia River in British Columbia, Canada.

Sampling activities followed protocols and standard operating procedures provided in the Field Sampling Plan for the 2019 Phase 3 sediment study (Appendix A of the Quality Assurance Project Plan [ERM et al. 2019]).

A total of 125 sediment samples for chemistry analysis were collected during the 2019 Phase 3 sediment study. This number includes 105 project samples, 12 field duplicate samples, and 8 split samples collected for the U.S. Environmental Protection Agency (EPA).

For sediment bioassay tests, 218 sample containers of sediment were collected: 106 2-gallon primary samples and 83 5-gallon primary samples; 17 2-gallon EPA split samples; and 12 field duplicates.

For benthic macroinvertebrate community analysis, 112 BMI samples, including 102 project samples and 10 field duplicate samples. No BMI split samples were collected for EPA.

One hundred and sixty-eight (168) porewater samples were collected during the Study. This number includes 124 project samples, 26 field duplicate samples, and 18 split samples (plus one split duplicate) collected for EPA.

Sediment samples for chemistry analysis and bioassay tests were transported to the ALS Environmental laboratory in Kelso, Washington, for analysis and storage, respectively. BMI samples were transported to the EcoAnalysts laboratory in Moscow, Idaho, for analysis.

[1] The Site, as defined within the June 2, 2006, Settlement Agreement, is the areal extent of hazardous substances contamination within the United States (U.S.) in or adjacent to the UCR, including Franklin D. Roosevelt Lake, from the U.S.-Canada border to the Grand Coulee Dam and those areas in proximity to the contamination that are suitable and necessary for implementation of response actions.

Contents

Executive Summary ES-1

1.0 Introduction 1
- 1.1 Project Background 2
- 1.2 Sampling Area Description 2
  - 1.2.1 Upper Reach OU Areas of Interest 2
  - 1.2.2 Reference Areas 2
- 1.3 Sampling Overview 3
- 1.4 Project Staffing 3
- 1.5 Health and Safety 3
- 1.6 Cultural Resources Monitoring 4
- 1.7 Technical Oversight and Observers 4

2.0 Sampling Activities and Documentation 4
- 2.1 Scope of Work 5
- 2.2 Permits and Permissions 5
- 2.3 Training and Preparation 6
- 2.4 Sampling Schedule 7
- 2.5 Sample Collection Methods and Results 7
  - 2.5.1 Sediment Sampling for Chemistry Analysis and Bioassay Tests 7
  - 2.5.2 BMI Sampling 9
  - 2.5.3 Porewater Sampling 10
- 2.6 Recording Sample Collection Locations 12
  - 2.6.1 Sampling Location Positioning 12
  - 2.6.2 Location Field Adjustments 12
  - 2.6.3 Spatial Data Compositing 13
- 2.7 Refusal and Alternate Locations 13
- 2.8 Sample Holding and Transport 13
- 2.9 Field Documentation 14
  - 2.9.1 Field Logbook 14
  - 2.9.2 Sediment/BMI Sample Collection Form 14
  - 2.9.3 Porewater Sample Collection Form 14
  - 2.9.4 Photo Log 15
  - 2.9.5 Equipment Rinsate Documentation 15
- 2.10 Field Deviations 15

3.0 Project Documentation 16
- 3.1 Appendix A – Health and Safety Forms 16
- 3.2 Appendix B – Project Permits and Permissions 16
- 3.3 Appendix C – Signed Change Request Forms 16
- 3.4 Appendix D – Chain-of-Custody Forms 17
- 3.5 Appendix E – Field Logbooks 17
- 3.6 Appendix F – Field Forms by Location 17
- 3.7 Appendix G – Porewater Calibration and Data Sheets 17

3.8 Appendix H – Photo Logs 17
3.9 Appendix I – Equipment Rinsate Blank Collection Forms 17
4.0 References 17

Maps

Map 1: Overview of Sediment, Porewater, and Benthic Macroinvertebrate Sampling Areas
Map 2: Porewater Sampling Locations, Evans AOI
Map 3: Porewater Sampling Locations, China Bend AOI
Map 4: Porewater Sampling Locations, Deadman's Eddy AOI
Map 5: Porewater Sampling Locations, Birchbank, Genelle, and Upstream of Genelle Reference Areas
Map 6: Porewater Sampling Locations, Lower Arrow Lake, Southern Reference Area
Map 7: Porewater Sampling Locations, Lower Arrow Lake, Northern Reference Area
Map 8: Sediment Sample Centroid Locations, Evans AOI
Map 9: Sediment Sample Centroid Locations , China Bend AOI
Map 10: Sediment Sample Centroid Locations , Deadman's Eddy AOI
Map 11: Sediment Sample Centroid Locations , Birchbank, Genelle, and Upstream of Genelle Reference Areas
Map 12: Sediment Sample Centroid Locations , Lower Arrow Lake, Southern Reference Area
Map 13: Sediment Sample Centroid Locations , Lower Arrow Lake, Northern Reference Area

Tables

Table 1: Number of Locations where Sediment, Porewater, and BMI Samples were Collected
Table 2: Project Sampling Personnel
Table 3: Technical Oversight Personnel and Observers
Table 4: Field Schedule
Table 5: Samples Collected by Location, Evans AOI
Table 6: Samples Collected by Location, China Bend AOI
Table 7: Samples Collected by Location, Deadman's Eddy AOI
Table 8: Reference Area Samples Collected by Location
Table 9: EPA Splits and Duplicates
Table 10: Summary of Change Requests
Table 11: Sediment Characterization Based on Field Observations
Table 12: Sediment Sample Centroid Locations
Table 13: Porewater Sample Locations

Appendices (Electronic Only)

Appendix A Health and Safety Forms
Appendix B Project Permits and Permissions
Appendix C Signed Change Request Forms
Appendix D Chain-of-Custody Forms
Appendix E Field Logbooks
Appendix F Field Forms by Location
Appendix G Porewater Calibration and Data Sheets
Appendix H Photo Logs
Appendix I Equipment Rinsate Blank Collection Forms

Acronyms and Abbreviations

µm	micrometer
AECOM	AECOM Technical Services, Inc.
ALS	ALS Environmental
AOI	area of interest
AVS	acid volatile sulfide
BC	British Columbia
BMI	benthic macroinvertebrate
CCT	Confederated Tribes of the Colville Reservation
CMA	Coastal Monitoring Associates
CNI	Columbia Navigation, Inc.
CRCP	Cultural Resources Coordination Plan
DGPS	differential global positioning system
DO	dissolved oxygen
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
GIS	geographic information system
GPS	global positioning system
Gravity	Gravity Environmental
HASP	health and safety plan
ml	milliliters
mm	millimeter
NAD83	North American datum of 1983
ORP	oxidation reduction potential
OU	Operable Unit
QAPP	Quality Assurance Project Plan
RM	river mile
SEM	simultaneously extracted metals
SFM	sediment facies mapping
SHSP	Site Health and Safety Plan
Site	Upper Columbia River site
SOP	standard operating procedure
SUP	Special Use Permit
Study	2019 Phase 3 sediment study
TAI	Teck American Incorporated
TDS	total dissolved solids
UCR	Upper Columbia River
UTM	Universal Transverse Mercator
U.S.	United States
USGS	United States Geological Survey

1.0 Introduction

This Field Summary Report provides information for the Upper Columbia River site (UCR; hereafter, the Site[2]) 2019 Phase 3 sediment study (hereinafter, the Study) that was conducted by AECOM Technical Services, Inc., (AECOM) from 10 September to 23 October 2019. Sampling activities followed protocols and standard operating procedures (SOPs) provided in the Field Sampling Plan (FSP) included as Appendix A of the Final 2019 Phase 3 Sediment Study Quality Assurance Project Plan (QAPP) (ERM et al. 2019).

The Study collected sediment samples for chemistry analysis, bioassay tests, and benthic macroinvertebrate (BMI) community analysis and porewater samples for chemistry analysis at the Site. The Site is between river mile (RM) 709 and the U.S.–Canada border at RM 745.[3] Sampling was conducted in three areas of interest (AOIs) in the Upper Reach Operable Unit (OU):[4] Evans,[5] China Bend, and Deadman's Eddy. Additional sediment and porewater sampling activities were completed in 18 upstream reference sampling locations (reference areas) on the Columbia River in British Columbia (BC): Birchbank, Genelle, Upstream of Genelle, and Lower Arrow Lake. AOIs and reference areas are shown on Map 1.

The Study was completed by Teck American Incorporated (TAI) under U.S. Environmental Protection Agency (EPA) oversight, as part of the remedial investigation and feasibility study and baseline ecological risk assessment being completed for the Site under a settlement agreement between TAI and EPA. The objective of the Study was to collect data needed to characterize sediment and porewater conditions in three AOIs within the Upper Reach OU such that an overall understanding of risk to benthic organisms and the nature and extent of contamination in this portion of the Site can be assessed.

[2] The Site, as defined within the June 2, 2006, Settlement Agreement, is the areal extent of hazardous substances contamination within the United States (U.S.) in or adjacent to the UCR, including Franklin D. Roosevelt Lake, from the U.S.-Canada border to the Grand Coulee Dam and those areas in proximity to the contamination that are suitable and necessary for implementation of response actions.

[3] On January 8, 2018, EPA defined the upper reaches of the riverine portion of the Site as the Upper Reach OU encompassing "the upper reaches of the Columbia River between Marcus at river mile (RM) 708 and the international border just north of RM 744." However, the RM designations used by EPA in the January 8, 2018, letter differ from the RM designations conventionally used by the National Oceanic and Atmospheric Administration and the United States Geological Survey (USGS). As explained in the Final Baseline Ecological Risk Assessment Work Plan (Page 2-3, footnote 7; Exponent et al. 2011), the discrepancy in RM designations used by USGS and those used by EPA dates back to the 2005 EPA Phase I sampling reports. USGS RMs increase from RM 680 to RM 682 over a river segment that is less than one RM in length when transitioning between the Inchelium and Rice USGS quadrants, whereas the EPA RMs increase from RM 680 to RM 681 over the same segment. As a result, above RM 680 the EPA RMs are *one less than* the USGS RMs. Because the EPA RM designations were shown in the QAPP and FSP, the RMs shown in field documentation use the EPA designations.

[4] On January 8, 2018, EPA defined the upper reaches of the riverine portion of the Site as the Upper Reach OU, encompassing "the upper reaches of the Columbia River between Marcus at RM 708 and the international border just north of RM 744."

[5] The name for this AOI was changed from "Upstream of Marcus Flats" to "Evans" in March 2019 by consensus between EPA and TAI. Evans AOI will be used in future field records, documentation, reports, and associated records.

Specifically, the Study incorporates multiple lines of evidence consisting of sediment and sediment porewater chemistry, whole sediment laboratory toxicity, and in-situ BMI community analyses.

1.1 Project Background

Review of existing data indicates a strong relationship between the presence of sand-sized sediment and potentially toxic concentrations of metals in samples collected from depositional features in the Upper Reach OU. However, the quantity and spatial coverage of these existing data are not sufficient to characterize the nature and magnitude of risks posed to benthic organisms through exposure to contaminated sediment and porewater.

This Study builds upon a sediment facies mapping (SFM) bathymetric survey (AECOM 2019a; TAI 2019; David Evans and Associates 2019) of the riverbed and pilot studies that field-tested different methods of sediment and porewater collection (ERM et al. 2019; Windward 2019). Output from the SFM survey, which was initiated in fall 2018 and completed in summer 2019, included a series of geospatial data layers, maps, and georeferenced sediment bed photographs, illustrating riverbed elevation and interpreted sediment grain size fraction composition, to assist with the selection of sampling locations for subsequent field activities.

1.2 Sampling Area Description

The Study consists of three AOIs located in the Upper Reach OU between Evans and the U.S.–Canada border and four upstream reference areas on the Columbia River in Canada, as identified in the FSP in the QAPP (ERM et al. 2019). This section briefly describes these sampling areas and the associated sample design.

1.2.1 Upper Reach OU Areas of Interest

Sampling locations were designated in each of the three Upper Reach OU AOIs: Evans, China Bend, and Deadman's Eddy (Map 1). Sampling locations were established as random (statistically based), repeat (locations sampled during a previous investigation), or judgmental (non-statistically based locations at China Bend AOI requested by EPA). The statistically based sampling locations within the AOIs were developed using sediment bed facies maps and defined target strata for sampling. The four strata targeted for sampling included sampleable sand, mixed coarse material, mud, and coarse sediments. The sampling design included primary and alternate locations for statistically based and judgmental locations. Alternate locations were established should refusal, safety issues, or other obstructions be encountered that prevented sample collection at primary locations.

1.2.2 Reference Areas

In the reference areas, 18 sampling locations were designated on the Columbia River, upstream of the UCR in BC (Map 1). Reference samples were collected from targeted riverine reference areas at the Genelle and Birchbank eddies between Trail and Castlegar, BC, where sand and mixed sediment facies are expected to occur. Lacustrine reference area samples were also collected from two areas in Lower Arrow Lake near locations that were sampled in 2013 during the Phase 2 sediment study. These locations represent the lacustrine end of the hydraulic condition that is similar to the seasonally flooded and backwater zones at the Evans and China Bend AOIs.

1.3 Sampling Overview

Field sampling was conducted using techniques described in the FSP contained in Appendix A of the QAPP (ERM et al. 2019). Sediment, porewater, and BMI samples were collected within each AOI at both primary and alternate locations. Sampling locations at AOIs were adjusted based on field conditions, when necessary; however, adjustments were restricted to within the contiguous targeted sediment facies map polygon. Sampling was performed at alternate locations when sampling could not be performed at a primary location due to refusal, safety issues, or if the sediment bed type did not match the targeted sediment stratum. Because sediment facies maps were unavailable for the reference areas and, therefore, facies polygons were not established, alternate sampling locations were not designated in these areas. Reference sampling locations were within 50 meters of the target location, if possible, although the sampling locations were adjusted within the river reach, where necessary, based on observed field conditions, as described in Section 2.6.2. Table 1 summarizes the number of locations where sediment, porewater, and BMI samples were successfully collected from each AOI and reference area.

1.4 Project Staffing

The staffing structure for the overall Study is provided in Section A4.2, Task Organization, of the QAPP (ERM et al. 2019) and includes a description of the responsibilities of EPA, TAI, and key task personnel. This section describes field staff deployed for the 2019 sampling efforts.

AECOM field supervisors and team members are listed in Table 2. The field supervisors were responsible for overseeing all sample collection and packaging as well as coordinating with TAI and EPA oversight, maintaining the field logbooks, and ensuring chain-of-custody procedures were implemented in accordance with the FSP.

Sampling teams were deployed on research vessels to the various AOIs and reference areas for sample collection. The sampling teams were responsible for sediment, porewater, and BMI sample collection, including sieving, weighing, photographing, packaging, and labeling samples; filling out data forms and photo logs and team logbooks; and decontaminating sampling equipment. The sampling teams included AECOM subcontractors Gravity Environmental (Gravity) and Coastal Monitoring Associates (CMA). Gravity was responsible for sediment sampling equipment, vessel operations, and spatial data collection. CMA provided porewater sampling instruments and computers and was responsible for porewater sample collection, instrument calibrations, and electronic sensor readings for porewater and surface water. An AECOM cultural resource monitor was present when any sediment or BMI sampling occurred. The monitor inspected the sample for artifacts or other cultural deposits. The monitor also acted as the assistant sediment sampler.

The field support team managed the storage, packaging, and shipment of all samples to their respective analytical laboratories as well as the organization of all field forms, sampling supplies, and data management.

1.5 Health and Safety

An addendum to the project-specific site health and safety plan (SHSP) for the Study (TCAI 2009) was prepared for the Study and included as Attachment A1 of the FSP (Appendix A of the QAPP; ERM et al. 2019). The SHSP includes sections on driving and traffic safety, deer collision hazards, work from boats on a flowing river, working in remote areas, outdoor exposure and weather-related hazards, biological

hazards (contact with wildlife, bees/wasps, ticks, mosquitos, large mammals), and exposure to contaminated sediments and porewater. AECOM developed a project-specific health and safety plan (HASP) that included all the above-listed elements and covered additional topics such as hazardous material handling and emergency response procedures (AECOM 2019b). Acknowledgement that each field team member reviewed the SHSP is presented in Appendix A.

Health and safety protocols, expectations, and overview of the SHSP were provided to all field staff, visitors, and subcontractors prior to and during the kick-off meeting for the Study. Tailgate health and safety briefings (or task hazard assessments) were conducted each day prior to starting work. Appendix A contains the daily tailgate task hazard assessment forms.

A safety vessel operated by Columbia Navigation, Inc. (CNI) (subcontracted by Gravity) was present with each research vessel during all on-water work.

1.6 Cultural Resources Monitoring

A Cultural Resources Coordination Plan (CRCP) was included in Appendix E of the QAPP to provide relevant background information about Site-related cultural resources, define measures for protecting resources, and define procedures for consulting with the appropriate state, federal, and tribal parties with interests in the cultural resources of the Site. TAI coordinated with EPA to ensure all necessary consultation and coordination with representatives of the Confederated Tribes of the Colville Reservation (CCT) occurred prior to sample collection on all AOIs to avoid, minimize, or mitigate any adverse effects on historic properties.

In accordance with the CRCP, a cultural resource monitor and/or tribal representative were present during implementation of the Study. Cultural resources monitoring for the Study was conducted by an AECOM archaeologist. The cultural resources monitor inspected every sediment sample collected during the Study for the presence of culturally sensitive items.

In accordance with state, federal, and tribal laws and regulations, all field personnel were required to keep the discovery of any found or suspected human remains, other cultural items, and historic properties confidential.

1.7 Technical Oversight and Observers

Technical oversight of the survey and sampling activities was provided by EPA and/or its designated contractor (Jacobs) throughout the Study. Technical oversight personnel were present with the sampling teams each day and were given the opportunity to observe all field tasks. AECOM personnel were available for discussions and to answer questions regarding field activities. TAI and ERM personnel were also present during the field sampling events to ensure consistency with the QAPP. A CCT member and/or contractor were present during portions of the field sampling. Technical oversight personnel and observers are listed in Table 3.

2.0 Sampling Activities and Documentation

The following sections summarize the scope of work, training and preparation, sampling activities, and documentation associated with the Study.

2.1 Scope of Work

The scope of work for the 2019 sampling efforts was to survey and collect sediment, porewater, and BMI samples from three AOIs located in the Upper Reach OU and in the reference areas on the Columbia River upstream from the Site in BC. Sampling events followed the appropriate methodologies described in the FSP portion of the QAPP (ERM et al. 2019), including details specified in SOPs included as Attachment 2 of the FSP (Appendix A of the QAPP).

Tasks during this sampling event included the following:

- Safety tailgate briefing each morning with each sampling group.
- Loading of crews and supplies onto the sample vessels and motoring to sampling areas.
- Positioning vessels for each sampling location using x-y coordinates designated in the project QAPP.
- Collection of primary sediment, porewater, and BMI samples, including EPA splits and other quality control samples.
- Communication and coordination with TAI, EPA oversight personnel, the CCT, and other visitors and observers.
- Maintenance of field records, including field logbooks, photographic documentation, and field data forms.
- Decontamination of sampling equipment in accordance with the QAPP.
- Sample labeling, storage, packaging, and transport to the project-specified analytical laboratories, using defined chain-of-custody procedures. The analytical laboratories were selected and contracted by TAI.
- Close coordination with TAI and the analytical laboratories to ensure proper storage and transportation procedures were followed and chain of custody documented.
- Preparation and submittal of this field investigation summary report to document field activities, modifications (changes) to the QAPP, and associated justifications.

2.2 Permits and Permissions

TAI obtained the following permits and permissions prior to implementing sampling activities:

- An email from the U.S. Department of Agriculture, dated 25 June 2019, indicating that the sediment samples collected in Canada could enter the United States without being subject to quarantine.
- A letter from EPA, dated 22 August 2019, providing EPA approval to finalize the Phase 3 Sediment Study QAPP and associated planning documents.
- An email from the Washington State Department of Natural Resources, dated 30 August 2019, acknowledging TAI's notification of the planned sampling activities.

- An email from the CCT, dated 3 September 2019, indicating that the CCT would like to have a tribal representative present during sediment sampling in the China Bend AOI but not in the Evans or Deadman's Eddy AOIs.
- A letter from Natural Resources Canada, dated 5 September 2019, confirming permission to collect samples in Canada.
- A Special Use Permit (SUP; #PWR LARO TCAI-013) from the U.S. Department of the Interior, National Park Service, dated 9 September 2019, to collect samples within the boundaries of the Lake Roosevelt National Recreation Area.
- A memorandum from the Lake Roosevelt National Recreation Area superintendent, dated 10 September 2019, modifying condition #25 of SUP #PWR LARO TCAI-013, allowing the return of excess sample materials to the vicinity from which it was collected in a manner that minimizes the distribution of potential contamination in these materials.

In addition, AECOM received letters from Immigration, Refugees and Citizenship Canada, dated 26 August 2019, permitting project team members to enter Canada as temporary foreign workers without requiring work permits. Project permits and permission letters are reproduced in Appendix B.

2.3 Training and Preparation

The AECOM project leadership team and subcontractor personnel from Gravity attended the TAI-sponsored Courageous Safety Leadership training at the TAI office in Spokane on 15 August 2019.

AECOM established a project-specific warehouse facility between 27 and 29 August 2019. The warehouse was used to store sampling containers, sampling supplies, and process samples prior to transportation to labs.

An internal AECOM technical team training occurred on 3 September 2019. It included all AECOM field supervisors, field staff, chemists, and field data managers. This training covered the approved FSP, record keeping requirements, data management workflow, visitor management, warehouse duties and sample processing, communication protocols, and project confidentiality requirements. The training session was recorded and available for staff who were unable to attend at that time. All project staff were assigned time to review written work plans (FSP and HASP) prior to arrival in the field.

An initial small group field kick-off meeting was held at the project warehouse in Kettle Falls, Washington, on 9 September 2019. Representatives from TAI, ERM, AECOM, Gravity, CNI, and Jacobs participated in this meeting. A subset of this group began sediment sampling on one vessel the following day. A second larger field kick-off meeting was held on 16 September 2019 in Kettle Falls. This meeting was attended by representatives from TAI, ERM, AECOM, Gravity, CMA, CNI, Jacobs, National Park Service, USGS, and CCT. TAI, ERM, and AECOM representatives provided an overview of the Study purpose and methods, as well as health and safety and project-specific cultural resource sensitivity training. Following the 16 September 2019 meeting, sampling activities increased to four vessels.

2.4 Sampling Schedule

Samples were collected from the three AOIs and reference areas between 10 September and 23 October 2019. Four research vessels, all owned and operated by Gravity, were used: *Yeti, Tieton, Ingalls*, and *Cayuse*. The general location (AOI or reference sampling location) of each sampling vessel by day is shown in Table 4.

2.5 Sample Collection Methods and Results

This section presents a brief summary of the sample collection methodologies employed for the Study. Sampling locations are shown on Maps 2 through 13. Primary samples collected by AOI and reference areas are presented in Tables 5, 6, 7, and 8. Sample splits and duplicates are shown in Table 9. The final sample locations are identified on the maps by location name and can be cross-referenced in the tables. Project samples were collected following methodologies described in the FSP (Appendix A to the QAPP; ERM et al. 2019). Where a modification to a sample collection, handling, storage, or shipment methodology was necessary, the field crew notified the project management team, and a change request was submitted to TAI and EPA for review and approval. Eight change requests were approved for the field sampling component of the Study. One of the eight change requests subsequently went through an approved revision (Change Request No. 3, revision 1). These change requests are summarized in Table 10. The signed change request forms are presented in Appendix C.

2.5.1 Sediment Sampling for Chemistry Analysis and Bioassay Tests

One hundred and twenty-five (125) sediment samples for chemistry analysis were collected during the Study. This number includes 105 project samples, 12 field duplicate samples, and 8 split samples collected for EPA.

For sediment bioassay tests, 218 sample containers were collected. This number included 106 2-gallon primary samples and 83 5-gallon primary samples, 17 2-gallon EPA split samples, and 12 field duplicates.

At 12 of the bioassay sample locations, less than 1.5 gallons of sediment was collected in 2-gallon containers due to the limited amount of material recovered. These sample locations were CB009, CB010, CB016, CB024, CB029, CB039, CB047, DM045, DM061, 3-R7-2019, 3-R8-2019, and REF012.

There were eight bioassay sample locations where less than 4 gallons of sediment was collected due to limited material; these samples were collected in 5-gallon containers. These sample locations were CB016, CB029, CB047, JS001, JS002, 1-B5-NRT, 3-R7-2019, and 3-R8-2019.

Sediment samples were obtained using one of four sampling methodologies: Van Veen power grab sampler, modified Hamon grab sampler, a freeze grab sediment sampler, and hand sampling in shallow water using a stainless-steel shovel or scoop. The methods used are indicated in Tables 5, 6, 7, and 8. The Van Veen power grab was the preferred sampler when the sediment facies was identified as mud and/or sand with little to no gravel (less than 20 percent sediment > 2 millimeters [mm]), the sampler easily penetrated the sediment, and the sediment did not contain wood debris or cobbles that prevented the sampler jaws from totally closing. The modified Hamon grab was the preferred sampler when the sediment facies consisted of mixed fines (sand and/or sand and gravel mixes), between 20 and 50 percent sediment > 2 mm). This sampler was effective at collecting a representative sample in these materials.

The freeze grab sampler was used when the sediment facies consisted of mixed coarse material (gravel/cobble/sand mixes, between 50 and 80 percent sediment > 2 mm, with less than 50 percent cobbles/boulders). Hand sampling methods are described in Section 2.10.

Each sampling device had an attached underwater camera that live-streamed images to a display screen inside the vessel. Field crews viewed the sediment bed composition at each location prior to sampling, to determine if it resembled the target facies listed in Table A1 of the FSP (ERM et al. 2019). A video or photo of the sediment bed was captured at each location, per Change Request No. 5. For locations where the target facies did not appear to match those listed in Table A1, sampling activities were ceased, and the location was designated as a "mismatched strata" in Tables 5, 6, 7, and 8.

Once the sampler was returned to the vessel, the sample was evaluated for acceptability following criteria specified in SOPs 3, 4, or 5 (ERM et al. 2019). Samples determined to be acceptable were photographed, the overlying water was removed by siphon, and the finer grained material (sand and smaller) sampled for acid volatile sulfide (AVS) and simultaneously extracted metals (SEM). The sediment was inspected for cultural resources by the on-board archaeologist, then the top 6 inches of sediment was placed onto a decontaminated Lexan tub. This process was repeated until sufficient material was recovered to meet the minimum target sample volume. Note that the SEM-AVS sample was only collected once per sample location.

The sediment was characterized by a trained person possessing qualifications specified in the EPA-approved QAPP (ERM et al. 2019). The sediment characteristics based on field observations are summarized in Table 11. The sediment was then homogenized in the Lexan tub using hand tools, and the homogenized material was photographed. The sample was then transferred to sample containers for analytical chemistry. The remaining material was transferred to 2- and 5-gallon plastic buckets for bioassay testing. River water was added to the bioassay sample buckets until a thin water layer covered the material to minimize oxygenation during storage and transport to the ALS Environmental (ALS) laboratory. The samples designated for chemistry analyses were placed directly into an iced cooler for storage. The bioassay buckets were stored on the vessel deck until the boat returned to the dock. Buckets were then transported to the field warehouse in Kettle Falls and placed into a refrigerated truck for storage until ready for transfer to the analytical laboratory. Excess sediment was returned to the river in the vicinity from which it was collected, as allowed by the National Park Service SUP, as modified on 10 September 2019 (see Section 2.2 and Appendix B). Placement was done in a way that minimized the potential distribution of sediment in the water column.

Sediment chemistry samples collected from the following 25 sample locations were sieved in the field: CB007, CB009, CB010, CB016, CB035, CB036, CB039, CB047, DM002, DM047, EV003, EV010, EV012, EV013, EV020, EV027, EV036, EV052, REF001, REF001, REF004, REF005, REF006, REF010, and REF012. These samples were placed on a 5-mm screen and mechanically sorted by pushing the material through the screen by hand. Porewater in the sample was used to assist the sieving process. Site water was not added during the sieving process. Material passing through the sieve was collected in the Lexan tub. The material retained on the sieve was removed and placed in buckets. Larger rocks were removed by hand and placed into a separate bucket. Woody debris was separated from the sediment material during sieving. Once the sieving was complete, the three sediment fractions were weighed to

obtain an approximate estimate of the grain size fraction. Woody debris removed from the samples was not weighed.

Per the procedures specified in SOP-11 and SOP-12 (ERM et al. 2019), AECOM personnel collected sediment samples on behalf of TAI and split samples for EPA. AECOM relinquished chemistry samples to EPA's representatives in the field or at the project warehouse in Kettle Falls, at EPA's request. AECOM retained and stored all of the EPA split bioassay samples that were collected (due to the large amount of refrigerated storage needed) and transported them to ALS in Kelso, Washington. AECOM also transported the EPA split samples collected in the reference areas in Canada back into the U.S., as agreed between TAI and EPA.

2.5.2 BMI Sampling

One hundred and twelve (112) BMI samples were collected during the Study. This number includes 102 project samples and 10 field duplicate samples. No BMI split samples were collected for EPA.

BMI samples were obtained using the same four sampling methods used to obtain the sediment samples as described in subsection 2.5.1. Once a sampler was returned to the vessel, the sample was evaluated for acceptability following the criteria established in SOP-8 for sediment sampling (ERM et al. 2019). Samples determined to be acceptable were photographed, and the overlying water was removed by siphon. However, in contrast to the sediment sampling protocol, the siphoned water was passed through a 250 micrometer (µm) sieve to capture any BMI that may be resident in the water. The sediment was inspected by the on-board archaeologist for cultural resources. Large gravel, cobbles, and debris were removed by hand and rinsed with 90 percent ethanol into the sample bucket to retain the BMI. Gravel, cobbles, and rocks removed from the samples were not weighed. The rinsed gravel, cobbles, and debris were returned to the river in the vicinity from which they were collected, per the National Park Service SUP, as modified on 10 September 2019 (see Section 2.2 and Appendix B).

To collect the BMI samples, the top 6 inches of sediment was transferred directly into the BMI sample buckets. Care was taken to scrape the sides of the sampler to collect sediment adhered to the sides. Site water remaining in the sampler was removed by siphon through a 250-µm sieve. Excess Site water that was transferred into the sample bucket with the sediment was then decanted by pouring it through the 250-µm sieve. The sieve was then backflushed with 90 percent ethanol to transfer the captured BMI into the sample bucket.

BMI samples were preserved by adding 90 percent ethanol to the bucket to achieve a 1 to 1 ratio of ethanol to sediment, in accordance with SOP-8 (ERM et al. 2019), as modified by EPA-approved Change Request No. 3, to preserve the BMI in the sediment until analysis at the laboratory. For each sample, a sample label was placed inside the pre-labeled bucket and sealed, then the sealed bucket was rolled on its side on the deck of the vessel to mix the ethanol with the sediment. The buckets containing the BMI samples were stored on the vessel deck until the boat returned to the dock, where the buckets were removed and placed into a refrigerated truck for storage until transfer to the EcoAnalysts laboratory in Moscow, Idaho.

2.5.3 Porewater Sampling

One hundred and sixty-eight (169) porewater samples were collected during the Study. This number includes 124 project samples, 26 field duplicate samples, and 18 split samples (plus one split duplicate) collected for EPA.

Porewater samples were obtained using a Trident probe in accordance with the procedures described in SOP-7 (ERM et al. 2019). The Trident probe is a direct-push sampler with integrated temperature and conductivity sensors that are used to determine if overlying site water is interacting with the porewater in sediment during sampling. Two variants of the Trident probe were used during the Study:

- The vibra-frame Trident probe is installed using a landing frame fitted with a vertically translating axle with the probes mounted on the bottom of the axle and the drive weights and vibration head mounted to the top. The axle is held up under tension of the winch line during deployment until the frame lands on the bottom, when the weight and vibration head are then used to drive the probes to the desired depth.

- The pneumatic drive-frame Trident probe is installed using a landing frame fitted with a vertically translating axle with a single probe mounted on the bottom of the axle in a heavily armored protective sheath. A driving weight rides on the outside of the axle and is used to drive the armored probe into the bottom to the desired depth by repeatedly lifting it and dropping it on the top flange of the armored probe using a system of pneumatic cylinders and release latches.

Each Trident probe system had an attached underwater camera that live-streamed images to a display screen inside the vessel. The camera was used to verify that the probe was properly settled on the sediment bed prior to beginning sample collection, and allowed field crews to view the sediment bed composition before deploying the Trident probe to determine if the sediment bed resembled the target facies listed in Table A1 of the FSP. For locations where the target facies did not appear to match those listed in Table A1, sampling activities ceased and the location was designated as a “mismatched strata” in Tables 5 through 8. If the sediment team had previously designated a sampling location as having mismatched strata, the porewater team did not attempt to sample there.

In Situ Temperature and Conductivity Measurements: For both Trident system configurations, in-situ porewater temperature and conductivity were measured with a Trident flow-through (in-line) conductivity sensor by pumping water through the probe and into the in-line sensor mounted inside the probe just above the screen zone. In-situ surface water temperature and conductivity were measured with a sensor mounted to the frame of the probe. Porewater and surface water quality parameters were measured with a small-volume, hand-held water quality analyzer by pumping a small amount of sample from the target depth to the sampling vessel with a low-flow peristaltic pump.

The in-line subsurface conductivity sensor was used to directly measure the porewater conductivity and temperature signal by pumping water from the screen section of the probe through the sensing element. A reference conductivity and temperature sensor was also mounted on the instrument frame to provide a direct comparison of the overlying surface water conditions with the interstitial water conditions. Sensor measurements were generally collected at the beginning, middle and end of the porewater sample collection with mid-measurement intervals of 200 milliliters (ml) of porewater sample volume.

The temperature and conductivity sensors were coupled through an underwater connecter and cable to a deck unit that interfaced the probe and reference temperature and conductivity signals to a laptop computer. The laptop was used in conjunction with the TridentTalk software to apply calibrations to the signals, and record and display the results.

Water Quality Measurements: Water quality measurements were performed using a handheld water quality meter (Myron Ultrameter II 6P). The Ultrameter measures temperature, conductivity, pH, and oxidation reduction potential (ORP), and estimates total dissolved solids (TDS) based on the conductivity reading. Water quality measurements were conducted on the surface water and porewater. Surface water measurements were performed by collecting the sample directly from the discharge of the surface water sampling pump. Porewater measurements were performed by collecting samples from a tee line that diverted the flow from the glove box to the water quality meter. Dissolved oxygen (DO) was monitored in porewater during pumping using a YSI Pro ODO meter.

Water quality measurements were generally collected at the beginning, middle, and end of the porewater sample collection with mid-measurement intervals of 200 ml of porewater sample volume. The porewater DO and ORP measurements obtained before porewater samples were collected were used to determine if sample collection for laboratory sulfide analysis was necessary at a given location.

Porewater Sampling: To collect porewater samples for chemical analysis, the sampling tube from the Trident system was connected to the low-flow peristaltic sampling pump and routed to an inert-gas (nitrogen) glove box inside the lab of the survey boat. The subsurface porewater probes were all configured with a 15-centimeter pre-filter packed with pre-cleaned glass filter beads (Ovivo GB-Grade 2; 0.4-1.0 mm diameter). The pre-filter, probe, and sample tubing were cleaned prior to collecting porewater at each location, per SOP-7 (ERM et al. 2019).

Once the Trident probe was deployed, the peristaltic pump was started to draw porewater through the sampling tube attached to the probe. With the flow routed to the glove box, the probe and tubing were purged into a waste container. The purge volume was 300 to 400 ml. After purging, the required filters and labeled sample bottles were placed inside the glove box. The glove box operator donned outer gloves and the glove box was sealed. With the glove box sealed and sample bottles opened, the glove box was purged with nitrogen until the oxygen meter read < 1 percent. Samples were then collected in the following order, as specified in the FSP (ERM et al. 2019): metals, dissolved organic carbon, total organic carbon, sulfide, and sulfate/chloride/alkalinity. The sampler paused periodically between bottles to route the sample for the requisite water quality measurements.

To the extent practicable, porewater samples from the sampleable sand, mixed coarse, and mud strata at the AOI and reference area sampling locations were collected prior to the associated sediment sample. If this sampling sequence was not achievable, porewater samples were collected from an undisturbed section of sediment in proximity to the associated sediment sample location.

The following are primary locations where no porewater sample was collected, categorized by reason:

- Refusal of Trident probe to adequately penetrate the substrate: EV020, EV021, EV029, EV041, DM032, DM033, and DM057.

- Safety issue such as strong current or inability to safely anchor the research vessel: DM013, DM014, DM028, DM029, DM056, and DM062.

- Sampling location was found to be mismatched with the target strata listed in Table A1 of the FSP: EV014, EV034, EV042, EV053, EV058, EV062, EV067, CB008, CB022, CB031, CB032, CB038, CB050, DM033,DM035, DM040, DM042, DM048, DM051, DM052, and DM066.

The porewater samples were placed directly into an iced cooler for storage on the vessel, then transferred to refrigerated storage at the warehouse.

Porewater samples were managed per specifications in SOP-11 (Sample Custody) and SOP-12 (Sample Packaging and Shipping) (ERM et al. 2019). AECOM personnel collected porewater samples on behalf of TAI and split samples for EPA. AECOM relinquished porewater samples to EPA in the field or at the field warehouse, at EPA's request. AECOM also transported all EPA split samples collected in the reference areas in Canada back to the U.S., as agreed between TAI and EPA.

2.6 Recording Sample Collection Locations

2.6.1 Sampling Location Positioning

A vessel-mounted differential global positioning system (DGPS) was used to locate and navigate to the proposed sampling locations. The vessel's navigation software included geographic information system (GIS)-formatted point data for all proposed sampling locations, plus sediment facies map polygons for real-time display during navigation and sampling. The protocol for recording sample locations for the Study by Universal Transverse Mercator (UTM) coordinates is provided in SOP-1 (ERM et al. 2019).

The DGPS used satellite-based augmentation by accessing the Wide Area Augmentation System to get a real-time correction signal in the field, which improved accuracies to less than 1 meter. As specified in the QAPP, the standard projection method used during field activities was the horizontal datum of North American datum of 1983 (NAD83) and UTM Zone 11 North (units in meters). Global positioning system (GPS) location data were transferred from the on-vessel equipment to the shore-based support team via thumb drive for uploading into the project data storage structure each night. Although the field team had the ability to locate shallow-water sample locations using hand-held GPS units, all sample locations were recorded using the vessel-mounted system.

2.6.2 Location Field Adjustments

Upon arrival at a designated sampling location, the field sampling team leader inspected the sediment bed composition using underwater video to verify that the observed sediment bed appeared consistent with the target strata (for locations at the AOIs) or facies (for locations at reference areas) as specified in the QAPP (ERM et al. 2019). If the sediment bed did not match the target stratum or facies, or if the location was determined to not be amenable to sample collection, then the video was used to identify a suitable location to sample. Field adjustments for AOI locations could be moved anywhere within the contiguous target sediment facies, preferably within a 0.5-acre area. Vessel position relative to the sediment facies polygon boundaries were monitored in real time using the on-vessel navigation software.

Reference area sampling locations were to be within a 50-meter-radius circle centered on the proposed location coordinates, if possible. The vessel position relative to the circles was displayed on the vessel

navigation software. If the target sediment type could not be identified within 50 meters of the specified location, sample locations were adjusted within the river reach based on video survey of the sediment. Modifications to the reference area sample locations beyond 50 meters were discussed with the on-board EPA oversight personnel and communicated to the project leadership team for approval prior to sampling. Three reference sampling locations were shifted more than 50 meters from the targeted locations (REF006, REF009, and REF010), as documented in Field Change Request No. 6 (see Table 10 and Appendix C).

2.6.3 Spatial Data Compositing

Field spatial data for sediment grabs were composited prior to plotting on maps and uploading to the project database. Where multiple successful grab attempts were retained as samples, the "Mean Center" tool in ArcGIS was used to identify the geographic center for a set of features, or the "average" of the spatial points, consistent with Phase 2 sediment sampling. The composited points contain all accepted grabs for primary sediment chemistry, bioassay, and BMI samples at a given location. The composite does not contain BMI duplicate samples or additional grabs required for preparing sediment chemistry field duplicates (with one exception, see Section 2.10). Sediment sample composite location coordinates are provided in Table 12.

Compositing was not required for porewater sampling locations because each porewater sample was obtained from a single deployment of the Trident probe. Porewater sample coordinates can be found in Table 13.

2.7 Refusal and Alternate Locations

For sediment sample collection in the AOIs, at least one video-guided attempt was made at each primary sampling location. If sediment sampling at an AOI location was not possible or did not recover sufficient volume for the planned analyses, that location was recorded as a refusal, and sampling was repeated at a suitable alternate location. Up to 10 alternate locations for the sampleable sand stratum were available at each AOI. If, after attempting mechanical grab samples at all primary and 10 alternate locations, the proposed number of sampleable sand samples were not obtained, sampling locations were revisited using the freeze grab sampler. Only one sampleable sand location (DM044) was visited with the freeze grab after the mechanical grab was unable to retrieve an acceptable sample.

For porewater locations where the sediment bed matched the target strata or facies, if sampling was not successful after a minimum of three failed attempts at a location, the field team leader consulted with EPA oversight personnel to determine whether to move to an alternate location or perform additional sampling attempts.

2.8 Sample Holding and Transport

Sediment samples for chemistry analyses and porewater samples were stored on wet ice immediately after being prepared in the field. BMI samples and sediment samples for toxicity analyses were stored in buckets on the research vessels' decks until they could be off-loaded at the end of the day. At the end of each day, all samples were transferred to a lockable refrigerated truck located at the project warehouse in Kettle Falls. A maximum-minimum thermometer was kept inside the refrigerated section of the truck and checked daily to verify that the refrigeration unit was functioning properly.

Porewater and sediment chemistry samples were packaged for transport in coolers with wet ice. These samples were transported to ALS in Kelso, Washington, twice weekly by a courier service located in Spokane, Washington. AECOM field personnel transported these samples to Spokane from Kettle Falls. Sediment toxicity samples were driven by AECOM personnel to ALS in a second refrigerated truck on a weekly basis.

Although the BMI samples did not require refrigeration during storage or transport, they were stored in the refrigerated truck in Kettle Falls to conserve warehouse space. The BMI samples were either driven directly to the EcoAnalysts laboratory in Moscow, Idaho, by TAI contractors, or EcoAnalysts personnel met TAI contractors in Spokane to transfer samples to the laboratory. All samples were stored and transported to the respective laboratories using project-defined chain-of-custody procedures, as specified in SOP-11 (ERM et al. 2019). Project chain-of-custody forms are provided in Appendix D.

2.9 Field Documentation

2.9.1 Field Logbook

All field activities and observations were recorded in a field logbook following guidance specified in SOP-10 (ERM et al. 2019). Each on-water sampling crew as well as the on-shore support crew had a dedicated field logbook to record the daily activities. The logbooks were digitally scanned at the end of each day for uploading into the project data storage system. The scanned logbooks are provided in Appendix E.

2.9.2 Sediment/BMI Sample Collection Form

Each sediment/BMI sampling attempt was documented on two location-specific sampling forms. A location form was completed documenting the general conditions observed at each sediment/BMI sample location upon arrival. Each time the sampler was lowered to the sediment bed and a sample grab attempted, a form was completed documenting the results of the attempt. Data recorded included the coordinates of the attempt, water depth, information on the acceptability of the sample, lithologic description of the sediment, and sample identification number if the material collected was determined to be acceptable. Sediment sample collection forms are included in Appendix F.

2.9.3 Porewater Sample Collection Form

Each porewater sampling attempt was documented on a location-specific sampling form. This form documented the general conditions observed at each porewater sample location upon arrival as well as the coordinates of the attempt, water depth, and sample identification number. These forms are included in Appendix F.

The porewater sampling methodology described in SOP-7 (ERM et al. 2019) specified that water quality parameters pH, temperature, conductivity, TDS, and ORP be monitored incrementally during sample collection. These data, recorded on porewater sampling data sheets, are provided in Appendix G.

The porewater sampling methodology required decontamination of the Trident probe, tubing, and glove box prior to sampling at each new location. In addition, all instrumentation was calibrated daily and re-calibrated as needed following standard operating procedures and/or manufacturers recommended procedures. Calibration logs are included in Appendix G.

2.9.4 Photo Log

During the field sampling activities conducted for the Study, project-related photographs were taken. Appendix H contains 1,052 representative photographs from field sampling, after eliminating out-of-focus and duplicate images. Appendix H includes photographs depicting sampling locations, collected sediment sample material, filled sample containers, and underwater images collected where the sediment bed did not match the target stratum as described in Change Request No. 5. The native files for underwater imagery (still frame and videos) are available as electronic files.

2.9.5 Equipment Rinsate Documentation

Sampling equipment decontamination procedures are described in SOP-14 (ERM et al. 2019). These procedures are intended to prevent potential cross contamination of samples from exposure to reusable sampling equipment. To measure the effectiveness of the decontamination process, the field sampling crews collected equipment rinsate samples that were submitted to ALS for chemical analysis. Rinsate samples for sediment sampling equipment were collected on a frequency of one per week per sampling crew. For porewater sampling equipment, rinsate samples were collected for each AOI for each Trident sampler used in the AOI. Equipment rinsate sampling forms are provided in Appendix I.

2.10 Field Deviations

Four deviations from certain field sampling methods described in the FSP occurred during the 2019 sampling event, as follows:

1. Deviation from SOP-6 for hand-held sediment sampling devices

   SOP-6 identified three hand-held samplers to be used at wadeable locations when very shallow water (e.g., < 1 meter) or dry conditions were encountered at a sample location (ERM et al. 2019). They are the Eckman grab, cookie cutter grab, and scoop grab. The field sampling team inadvertently did not carry the hand-held sampling devices into BC for potential use during sampling at the reference areas; however, conditions at three reference sampling locations (REF003, REF004, and REF012) required the use of hand-held samplers. The field team, in consultation with EPA on-site oversight representatives, used a stainless steel shovel to collect sediment samples at REF003 and REF004, and a stainless steel ice scoop to collect the sediment sample at REF012.

2. Deviation from SOP-1

   SOP-1 required that the angle of the hydrowire to the vertical be limited to approximately 5 degrees or less for all sampling activities, if possible, and that once the wire angles exceed 5 degrees, the angle of the wire be measured to determine the adjusted position of the sample location (ERM et al. 2019). During all sampling efforts, the winch wire was monitored for excessive drift of deployed sampling equipment in swift currents. In the Evans and China Bend AOIs, and in the reference areas, no notable drift occurred. In the Deadman's Eddy AOI, locations with swift currents and shallow water did experience some drift; however, the angle of the wire was not measured or recorded consistently during sampling. Because the water column was relatively shallow (i.e., 0.8 to 18 m), there was minimal impact to the spatial coordinate data for the samples obtained. No spatial positions were adjusted for sample locations as a result of the winch wire angle.

3. Deviation from FSP Section 2.2.7 (Sediment Quality Control Samples) and SOP-3

Instead of taking the EPA split sample REF011-SE-3-100119 (located in the Upstream of Genelle reference area) from the same homogenized sediment as the primary sample, as specified in the FSP and in SOP-3 (ERM et al. 2019), sample REF011-SE-3-100119 was inadvertently taken from a separate grab. All other sediment quality control samples (duplicate and split samples) were collected from the same homogenized sediment used for the primary sample.

4. Deviation from QAPP (footnote 6)

   Footnote 6 in the QAPP, on page A-14, states that "Repeat sampling locations proposed at Deadman's Eddy are outside of the sediment facies map coverage and therefore may be dry or in very shallow water (< 1-m depth). Sampling at these selected locations may require use of wading or ground-based methods, as described in the FSP (Appendix A)" (ERM et al. 2019).

   Shallow water conditions were encountered at Deadman's Eddy repeat sampling locations 1-B5-NRT and 1-B6-NRT;[6] however, rather than use wading and a hand-held sampling device as described in SOP-6, field staff positioned the vessel to the nearest distance from the proposed location and used the Van Veen sampling device for sample collection. The actual location of 1-B5-NRT was 9.4 meters from the proposed target location, and the actual location of 1-B6-NRT was 20.2 meters from the proposed target location.

3.0 Project Documentation

Field sampling activities and associated field data collection were completed in accordance with the methodologies specified in the QAPP (ERM et al. 2019). Field documentation and data records are provided in the appendices attached to this report. This section provides a brief description of the information presented in each of the appendices to this FSR.

3.1 Appendix A – Health and Safety Forms

Appendix A contains health and safety forms used to document knowledge of and conformance to the project-specific HASP and SHSP. Appendix A includes documentation that project personnel have reviewed the HASP and SHSP as well as the AECOM Daily Tailgate Meeting forms that were completed and signed daily by all crew members during the tailgate meeting.

3.2 Appendix B – Project Permits and Permissions

Appendix B provides the permit and permission documents required for implementation of field sampling activities. The project-specific permits and permissions obtained by TAI and AECOM for the Study are listed in Section 2.2 of this report.

3.3 Appendix C – Signed Change Request Forms

Appendix C presents the eight change requests that were approved by TAI and EPA during the field sampling portion of the Phase 3 sediment study. These forms document modifications to the QAPP and the circumstances that necessitated such changes. Changes were reviewed for compliance with data quality objectives. The feasibility of making modifications to the QAPP were typically discussed with the

[6] For locations 1-B5-NRT and 1-B6-NRT, the sample identifiers in the database records were appended with a "-2019" suffix to distinguish them from samples collected previously (in 2013) at these locations.

EPA representative in the field and then implemented as soon as they were formalized as written change requests. Change requests were circulated for signatures as soon as possible during normal business days.

3.4 Appendix D – Chain-of-Custody Forms

Final chain-of-custody forms, including several with revisions, are included in Appendix D. Chain-of-custody form revisions, where necessary, were initiated by AECOM, TAI, other TAI contractors, or the labs. Revisions were typically made by AECOM chemists and then recirculated to the labs and TAI.

3.5 Appendix E – Field Logbooks

Appendix E contains the scanned field logbooks used by each sampling crew as well as the onshore support crew.

3.6 Appendix F – Field Forms by Location

Sample data forms are included in Appendix F. These forms are provided by location for both sediment/BMI and porewater sampling activities.

3.7 Appendix G – Porewater Calibration and Data Sheets

Appendix G contains field data collection sheets documenting the water quality parameters recorded during porewater sampling and data sheets documenting daily calibration of the porewater sensors and meters used to monitor water quality parameters during porewater sampling.

3.8 Appendix H – Photo Logs

Appendix H presents a photo log documenting the 1,052 photographs taken during 2019 Phase 3 sediment study field sampling activities.

3.9 Appendix I – Equipment Rinsate Blank Collection Forms

Appendix I presents equipment rinsate sample collection forms documenting the rinsate samples collected and the sample locations associated with each rinsate sample.

4.0 References

AECOM. 2019a. Field Survey Report – Sediment Facies Mapping, Upper Columbia River. Prepared by AECOM Technical Services, Inc., for Teck American Incorporated. November.

AECOM. 2019b. HAZWOPER Health and Safety Plan. 2019 Phase 3 Sediment Study. September 5.

David Evans and Associates. 2019. Draft Phase 3 Sediment Study – Sediment Facies Mapping Data Summary Report. Prepared by David Evans and Associates in association and consultation with Gravity Consulting, LLC, and Parametrix, Inc. for Teck American Incorporated. December.

ERM et al. 2019. FINAL Quality Assurance Project Plan for the 2019 Phase 3 Sediment Study, Upper Columbia River. Prepared by ERM in association with Windward Environmental LLC, HDR, Exponent, and Parametrix, Inc. for Teck American Incorporated. August.

Exponent, et al. 2011. Upper Columbia River Baseline Ecological Risk Assessment Work Plan. Prepared for Teck American Inc. February 2011.

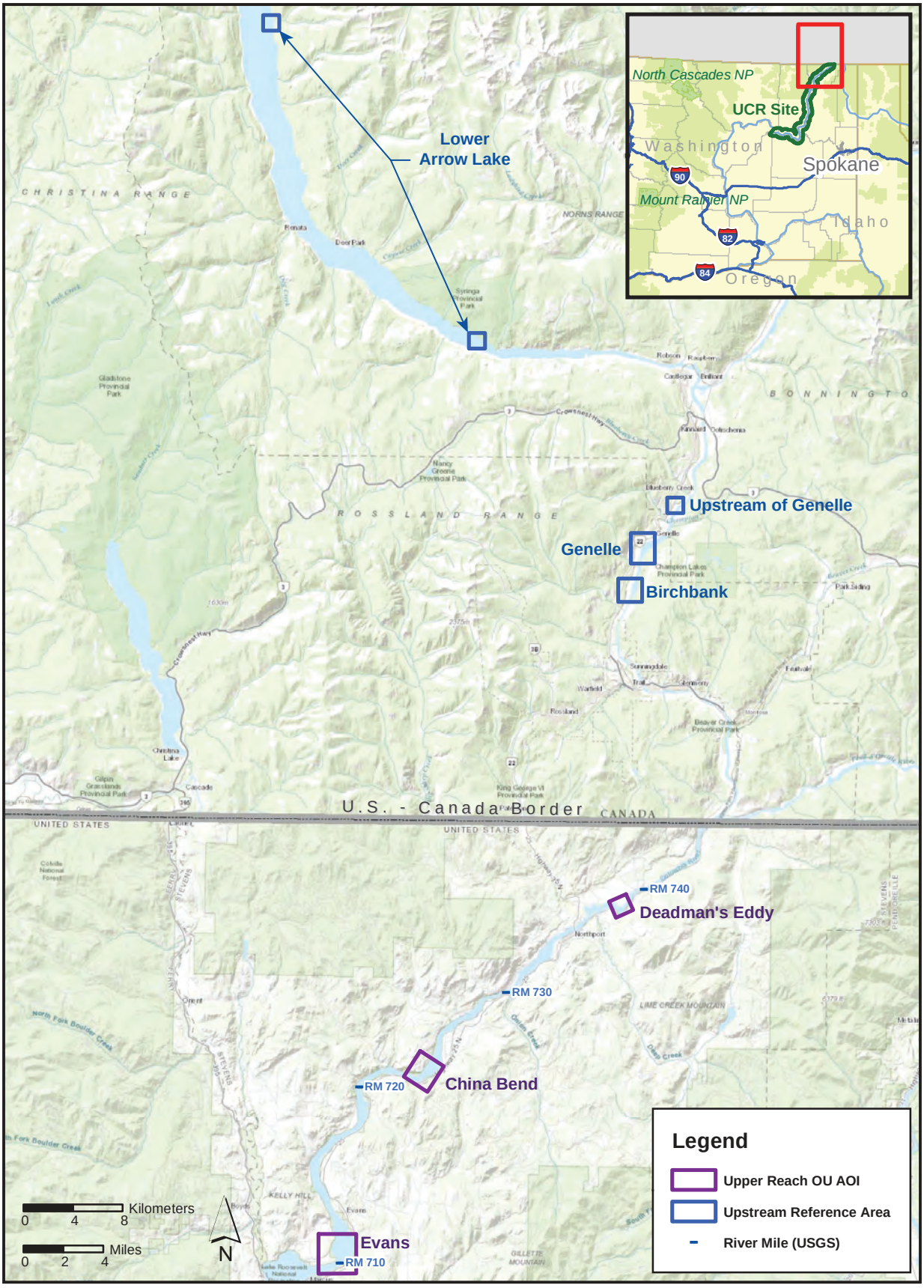
TAI (Teck American Incorporated). 2019. Final Technical Memorandum with Sediment Facies Maps for Upper Reach Operable Unit Areas of Interest. May.

TCAI (Teck Cominco American Incorporated). 2009. Upper Columbia River Draft General Site Health and Safety Plan for the Remedial Investigation and Feasibility Study. Prepared by Integral Consulting, Inc., Mercer Island, Washington and Parametrix, Inc., Bellevue, Washington. December 27.

Windward. 2019. Upper Columbia River Draft Final Phase 3 Sediment Study Porewater Sampling Pilot study Report. Prepared by Windward Environmental LLC for Teck American Incorporated. February.

Maps

\\Seattle.na.aecomnet.com\Seattle\DCS\Resources\GRFX\Projects\60612698 - UCR 2019\60612698_01.ai

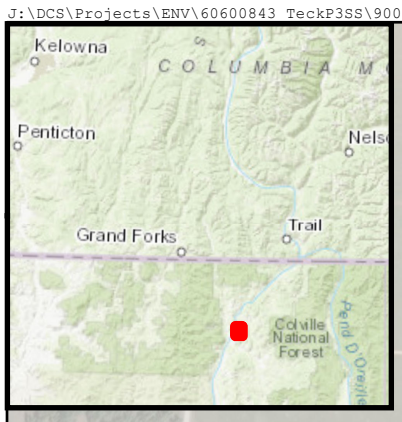


Source: Windward Environmental, LLC

Figure 1

Overview of Sediment, Porewater, and Benthic Macroinvertebrate Sampling Areas

J:\DCS\Projects\ENV\60600843 TeckP3SS\900 CAD GIS\920 929 GIS Graphics\02 Maps\02 Map Production and Reports\PW returns updated10 51.mxd @ 09/10/2020



EV075 EV074 EV072 EV071 EV069 EV067 EV066 EV064 EV065 EV063 EV062 EV060 EV059 4-B1-2019 EV058 EV057 EV053 EV052 EV054 EV051 EV048 EV049 EV046 EV046 EV044 EV043 EV042 EV041 EV037 EV039 EV040 EV038 EV026 EV029 EV036 EV025 EV027 EV031 EV034 EV028 EV032 EV021 EV024 EV023 EV014 4-B6-2019 EV020 EV022 EV005 EV002 EV008 EV018 EV015 EV016 EV013 EV012 EV001 EV010 EV003 EV011

25

Note:
EV046 - Porewater sample collected but later determined to be mismatched strata, so sample not analyzed.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, ©

Legend

- Porewater Sampling Location
- Locations Attempted but Not Sampled; Point on Map Represents 1st Spatial Location Attempted
- EPA Area of
- Historical Thalweg
- State Highway
- Railroad

Orange Label - Mismatched Strata
Green Label - Sampling Refusal

AECOM

0 500 1,000 Feet

0 0.075 0.15 Miles

N

Map 2
Porewater Sample Locations
Evans AOI
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843 TeckP3SS\900 CAD GIS\920 929 GIS Graphics\02 Maps\02 Map Production and Reports\PW returns updated10 51.mxd @ 09/10/2020

CB015 CB021 CB024 CB016 CB009 CB020 CB029 CB007 CB010 CB018 CB027 CB008 CB022 CB031 CB002 CB012 CB006 CB014 CB005 3-R8-2019 25

CB056 CB055 CB054 CB052 CB050 JS002 CB049 JS001 CB048 CB047 CB046 CB044 CB043 CB039 CB041 CB040 CB038 CB036 CB037 CB035 3-R7-2019 CB032 CB034 25

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, ©

Legend

- Porewater Sampling Location
- Locations Attempted but Not Sampled; Point on Map Represents 1st Spatial Location Attempted
- EPA Area of Interest
- Historical Thalweg
- State Highway
- Railroad

Orange Label - Mismatched Strata

AECOM

Feet
0 370 740

Miles
0 0.05 0.1

N

Map 3
Porewater Sample Locations
China Bend AOI
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843 TeckP3SS\900 CAD GIS\920 929 GIS Graphics\02 Maps\02 Map Production and Reports\PW returns updated10 51.mxd @ 09/10/2020

DM066 DM065 DM064 DM063 DM062 DM061 DM060 DM059 DM058 DM056 DM055 DM054 DM053 DM052 DM051 DM050 DM049 DM048 DM047 DM046 DM045 DM044 DM043 DM042 DM041 DM040 DM039 DM038 DM037 DM036 DM035 DM034 DM033 DM032 DM031 DM030 DM029 DM028 DM027 DM026 DM025 DM024 DM023 DM022 DM020 DM019 DM018 DM016 DM015 DM014 DM013 DM012 DM010 DM008 DM007 DM006 DM005 DM004 DM002 1-B5-NRT 1-B6-NRT

251

Legend

- Porewater Sampling Location
- Locations Attempted but Not Sampled; Point on Map Represents 1st Spatial Location Attempted
- EPA Area of Interest
- Historical Thalweg
- State Highway
- Railroad

Orange Label - Mismatched Strata
Green Label - Sampling Refusal
Pink Label - Safety Issue

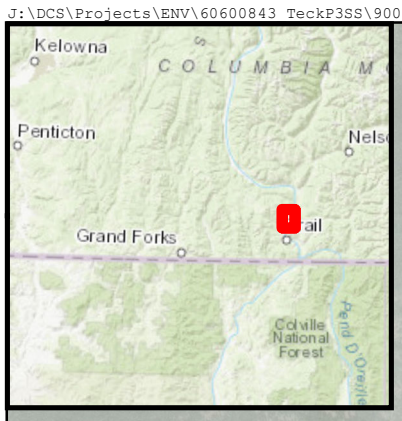
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, ©

AECOM

Feet
0 230 460
Miles
0 0.0425 0.085

Map 4
Porewater Sample Locations
Deadman's Eddy AOI
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843 TeckP3SS\900 CAD GIS\920 929 GIS Graphics\02 Maps\02 Map Production and Reports\PW returns updated10 5.mxd @ 05/12/2020



REF012
REF011
REF010
REF009A
REF009
REF008
REF007
REF005
REF006
REF004
REF003
REF002
REF001

Note:
REF009 - Porewater sample collected but was not analyzed because colocated sediment sample could not be collected due to drop in water level.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, ©

Legend

Porewater Sampling Location

AECOM

Feet
0 1,000 2,000
Miles
0 0.175 0.35
N

Map 5
Porewater Sample Locations
Birchbank, Genelle, and Upstream of Genelle Reference Areas in British Columbia, Canada
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843 TeckP3SS\900 CAD GIS\920 929 GIS Graphics\02 Maps\02 Map Production and Reports\PW returns updated10 5.mxd @ 05/12/2020

REF015
REF014
REF013

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, ©

Legend

- Porewater Sampling Location

AECOM

Feet
0 800 1,600

Miles
0 0.15 0.3

N

Map 6
Porewater Sample Locations
Lower Arrow Lake Southern Reference Area in British Columbia, Canada
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843 TeckP3SS\900 CAD GIS\920 929 GIS Graphics\02 Maps\02 Map Production and Reports\PW returns updated10 5.mxd @ 05/12/2020

REF018
REF017
REF016

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, ©

Legend

- Porewater Sampling Location

AECOM

Feet
0 800 1,600

Miles
0 0.15 0.3

N

Map 7
Porewater Sample Locations
Lower Arrow Lake Northern Reference Area in British Columbia, Canada
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\02_Maps\02_Map_Production_and_Reports\SedimentMapset\Teck_Centroids - Copy_10_5_1.mxd @ 09/10/2020

EV075 EV074 EV072 EV071 EV069 EV067 EV066 EV065 EV064 EV063 EV062 EV060 EV059 4-B1-2019 EV057 EV058 EV053 EV052 EV054 EV051 EV048 EV049 EV046 EV044 EV042 EV041 EV039 EV037 EV040 EV026 EV025 EV029 EV031 EV036 EV027 EV034 EV028 EV014 EV021 EV020 EV020 EV005 4-B6-2019 EV022 EV002 EV008 EV016 EV012 EV013 EV015 EV001 EV010 EV003 EV011

25

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Legend

- Sample Centroid
- Locations Attempted but Not Sampled; Point on Map Represents 1st Spatial Location Attempt
- EPA Area of
- Historical Thalweg
- State Highway
- Railroad

Orange Label - Mismatched Strata
Yellow Label - Insufficient Material

AECOM

Feet
0 500 1,000
Miles
0 0.075 0.15
N

Map 8
Sediment Sample Centroid Locations
Evans AOI
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\02_Maps\02_Map_Production_and_Reports\SedimentMapset\Teck_Centroids - Copy_10_5_1.mxd @ 09/10/2020

CB015 CB021 CB024 CB009 CB016 CB018 CB020 CB029 CB027 CB007 CB010 CB022 CB008 CB031 CB012 CB002 CB006 CB014 CB005 3-R8-2019

CB056 CB054 JS002 CB050 JS001 CB047 CB046 CB044 CB040 CB039 CB038 CB036 CB037 CB035 3-R7-2019 CB032 CB034

25

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Legend

- Sample Centroid
- Locations Attempted but Not Sampled; Point on Map Represents 1st Spatial Location Attempt
- EPA Area of
- Historical Thalweg
- State Highway
- Railroad

Orange Label - Mismatched Strata
Yellow Label - Insufficient Material

AECOM

0 385 770 Feet

0 0.05 0.1 Miles

N

Map 9
Sediment Sample Centroid Locations
China Bend AOI
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\02_Maps\02_Map_Production_and_Reports\SedimentMapset\Teck_Centroids - Copy_10_5_1.mxd @ 09/10/2020

DM066
251
DM061
DM057
DM053
DM054
DM052
DM051
DM049
DM047
DM048
DM050
DM046
DM039
DM040
DM038
DM044
DM045
DM033
DM041
DM042
DM032
DM036
DM031
DM037
DM035
DM034
1-B5-NRT
DM025
DM026
1-B6-NRT
DM023
DM020
DM027
DM019
DM022
DM024
DM015
DM018
DM016
DM010
DM007
DM012
DM008
DM014
DM013
DM005
DM006
DM002
DM004

Legend

- Sample Centroid
- Locations Attempted but Not Sampled; Point on Map Represents 1st Spatial Location Attempt
- EPA Area of
- Historical Thalweg
- State Highway
- Railroad

Orange Label - Mismatched Strata
Yellow Label - Insufficient Material
Pink Label - Safety Issue

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

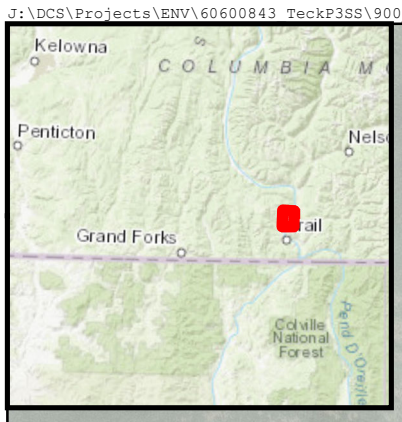
AECOM

Feet
0 237.5 475
Miles
0 0.0425 0.085

N

Map 10
Sediment Sample Centroid Locations
Deadman's Eddy AOI
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\02_Maps\02_Map_Production_and_Reports\Teck_Centroids - Copy.mxd @ 03/24/2020



REF012
REF011
REF010
REF009A
REF008
REF007
REF005
REF006
REF004
REF003
REF002
REF001

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Legend

Sample Centroid

AECOM

Feet
0 1,000 2,000
Miles
0 0.175 0.35
N

Map 11
Sediment Sample Centroid Locations
Birchbank, Genelle, and Upstream of Genelle Reference Areas in British Columbia, Canada
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\02_Maps\02_Map_Production_and_Reports\Teck_Centroids - Copy1.mxd @ 05/13/2020

REF015
REF014
REF013

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Legend

Sample Centroid

AECOM

Feet
0 850 1,700

Miles
0 0.15 0.3

N

Map 12
Sediment Sample Centroid Locations
Lower Arrow Lake Southern Reference Area in British Columbia, Canada
Upper Columbia River 2019 Phase 3 Sediment Study

J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\02_Maps\02_Map_Production_and_Reports\Teck_Centroids - Copy1.mxd @ 05/13/2020

REF018
REF017
REF016

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Legend

Sample Centroid

AECOM

Feet
0 850 1,700

Miles
0 0.15 0.3

N

Map 13
Sediment Sample Centroid Locations
Lower Arrow Lake Northern Reference Area in British Columbia, Canada
Upper Columbia River 2019 Phase 3 Sediment Study

Tables

Appendices

Tables

Table 1. Number of Locations where Sediment, Porewater, and BMI Samples were Collected

	Evans AOI	China Bend AOI	Deadman's Eddy AOI	Reference Locations	Total
Sediment Sample Location Total	**33**	**27**	**27**	**18**	**105**
No Designated Stratum	2	2	2	18	24
Sampleable Sand Stratum	21	14	21	n/a	56
Mud Stratum	5	5	n/a	n/a	10
Mixed Coarse Stratum	4	6	4	n/a	14
PW Sample Locations Total	**41** [2]	**33**	**3129**	**19** [1]	**124**
No Designated Stratum	2	2	2	19	25
Sampleable Sand Stratum	23	14	20	n/a	57
Mud Stratum	5	5	n/a	n/a	10
Mixed Coarse Stratum	5	6	4	n/a	15
Coarse Stratum	6	6	5	n/a	17
BMI Sample Locations Total	**32**	**27**	**26**	**18**	**106**
No Designated Stratum	2	2	2	18	24
Sampleable Sand Stratum	21	14	20	n/a	56
Mud Stratum	5	5	n/a	n/a	10
Mixed Coarse Stratum	4	6	4	n/a	16

Notes:

[1] – One porewater sample at REF009 was not analyzed.

[2] – One porewater sample at EV046 was not analyzed.

AOI – area of interest
BMI – benthic macroinvertebrate
PW - porewater

Table 2. Project Sampling Personnel

Name	Company	Role
Al Thatcher	AECOM	Field Scientist
Anders Utter	AECOM	Field Scientist
Andrew Paynter	AECOM	Health and Safety Manager
Andy Clodfelter	AECOM	Field Scientist
Anisa Sheppherd-Becker	AECOM	Cultural Resource Specialist
Anthony Palmieri, LG	AECOM	Field Supervisor
Brian Fletcher	AECOM	Field Scientist
Cary Kindberg	AECOM	Field Data Management
Chelsey Cook	AECOM	Chemist
Clifford (Cliff) Pearson	AECOM	Field Scientist
Dave Hose, LG	AECOM	Field Supervisor
Dave Lewis	AECOM	Field Scientist
Denise Yee	AECOM	Field Data Management
Denyne McDonald	AECOM	SharePoint Site
Glen Mejia	AECOM	Field Scientist
Ian Sahlberg	AECOM	Field Data Management
JD Brooks	AECOM	Sample Transportation
Jennifer Pretare	AECOM	Lead Field Supervisor, Project Manager
Jennifer Ray	AECOM	Field Scientist
Josie Smith	AECOM	Field Scientist
Kelly Mitchell	AECOM	Cultural Resource Specialist
Ken Jiang	AECOM	Sample Transportation
Linda Howard	AECOM	Field Scientist
Mark Hale	AECOM	Field Supervisor/Cultural Resource Specialist
Mark Tauscher	AECOM	Field Scientist
Mason Struna	AECOM	Field Data Management
Michaela McCoog	AECOM	Field Scientist
Michelle Brownell	AECOM	Sample Transportation
Michelle Stegner	AECOM	Field Supervisor/Cultural Resource Specialist
Nicky Moody	AECOM	Field Supervisor
Paul Hamidi	AECOM	Field Scientist
Ragan Driver	AECOM	Cultural Resource Specialist
Sarah Kintner	AECOM	Field Scientist
Sarah McDaniel	AECOM	Cultural Resource Coordinator
Shannon Couch	AECOM	Health and Safety Manager
Shira DeGrood	AECOM	Field Scientist
Stuart Holmes	AECOM	Field Scientist
Alan Sims	Coastal Monitoring Associates	Senior Technician – Porewater
Bart Chadwick	Coastal Monitoring Associates	Principal – Porewater
Chris Pickerell	Coastal Monitoring Associates	Technician – Porewater
Chris Smith	Coastal Monitoring Associates	Principal – Porewater
Gregg Rivara	Coastal Monitoring Associates	Technician – Porewater
Joel Guerero	Coastal Monitoring Associates	Technician – Porewater
Joss Moore	Coastal Monitoring Associates	Technician – Porewater
Mark Biser	Coastal Monitoring Associates	Technician – Porewater
Brandon Hoover	Gravity Marine Consulting	Boat Captain – Safety and Logistical Support
Brian Strobel	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Brian Walker	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Dan Smith	Gravity Marine Consulting	Deckhand – Safety and Logistical Support

Table 2. Project Sampling Personnel

Name	Company	Role
Dennis Gross	Gravity Marine Consulting	Boat Captain – Safety and Logistical Support
Doug Hadley	Gravity Marine Consulting	Boat Captain – Safety and Logistical Support
Eric Weatherman	Gravity Marine Consulting	Boat Captain – Safety and Logistical Support
George Schernitzki	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Jack McCotter	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Jordan Kloppe	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Josh Weatherman	Gravity Marine Consulting	Boat Captain – Safety and Logistical Support
Rick Wilson	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Ryan Butarac	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Scott Nielson	Gravity Marine Consulting	Boat Captain – Safety and Logistical Support
Steve Bachman	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Weston Sellars	Gravity Marine Consulting	Deckhand – Safety and Logistical Support
Bret Walburn	Gravity Marine Consulting	Deckhand
Chad Furulie	Gravity Marine Consulting	Gravity Field Scientist
Charlie Kellogg	Gravity Marine Consulting	Deckhand
Ed Sloan	Gravity Marine Consulting	Gravity Field Scientist
Emma Rigby	Gravity Marine Consulting	Gravity Field Scientist
Hank Jenkins	Gravity Marine Consulting	Deckhand
Jeff Schmidt	Gravity Marine Consulting	Deckhand
Jeff Schut	Gravity Marine Consulting	Gravity Field Scientist
Jeff Wilson	Gravity Marine Consulting	Gravity Field Scientist/GIS
John Schaefer	Gravity Marine Consulting	Gravity Field Scientist
Larry Lesueur	Gravity Marine Consulting	Deckhand
Maggie McKeon	Gravity Marine Consulting	Gravity Field Scientist
Mike Duffield	Gravity Marine Consulting	Gravity Boat Captain
Pete Jenkins	Gravity Marine Consulting	Gravity Boat Captain
Rene Trudeau	Gravity Marine Consulting	Gravity Boat Captain
Ryan McEliece	Gravity Marine Consulting	Gravity Field Scientist
Shawn Hinz	Gravity Marine Consulting	Gravity Field Scientist

Table 3. Technical Oversight Personnel and Observers

Affiliation	Personnel
EPA Region 10	Kathryn Cerise – Project Manager Robert Tan
Jacobs (EPA contractor)	Marilyn Gauthier Dan Lavoie D.J. Moore Elle Anzinger Frank Dillon Gabriel (Gabe) Sedberry Jeff Johnson John Culley John Gondek Kaila Savage Lisa Raterink Nicole Badon Rachel Zajac-Fay Shaun Roark
TAI	Kris McCaig – Project Coordinator Denise Mills Cristy Kessel Rob Orr
ERM	James Keithly Kevin Lundmark
CCT	Aren Orsen Whitney Fraser – Contractor, Lodestone Environmental Consulting
Spokane Tribe of Indians	Tamara Knudson
Others	Joe Wichmann – Citizens for a Clean Columbia Brendan Dowling – Washington State Department of Ecology Brad Sample – Ecorisk Steve Cox – U.S. Geological Survey Justin Eichelberger – National Park Service – Lake Roosevelt National Recreation Area

Table 4. Field Schedule

Date	AOI or Area of Sampling or Other Task			
	Porewater Boat 1 (*Yeti*)	Porewater Boat 2 (*Tieton*)	Sediment Boat 1 (*Ingalls*)	Sediment Boat 2 (*Cayuse*)
9/9/19				Mobilization, H/S Meeting
9/10/19				Evans
9/11/19				Evans
9/12/19				Evans
9/13/19				Evans
9/14/19	PW Equipment Set Up and Testing (land based)			Evans
9/15/19	PW Equipment Set Up and Testing (land based)			
9/16/19	H/S Meeting, Evans	H/S Meeting, DME	H/S Meeting, Evans	Mobilization, H/S Meeting
9/17/19	Evans	DME		Equipment Set Up; DME
9/18/19	Evans	DME		DME
9/19/19	Evans	DME		DME
9/20/19	Evans	DME	Evans	DME
9/21/19	Evans	DME	Evans	DME
9/22/19				
9/23/19	Evans	Mobilization to Canada	Evans	Mobilization to Canada
9/24/19	Evans	Reference Area	Evans	Reference Area
9/25/19	Evans	Reference Area	Evans	Reference Area
9/26/19	Evans	Reference Area	Evans	Reference Area
9/27/19	Evans	Reference Area	Evans	Reference Area
9/28/19	Evans	Reference Area	Evans	Reference Area
9/29/19				
9/30/19	Evans	Reference Area	Evans	Reference Area
10/1/19	Evans	Reference Area	Evans	Reference Area
10/2/19	Evans	Reference Area	Evans	Reference Area
10/3/19	Evans	Reference Area	China Bend	Reference Area
10/4/19	Evans	Reference Area	China Bend	Reference Area
10/5/19				
10/6/19				
10/7/19				
10/8/19	Evans	DME	China Bend	DME
10/9/19	Evans	DME	China Bend	DME
10/10/19	China Bend	DME	China Bend	DME
10/11/19	China Bend	DME	China Bend	DME
10/12/19	China Bend	DME	China Bend	DME
10/13/19				
10/14/19	China Bend	DME	China Bend	DME
10/15/19	China Bend	DME	China Bend	DME
10/16/19	China Bend	DME	China Bend	DME
10/17/19	China Bend	DME	China Bend	DME
10/18/19	China Bend	DME	Demobilization	DME
10/19/19	China Bend	DME		DME
10/20/19				Demobilization
10/21/19	China Bend	DME		
10/22/19	China Bend	Evans		
10/23/19	Evans	Evans and DME - photos only		
10/24/19	Demobilization	Demobilization		

Notes: Gray shading indicates no field work completed on that date; AOI – area of interest; H/S – Health and Safety, DME – Deadman's Eddy

Table 5. Samples Collected by Location, Evans AOI

Sample Location	Location Type	Target Stratum	Sediment Sampling Equipment	Sample Type			
				SE	TX	BMI	PW
EV001	A	Sampleable Sand	PG	●	●	●	●
EV002	P	Sampleable Sand	PG	●	●	●	●
EV003	A	Sampleable Sand	H	●	●	●	●
EV004	A	Mud	NA	Sampling Not Attempted at this Location			
EV005	P	Sampleable Sand	PG	●	●	●	●
EV006	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV007	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV008	P	Sampleable Sand	PG	●	●	●	●
EV009	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV010	P	Sampleable Sand	H	●	●	●	●
EV011	A	Mixed Coarse	F	●	--	●	●
EV012	P	Sampleable Sand	H	●	●	●	●
EV013	P	Sampleable Sand	H	●	●	●	●
EV014	P	Sampleable Sand	NA	Mismatched Strata			
EV015	P	Mixed Coarse	F	○	--	○	●
EV016	A	Mixed Coarse	NA	Mismatched Strata			
EV017	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV018	P	Coarse	NA	--	--	--	●
EV019	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV020	A	Mixed Coarse	F	●	--	○	X
EV021	P	Coarse	NA	--	--	--	X
EV022	P	Mixed Coarse	F	●	--	●	●
EV023	P	Coarse	NA	--	--	--	●
EV024	P	Coarse	NA	--	--	--	●
EV025	A	Coarse	NA	Mismatched Strata			
EV026	P	Sampleable Sand	H	●	●	●	●
EV027	P	Sampleable Sand	H	●	●	●	●
EV028	A	Mixed Coarse	NA	Mismatched Strata			
EV029	P	Coarse	NA	--	--	--	X
EV030	A	Coarse	NA	Sampling Not Attempted at this Location			
EV031	A	Mixed Coarse	NA	Mismatched Strata			
EV032	A	Coarse	NA	--	--	--	●
EV033	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV034	P	Mixed Coarse	NA	Mismatched Strata			
EV035	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV036	P	Mixed Coarse	F	●	--	●	●
EV037	P	Sampleable Sand	PG	●	●	●	●
EV038	A	Coarse	NA	--	--	--	●
EV039	A	Mixed Coarse	NA	Mismatched Strata			
EV040	A	Coarse	NA	--	--	--	X
EV041	P	Coarse	NA	--	--	--	X
EV042	P	Mixed Coarse	NA	Mismatched Strata			
EV043	P	Coarse	NA	--	--	--	●

Table 5. Samples Collected by Location, Evans AOI

Sample Location	Location Type	Target Stratum	Sediment Sampling Equipment	Sample Type			
				SE	TX	BMI	PW
EV044	P	Mud	PG	●	●	●	●
EV045	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV046	P	Sampleable Sand	NA	Mismatched Strata			●[1]
EV047	A	Mud	NA	Sampling Not Attempted at this Location			
EV048	P	Sampleable Sand	PG	●	●	●	●
EV049	P	Mixed Coarse	H, F	●	--	●	●
EV050	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV051	P	Sampleable Sand	PG	●	●	●	●
EV052	A	Sampleable Sand	PG	●	●	●	●
EV053	P	Sampleable Sand	NA	Mismatched Strata			
EV054	P	Mud	PG	●	●	●	●
EV055	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV056	A	Mud	NA	Sampling Not Attempted at this Location			
EV057	P	Mud	PG	●	●	●	●
EV058	P	Sampleable Sand	NA	Mismatched Strata			
EV059	P	Sampleable Sand	H	○	○	○	●
EV060	A	Sampleable Sand	H	●	●	●	●
EV061	A	Mud	NA	Sampling Not Attempted at this Location			
EV062	P	Sampleable Sand	NA	Mismatched Strata			
EV063	P	Mud	PG	●	●	●	●
EV064	P	Mud	PG	●	●	●	●
EV065	P	Sampleable Sand	PG	●	●	●	●
EV066	A	Sampleable Sand	PG	●	●	●	●
EV067	P	Sampleable Sand	NA	Mismatched Strata			
EV068	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV069	P	Sampleable Sand	PG	●	●	●	●
EV070	A	Mud	NA	Sampling Not Attempted at this Location			
EV071	A	Sampleable Sand	PG	●	●	●	●
EV072	A	Sampleable Sand	PG	●	●	●	●
EV073	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
EV074	A	Sampleable Sand	NA	Mismatched Strata			
EV075	P	Sampleable Sand	PG	●	●	●	●
EV076	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
4-B1-2019	R	NA	PG	●	●	●	●
4-B6-2019	R	NA	PG	●	●	●	●

Notes:

[1] – sample not analyzed
A – Alternate Location
AOI – area of interest
BMI – benthic macroinvertebrate
F – Freeze Grab
H – Hamon Grab
NA – not applicable
P – Primary Location
PG – Power Grab
PW – porewater
QAPP – Quality Assurance Project Plan
R – Resample at previously sampled location
SE – sediment

● Sample collected successfully
○ Insufficient volume for sample
-- Analyses not specified in QAPP
X Refusal; no sample obtained

TX – bioassay

Table 6. Samples Collected by Location, China Bend AOI

Sample Location	Location Type	Target Stratum	Sediment Sampling Equipment	Sample Type			
				SE	TX	BMI	PW
CB001	A	Coarse	NA	Sampling Not Attempted at this Location			
CB002	A	Sampleable Sand	H	●	●	●	●
CB003	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
CB004	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
CB005	P	Mixed Coarse	F	●	--	●	●
CB006	P	Sampleable Sand	H	●	●	●	●
CB007	P	Sampleable Sand	H	●	●	●	●
CB008	P	Sampleable Sand	NA	Mismatched Strata			
CB009	P	Sampleable Sand	H	●	●	●	●
CB010	A	Sampleable Sand	H	●	●	●	●
CB011	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
CB012	P	Sampleable Sand	H	●	●	●	●
CB013	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
CB014	P	Sampleable Sand	PG	●	●	●	●
CB015	A	Sampleable Sand	NA	Mismatched Strata			
CB016	P	Sampleable Sand	H	●	●	●	●
CB017	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
CB018	P	Sampleable Sand	H	●	●	●	●
CB019	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
CB020	A	Sampleable Sand	PG	●	●	●	●
CB021	P	Mud	PG	●	●	●	●
CB022	P	Sampleable Sand	NA	Mismatched Strata			
CB023	A	Mud	NA	Sampling Not Attempted at this Location			
CB024	P	Mud	PG	●	●	●	●
CB025	A	Mud	NA	Sampling Not Attempted at this Location			
CB026	A	Mud	NA	Sampling Not Attempted at this Location			
CB027	P	Mud	PG	●	●	●	●
CB028	A	Mud	NA	Sampling Not Attempted at this Location			
CB029	P	Mud	PG	●	●	●	●
CB030	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
CB031	P	Sampleable Sand	NA	Mismatched Strata			
CB032	P	Mixed Coarse	NA	Mismatched Strata			
CB033	A	Coarse	NA	Sampling Not Attempted at this Location			
CB034	A	Mixed Coarse	NA	Mismatched Strata			
CB035	P	Mixed Coarse	F	●	--	●	●
CB036	A	Mixed Coarse	F	●	--	●	●
CB037	A	Mixed Coarse	NA	Mismatched Strata			
CB038	P	Mixed Coarse	NA	Mismatched Strata			
CB039	P	Sampleable Sand	H	●	●	●	●
CB040	A	Mixed Coarse	F	●	--	●	●
CB041	P	Coarse	NA	--	--	--	●
CB042	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			

Table 6. Samples Collected by Location, China Bend AOI

Sample Location	Location Type	Target Stratum	Sediment Sampling Equipment	Sample Type			
				SE	TX	BMI	PW
CB043	P	Coarse	NA	--	--	--	●
CB044	P	Mud	PG	●	●	●	●
CB045	A	Mud	NA	Sampling Not Attempted at this Location			
CB046	P	Mixed Coarse	F	●	--	●	●
CB047	P	Sampleable Sand	H	●	●	●	●
CB048	P	Coarse	NA	--	--	--	●
CB049	P	Coarse	NA	--	--	--	●
CB050	P	Mixed Coarse	NA	Mismatched Strata			
CB051	A	Coarse	NA	Sampling Not Attempted at this Location			
CB052	P	Coarse	NA	--	--	--	●
CB053	A	Coarse	NA	Sampling Not Attempted at this Location			
CB054	A	Mixed Coarse	NA	Mismatched Strata			
CB055	P	Coarse	NA	--	--	--	●
CB056	A	Mixed Coarse	F	●	--	●	●
CB057	A	Coarse	NA	Sampling Not Attempted at this Location			
CB058	A	Coarse	NA	Sampling Not Attempted at this Location			
JS001	P	Sampleable Sand	H	●	●	●	●
JS002	P	Sampleable Sand	H	●	●	●	●
JS003	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
JS004	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
3-R7-2019	R	NA	PG	●	●	●	●
3-R8-2019	R	NA	H	●	●	●	●

Notes:

A – Alternate Location
AOI – area of interest
BMI – benthic macroinvertebrate
F – Freeze Grab
H – Hamon Grab
NA – not applicable
P – Primary Location
PG – Power Grab
PW – porewater
QAPP – Quality Assurance Project Plan
R – Resample at previously sampled location
SE – sediment
TX – bioassay

● Sample collected successfully
○ Insufficient volume for sample
-- Analyses not specified in QAPP

Table 7. Samples Collected by Location, Deadman's Eddy AOI

Sample Location	Location Type	Target Stratum	Sediment Sampling Equipment	Sample Type			
				SE	TX	BMI	PW
DM001	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
DM002	P	Sampleable Sand	H	●	●	●	●
DM004	A	Mixed Coarse	NA	Mismatched Strata			
DM005	A	Mixed Coarse	NA	Mismatched Strata			
DM006	A	Mixed Coarse	F	○	--	○	X
DM007	A	Sampleable Sand	PG	●	●	●	●
DM008	P	Sampleable Sand	H	●	●	●	●
DM009	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
DM010	P	Sampleable Sand	H	●	●	●	●
DM011	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
DM012	A	Mixed Coarse	NA	Mismatched Strata			
DM013	P	Mixed Coarse	NA	LNS	--	LNS	LNS
DM014	P	Mixed Coarse	NA	LNS	--	LNS	LNS
DM015	P	Sampleable Sand	H	●	●	●	●
DM016	P	Sampleable Sand	H	●	●	●	●
DM017	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
DM018	P	Sampleable Sand	H	●	●	●	●
DM019	A	Sampleable Sand	H	●	●	●	●
DM020	A	Sampleable Sand	H	●	●	●	●
DM021	A	Sampleable Sand	NA	Sampling Not Attempted at this Location			
DM022	P	Sampleable Sand	H	●	●	●	●
DM023	P	Sampleable Sand	PG	●	●	●	●
DM024	A	Sampleable Sand	PG	●	●	●	●
DM025	A	Sampleable Sand	H	●	●	●	●
DM026	P	Sampleable Sand	PG	●	●	●	●
DM027	A	Sampleable Sand	H	●	●	●	●
DM028	P	Coarse	NA	--	--	--	LNS
DM029	P	Coarse	NA	--	--	--	LNS
DM030	A	Coarse	NA	--	--	--	●
DM031	A	Mixed Coarse	F	○	--	○	X
DM032	P	Mixed Coarse	F	○	--	○	X
DM033	P	Sampleable Sand	NA	Mismatched Strata			
DM034	A	Sampleable Sand	NA	Mismatched Strata			
DM035	P	Sampleable Sand	NA	Mismatched Strata			
DM036	P	Mixed Coarse	F	●	--	●	●
DM037	A	Sampleable Sand	NA	Mismatched Strata			
DM038	A	Mixed Coarse	F	●	--	●	●
DM039	P	Mixed Coarse	F	●	--	●	●
DM040	P	Sampleable Sand	NA	Mismatched Strata			
DM041	A	Sampleable Sand	NA	Mismatched Strata			
DM042	P	Sampleable Sand	NA	Mismatched Strata			
DM043	A	Coarse	NA	--	--	--	●

Table 7. Samples Collected by Location, Deadman's Eddy AOI

Sample Location	Location Type	Target Stratum	Sediment Sampling Equipment	Sample Type			
				SE	TX	BMI	PW
DM044	P	Sampleable Sand	PG, F	●	NA	●	●
DM045	A	Sampleable Sand	H	●	●	●	●
DM046	A	Sampleable Sand	H, PG	●	●	●	●
DM047	P	Mixed Coarse	F	●	--	●	●
DM048	P	Sampleable Sand	NA	Mismatched Strata			
DM049	A	Sampleable Sand	NA	Mismatched Strata			
DM050	P	Sampleable Sand	H, PG	●	●	●	●
DM051	P	Sampleable Sand	NA	Mismatched Strata			
DM052	P	Sampleable Sand	NA	Mismatched Strata			
DM053	A	Sampleable Sand	NA	Mismatched Strata			
DM054	A	Sampleable Sand	NA	Mismatched Strata			
DM055	A	Coarse	NA	--	--	--	LNS
DM056	P	Coarse	NA	--	--	--	LNS
DM057	P	Sampleable Sand	H	●	●	○	X
DM058	A	Sampleable Sand	NA	Sampling Not Attempted [1]			X
DM059	P	Coarse	NA	--	--	--	●
DM060	A	Sampleable Sand	NA	Sampling Not Attempted [1]			X
DM061	P	Sampleable Sand	H, PG	●	●	●	●
DM062	P	Coarse	NA	--	--	--	LNS
DM063	P	Coarse	NA	--	--	--	●
DM064	A	Coarse	NA	--	--	--	●
DM065	A	Coarse	NA	--	--	--	LNS
DM066	P	Sampleable Sand	NA	Mismatched Strata			
1-B5-NRT	R	NA	PG	●	●	●	●
1-B6-NRT	R	NA	PG	●	●	●	●

Notes:

[1] – Not sampled due to refusal for porewater sampling
A – Alternate Location
AOI – area of interest
BMI – benthic macroinvertebrate
F – Freeze Grab
H – Hamon Grab
LNS – Location was not safe to sample
NA – not applicable
P – Primary Location
PG – Power Grab
PW – porewater
QAPP – Quality Assurance Project Plan
R – Resample at previously sampled location
SE – sediment
TX – bioassay

● Sample collected successfully
○ Insufficient volume for sample
-- Analyses not specified in QAPP
X Refusal; no sample obtained

Table 8. Reference Area Samples Collected by Location

Sample Location	Area	Location Type	Target Stratum	Sediment Sampling Equipment	Sample Type			
					SE	TX	BMI	PW
REF001	Birchbank	NA	Mixed	PG	●	●	●	●
REF002	Birchbank	NA	Sand	PG	●	●	●	●
REF003	Birchbank	NA	Sand	Shovel	●	●	●	●
REF004	Birchbank	NA	Mixed	Shovel Sample	●	●	●	●
REF005	Genelle	NA	Mixed	H	●	●	●	●
REF006	Genelle	NA	Mixed	H	●	●	●	●
REF007	Genelle	NA	Sand	PG	●	●	●	●
REF008	Genelle	NA	Sand	PG	●	●	●	●
REF009	Genelle	NA	Sand	NA	NA	NA	NA	● [1]
REF009A	Genelle	NA	Sand	H	●	●	●	●
REF010	Genelle	NA	Mixed	H	●	●	●	●
REF011	Upstream of Genelle	NA	Sand	PG	●	●	●	●
REF012	Upstream of Genelle	NA	Mixed	Scoop	●	●	●	●
REF013	Lower Arrow Lake	NA	Sand/Mud	PG	●	●	●	●
REF014	Lower Arrow Lake	NA	Sand/Mud	PG	●	●	●	●
REF015	Lower Arrow Lake	NA	Sand/Mud	PG	●	●	●	●
REF016	Lower Arrow Lake	NA	Sand/Mud	PG	●	●	●	●
REF017	Lower Arrow Lake	NA	Sand/Mud	PG	●	●	●	●
REF018	Lower Arrow Lake	NA	Sand/Mud	PG	●	●	●	●
TOTAL		-	-	-	18	18	18	19

Notes:

[1] – Sample not analyzed.

BMI – benthic macroinvertebrate
F – Freeze Grab
H – Hamon Grab
NA – not applicable
PG – Power Grab
PW – porewater
SE – sediment
TX – bioassay

● Sample collected successfully

Table 9. EPA Splits and Field Duplicates

Area	Location ID	Primary, Alternate, or Repeat	EPA Split Sample Type(s) in QAPP	Sediment			Porewater	
				Sediment Chemistry Duplicate	Sediment Chemistry EPA Splits	Sediment Bioassay EPA Splits	EPA Split Sample	Duplicates
China Bend	CB001	A						
China Bend	CB002	A						
China Bend	CB003	A						
China Bend	CB004	A						
China Bend	CB005	P	SE, PW				X (and duplicate)	
China Bend	CB006	P						
China Bend	CB007	P						
China Bend	CB008	P						
China Bend	CB009	P						
China Bend	CB010	A				X		DOC
China Bend	CB011	A						
China Bend	CB012	P	PW				X	
China Bend	CB013	A						
China Bend	CB014	P	TX	X		X		
China Bend	CB015	A						
China Bend	CB016	P	PW				X	
China Bend	CB017	A						
China Bend	CB018	P		X				
China Bend	CB019	A						
China Bend	CB020	A						
China Bend	CB021	P						TOC
China Bend	CB022	P						
China Bend	CB023	A						
China Bend	CB024	P						
China Bend	CB025	A						
China Bend	CB026	A						
China Bend	CB027	P						
China Bend	CB028	A						
China Bend	CB029	P	TX			X		
China Bend	CB030	A						
China Bend	CB031	P	TX					
China Bend	CB032	P						
China Bend	CB033	A						
China Bend	CB034	A						
China Bend	CB035	P		X	X (and duplicate)			
China Bend	CB036	A						
China Bend	CB037	A						
China Bend	CB038	P						
China Bend	CB039	P						
China Bend	CB040	A						
China Bend	CB041	P	PW				X	
China Bend	CB042	A						
China Bend	CB043	P						Sul/Alk/Cl
China Bend	CB044	P						
China Bend	CB045	A						
China Bend	CB046	P						Sul/Alk/Cl
China Bend	CB047	P	SE, PW, TX		X	X	X	
China Bend	CB048	P						
China Bend	CB049	P						
China Bend	CB050	P						
China Bend	CB051	A						

Table 9. EPA Splits and Field Duplicates

Area	Location ID	Primary, Alternate, or Repeat	EPA Split Sample Type(s) in QAPP	Sediment			Porewater	
				Sediment Chemistry Duplicate	Sediment Chemistry EPA Splits	Sediment Bioassay EPA Splits	EPA Split Sample	Duplicates
China Bend	CB052	P						
China Bend	CB053	A						
China Bend	CB054	A						
China Bend	CB055	P						
China Bend	CB056	A						
China Bend	CB057	A						
China Bend	CB058	A						
China Bend	JS001	P				X		Metals
China Bend	JS002	P						
China Bend	JS003	A						
China Bend	JS004	A						
Deadman's Eddy	DM001	A						
Deadman's Eddy	DM002	P						
Deadman's Eddy	DM004	A						
Deadman's Eddy	DM005	A						
Deadman's Eddy	DM006	A						
Deadman's Eddy	DM007	A						Sul/Alk/Cl
Deadman's Eddy	DM008	P	TX			X		TOC
Deadman's Eddy	DM009	A						
Deadman's Eddy	DM010	P	SE, PW		X		X	
Deadman's Eddy	DM011	A						
Deadman's Eddy	DM012	A						
Deadman's Eddy	DM013	P						
Deadman's Eddy	DM014	P						
Deadman's Eddy	DM015	P						Sul/Alk/Cl
Deadman's Eddy	DM016	P		X				
Deadman's Eddy	DM017	A						
Deadman's Eddy	DM018	P						
Deadman's Eddy	DM019	A						
Deadman's Eddy	DM020	A					X	
Deadman's Eddy	DM021	A						
Deadman's Eddy	DM022	P						Metals
Deadman's Eddy	DM023	P						DOC
Deadman's Eddy	DM024	A		X		X		DOC, TOC
Deadman's Eddy	DM025	A				X		
Deadman's Eddy	DM026	P	PW, TX	X		X	X	
Deadman's Eddy	DM027	A						
Deadman's Eddy	DM028	P	PW					
Deadman's Eddy	DM029	P						
Deadman's Eddy	DM030	A						
Deadman's Eddy	DM031	A						
Deadman's Eddy	DM032	P						
Deadman's Eddy	DM033	P						
Deadman's Eddy	DM034	A						
Deadman's Eddy	DM035	P	TX					
Deadman's Eddy	DM036	P	SE, PW		X			
Deadman's Eddy	DM037	A						
Deadman's Eddy	DM038	A						
Deadman's Eddy	DM039	P						
Deadman's Eddy	DM040	P						
Deadman's Eddy	DM041	A						
Deadman's Eddy	DM042	P						
Deadman's Eddy	DM043	A						
Deadman's Eddy	DM044	P						Metals

Table 9. EPA Splits and Field Duplicates

Area	Location ID	Primary, Alternate, or Repeat	EPA Split Sample Type(s) in QAPP	Sediment			Porewater	
				Sediment Chemistry Duplicate	Sediment Chemistry EPA Splits	Sediment Bioassay EPA Splits	EPA Split Sample	Duplicates
Deadman's Eddy	DM045	A						
Deadman's Eddy	DM046	A				X		
Deadman's Eddy	DM047	P					X	
Deadman's Eddy	DM048	P	TX					
Deadman's Eddy	DM049	A						
Deadman's Eddy	DM050	P						
Deadman's Eddy	DM051	P	PW					
Deadman's Eddy	DM052	P						
Deadman's Eddy	DM053	A						
Deadman's Eddy	DM054	A						
Deadman's Eddy	DM055	A						
Deadman's Eddy	DM056	P						
Deadman's Eddy	DM057	P						
Deadman's Eddy	DM058	A						
Deadman's Eddy	DM059	P					X	
Deadman's Eddy	DM060	A						
Deadman's Eddy	DM061	P						
Deadman's Eddy	DM062	P						
Deadman's Eddy	DM063	P						
Deadman's Eddy	DM064	A						
Deadman's Eddy	DM065	A						
Deadman's Eddy	DM066	P						
Evans	EV001	A		X				
Evans	EV002	P	TX			X		DOC
Evans	EV003	A						
Evans	EV004	A						
Evans	EV005	P						
Evans	EV006	A						
Evans	EV007	A						
Evans	EV008	P						
Evans	EV009	A						
Evans	EV010	P	PW				X	
Evans	EV011	A						
Evans	EV012	P						
Evans	EV013	P						Metals
Evans	EV014	P						
Evans	EV015	P	SE, PW				X	
Evans	EV016	A						
Evans	EV017	A						
Evans	EV018	P						
Evans	EV019	A						
Evans	EV020	A			X			
Evans	EV021	P						
Evans	EV022	P						
Evans	EV023	P						
Evans	EV024	P						
Evans	EV025	A						
Evans	EV026	P						
Evans	EV027	P	TX			X		
Evans	EV028	A						
Evans	EV029	P						
Evans	EV030	A						
Evans	EV031	A						
Evans	EV032	A						

Table 9. EPA Splits and Field Duplicates

Area	Location ID	Primary, Alternate, or Repeat	EPA Split Sample Type(s) in QAPP	Sediment			Porewater	
				Sediment Chemistry Duplicate	Sediment Chemistry EPA Splits	Sediment Bioassay EPA Splits	EPA Split Sample	Duplicates
Evans	EV033	A						
Evans	EV034	P						
Evans	EV035	A						
Evans	EV036	P						
Evans	EV037	P	SE, PW	X	X		X	
Evans	EV038	A						
Evans	EV039	A						
Evans	EV040	A						
Evans	EV041	P						
Evans	EV042	P						
Evans	EV043	A						
Evans	EV044	P	TX			X		
Evans	EV045	A						
Evans	EV046	P						
Evans	EV047	A						
Evans	EV048	P						Metals
Evans	EV049	P						
Evans	EV050	A						
Evans	EV051	P						Metals
Evans	EV052	A					X	
Evans	EV053	P						
Evans	EV054	P						
Evans	EV055	A						
Evans	EV056	A						
Evans	EV057	P						
Evans	EV058	P						
Evans	EV059	P						
Evans	EV060	A						Sul/Alk/Cl
Evans	EV061	A						
Evans	EV062	P	PW					
Evans	EV063	P	PW				X	
Evans	EV064	P						
Evans	EV065	P		X				
Evans	EV066	A						TOC
Evans	EV067	P						
Evans	EV068	A						
Evans	EV069	P	TX			X		DOC
Evans	EV070	A						
Evans	EV071	A						
Evans	EV072	A		X				TOC
Evans	EV073	A						
Evans	EV074	A						
Evans	EV075	P						Sul/Alk/Cl
Evans	EV076	A						
Birchbank - Lower	REF001	NA						DOC
Birchbank - Lower	REF002	NA						
Birchbank - Upper	REF003	NA	PW				X	
Birchbank - Upper	REF004	NA	TX			X		
Genelle - Upper	REF005	NA						
Genelle - Upper	REF006	NA						
Genelle - Upper	REF007	NA	TX			X		
Genelle - Upper	REF008	NA						TOC
Genelle - Upper	REF009	NA						
Genelle - Upper	REF009A	NA						Metals

Table 9. EPA Splits and Field Duplicates

Area	Location ID	Primary, Alternate, or Repeat	EPA Split Sample Type(s) in QAPP	Sediment			Porewater	
				Sediment Chemistry Duplicate	Sediment Chemistry EPA Splits	Sediment Bioassay EPA Splits	EPA Split Sample	Duplicates
Genelle - Upper	REF010	NA						
Upstream of Genelle	REF011	NA	SE, PW	X	X		X	Sul/Alk/Cl
Upstream of Genelle	REF012	NA						
Arrow Lake	REF013	NA						
Arrow Lake	REF014	NA		X				Metals
Arrow Lake	REF015	NA	TX			X		
Arrow Lake	REF016	NA						
Arrow Lake	REF017	NA						
Arrow Lake	REF018	NA	PW				X	
Deadman's Eddy	1-B5-NRT	R						
Deadman's Eddy	1-B6-NRT	R						
China Bend	3-R7-2019	R						
China Bend	3-R8-2019	R						
Evans	4-B1-2019	R						
Evans	4-B6-2019	R						
TOTAL NUMBER				**12**	**8, including duplicates**	**17**	**19, including duplicates**	**26**

Notes:
Primary judgmental (JS001 and JS002) and alternate judgmental (JS003 and JS004) sample locations were added to the China Bend AOI as requested by EPA.

A – alternate location
DOC – dissolved organic carbon
JS – judgmental sample
NA – not applicable
P – primary location
PW – porewater
R – repeat location
SE – sediment
Sul/Alk/Cl – sulfate, alkalinity, chloride
TOC – total organic carbon
TX – potential toxicity testing
X – sample collected

Table 10. Summary of Change Requests

No.	Sample Type	QAPP Reference	Applicable Sample Identification Nos.	Description of Modification	Reason for Modification	Impact on Present and Completed Work
1	TX	Table B-1 Appendix A, Table A1 Appendix E, Table E3-1	JS001, JS002, JS003, JS004	Add toxicity testing to the primary and alternate judgmental sampling locations at the China Bend AOI.	Potential toxicity testing is being specified as a sample type for these locations in order to make them consistent with other proposed samples from the "sampleable sand" target stratum.	None.
2	BMI	Appendix A, Section 2.2.5 Appendix A, Table A2 Appendix A, Attachment A1 SOP-8	All BMI samples	Add text to the designated QAPP sections stating: "After the sediment and preservative have been added to the BMI sample container, the container should be closed, sealed, and then gently rolled to ensure the preservative and sediment are fully mixed and in contact with the BMI."	Mixing the preservative (90% ethanol) with the sediment will maximize preservation quality and specimen quality.	None.
3	BMI	Appendix A, Section 2.2.5 SOP-8	BMI samples collected using the XL Van Veen sampler	Collect five sub-samples from the Van Veen grab sampler by pushing a 4-inch-diameter PVC or Lexan tube 6 inches into the sediment in the grab sampler, working in each quadrant of the sampler.	Preliminary BMI samples collected using the XL Van Veen sampler averaged 3.2 ft^2 and 6 gallons of sediment per sample. This is much more sediment than expected and caused an array of logistical issues.	The first two samples collected have a larger sampled area. Density will be normalized to a square meter basis.
3, rev 1	BMI	Appendix A, Section 2.2.5 SOP-8	BMI samples collected using the XL Van Veen grab sampler	Collect half of the XL Van Veen power grab sediment sample to a 6-inch depth and place it into the BMI sample container.	Collecting half of the XL Van Veen sample volume will alleviate these issues while providing the specified volume of sediment for the BMI testing.	Initial samples have a larger sampled area. Density will be normalized to a square meter basis.
4	BMI	Section A7.3.1 Table A7-3 Section B4.4.1 Table B5-3 Appendix A, Table A2	All BMI samples	Residual AFDM and BMI biomass analyses were added to the suite of BMI analyses.	Residual AFDM represents the particulate organic matter that many of the BMI are likely to use as food. Knowing the magnitude and availability of this food source may be useful for evaluating variation in BMI density and composition. BMI biomass will provide additional information pertaining to the magnitude of the BMI community present in the sample.	None.

Table 10. Summary of Change Requests

No.	Sample Type	QAPP Reference	Applicable Sample Identification Nos.	Description of Modification	Reason for Modification	Impact on Present and Completed Work
5	Multiple	Appendix A, Sections 2.2.1 and 2.2.5 SOP-1 SOP-3 SOP-4 SOP-5	All sediment and BMI sample locations	Collect a digital photographic image of the sediment bed at every sediment and BMI sample location.	Refusals, imagery, and grain size data from the Phase 3 sediment study, along with similar results from historical events, will be used as appropriate to verify and refine the results of the preliminary sediment composition maps developed to support the Phase 3 sampling design. This change provides for the consistent collection of imagery at sediment sampling locations.	Underwater imagery was not collected at sediment sampling locations completed prior to 20 September 2019. These locations were revisited during the sampling program for image collection.
Field 1	Sediment	Section A7.7.7 Appendix A, Section 2.1.1	EV001, EV052, EV066, EV071, EV072	Additional sampleable sand strata locations will be attempted in the historical river channel (below 1,220 feet) instead of outside the historical channel (above 1,220 feet).	All 21 primary sampleable sand and 5 alternates had been attempted but only 18 (of 21) were successful.	Impacted order of sediment sampling work in Evans AOI.
Field 2	Freeze Grab Sediment Samples	Section A7.7.5 Appendix A, Sections 2.1.1 and 2.2.7	EV011, EV020, EV022, EV036, EV049	Reasonable effort should be made to collect sediment samples from the mixed coarse strata using the freeze grab sampler, then move to the next sampling location.	Collection of sediment samples from the mixed coarse strata using freeze grab in the Evans AOI has been time consuming.	None.
Field 3	Sediment and Porewater	Map A7-6 Appendix A, Section 2.2.2 and Map A-6	REF006, REF009,[1] and REF010	Adjustments to reference area sampling locations were moved more than 50 meters from target locations proposed in the QAPP	Field conditions were not suitable for sampling (low water, incorrect substrate)	None.

Notes:

[1] – Actual sample location was named REF009A.
AFDM – ash-free dry mass
AOI – area of interest
BMI – benthic macroinvertebrate
ft^2 – square feet
QAPP – Quality Assurance Project Plan
SOP – standard operating procedure

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
CB002-BMI-1-101619	CB002	China Bend	10/16/2019	14:31	Sed - BMI	Fine to medium sand, trace silt	10YR2/1	Homogenous	Loose	Present	<1mm redox	Scattered wood fragments, leaves, pine needles, trace larvae	Trace larvae	None	None
CB002-SE-1-101619	CB002	China Bend	10/16/2019	13:53	Sed - Bioassay (5 gal)	Fine to medium sand, trace silt	10YR2/1	Homogenous	Loose	Present	1mm on surface	Wood pieces	Trace larvae, wood fragments, pine needles, leaves	None	None
CB002-SE-1-101619	CB002	China Bend	10/16/2019	13:53	Sed - Bioassay (2 gal)	Fine to medium sand, trace silt	10YR2/1	Homogenous	Loose	Present	1mm on surface	Wood pieces	Trace larvae, wood fragments, pine needles, leaves	None	None
CB002-SE-1-101619	CB002	China Bend	10/16/2019	13:53	Sed - Chemistry (inclusive BSEM)	Fine to medium sand, trace silt	10YR2/1	Homogenous	Loose	Present	1mm on surface	Wood pieces	Trace larvae, wood fragments, pine needles, leaves	None	None
CB005-BMI-1-101819	CB005	China Bend	10/18/2019	10:37	Sed - BMI	Medium to coarse sand, little rounded to subrounded gravel	10YR2/1	Homogenous	Medium dense	Present	None	Trace drift wood	None	None	None
CB005-SE-1-101819	CB005	China Bend	10/18/2019	8:58	Sed - Chemistry (inclusive BSEM)	Fine to medium gravel, rounded to subrounded. Gravel = variable color little medium to coarse, sand trace silt	Sand 10YR2/1	Homogenous	Medium dense	Present	None	None	None	None	None
CB006-BMI-1-100919	CB006	China Bend	10/9/2019	10:12	Sed - BMI	Fine to medium sand	10YR2/1	Homogenous	Loose	Present	<1mm	Scattered twigs	None	None	None
CB006-SE-1-100919	CB006	China Bend	10/9/2019	10:12	Sed - Bioassay (5 gal)	Fine to medium sand	10YR2/1	Homogenous	Loose	Present	<1mm	Scattered twigs	None	None	None
CB006-SE-1-100919	CB006	China Bend	10/9/2019	10:12	Sed - Bioassay (2 gal)	Fine to medium sand	10YR2/1	Homogenous	Loose	Present	<1mm	Scattered twigs	None	None	None
CB006-SE-1-100919	CB006	China Bend	10/9/2019	10:12	Sed - Chemistry (inclusive BSEM)	Fine to medium sand	10YR2/1	Homogenous	Loose	Present	<1mm	Scattered twigs	None	None	None
CB007-BMI-1-100919	CB007	China Bend	10/9/2019	13:36	Sed - BMI	Gravelly fine to coarse sand, fine to coarse subrounded to rounded gravel with fine to coarse cobble subrounded to rounded, some silt	10YR4/2	Homogenous	Loose	Yes, trace	<1mm	None	None	None	None
CB007-SE-1-100919	CB007	China Bend	10/9/2019	13:36	Sed - Bioassay (2 gal)	Gravelly fine to coarse sand, fine to coarse subrounded to rounded gravel with fine to coarse cobble subrounded to rounded, some silt	10YR4/2	Homogenous	Loose	Yes, trace	<1mm	None	None	None	None
CB007-SE-1-100919	CB007	China Bend	10/9/2019	13:36	Sed - Chemistry (inclusive BSEM)	Gravelly fine to coarse sand, fine to coarse subrounded to rounded gravel with fine to coarse cobble subrounded to rounded, some silt	10YR4/2	Homogenous	Loose	Yes, trace	<1mm	None	None	None	None
CB009-BMI-1-101219	CB009	China Bend	10/12/2019	11:23	Sed - BMI	Fine to medium sand with silt	10YR2/1	Homogenous	Loose to medium density	Some	None	None	Leaves, pine needles, organic material	Shell	None
CB009-SE-1-101219	CB009	China Bend	10/12/2019	11:23	Sed - Bioassay (2 gal)	Fine to medium sand, fine to medium gravel - subrounded to rounded, some rounded cobble, little silt	10YR3/2	Homogenous	Loose to medium density	Some	None	None	None	None	None
CB009-SE-1-101219	CB009	China Bend	10/12/2019	11:23	Sed - Chemistry (inclusive BSEM)	Fine to medium sand, fine to medium gravel - subrounded to rounded, some rounded cobble, little silt	10YR3/2	Homogenous	Loose to medium density	Some	None	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
CB010-BMI-1-101219	CB010	China Bend	10/12/2019	14:25	Sed - BMI	Fine to medium sand, some silt with fine to coarse gravel subrounded to rounded, little subrounded cobble.	10YR3/2	Homogenous	Loose	Trace	None	None	Lot of leaves, pine needles	None	None
CB010-SE-1-101219	CB010	China Bend	10/12/2019	14:25	Sed - Bioassay (5 gal)	0-1": Silt, trace fine sand; 1-6": fine to medium sand, trace silt, trace fine, rounded gravel, pockets of rounded, fine to medium sand	10YR4/1 (0-1" and 1-6)	Yes	0 - 1: very loose; 1-6: loose	Small pockets	None	None	Lot of leaves, pine needles	None	None
CB010-SE-1-101219	CB010	China Bend	10/12/2019	14:25	Sed - Bioassay (2 gal)	0-1": Silt, trace fine sand; 1-6": fine to medium sand, trace silt, trace fine, rounded gravel, pockets of rounded, fine to medium sand	10YR4/1 (0-1" and 1-6)	Yes	0 - 1: very loose; 1-6: loose	Small pockets	None	None	Lot of leaves, pine needles	None	None
CB010-SE-1-101219	CB010	China Bend	10/12/2019	14:25	Sed - Chemistry (inclusive BSEM)	0-1": Silt, trace fine sand; 1-6": fine to medium sand, trace silt, trace fine, rounded gravel, pockets of rounded, fine to medium sand	10YR4/1 (0-1" and 1-6)	Yes	0 - 1: very loose; 1-6: loose	Small pockets	None	None	Lot of leaves, pine needles	None	None
CB010-SE-3-101219	CB010	China Bend	10/12/2019	14:25	Sed - Bioassay (2 gal)	0-1": Silt, trace fine sand; 1-6": fine to medium sand, trace silt, trace fine, rounded gravel, pockets of rounded, fine to medium sand	10YR4/1 (0-1" and 1-6)	Yes	0 - 1: very loose; 1-6: loose	Small pockets	None	None	Lot of leaves, pine needles	None	None
CB010-SE-3-101219	CB010	China Bend	10/12/2019	14:25	Sed - Chemistry (inclusive BSEM)	0-1": Silt, trace fine sand; 1-6": fine to medium sand, trace silt, trace fine, rounded gravel, pockets of rounded, fine to medium sand	10YR4/1 (0-1" and 1-6)	Yes	0 - 1: very loose; 1-6: loose	Small pockets	None	None	Lot of leaves, pine needles	None	None
CB012-BMI-1-100919	CB012	China Bend	10/9/2019	11:36	Sed - BMI	Medium to fine sand	0-2": 10YR2/1; 2-6": 10YR 4/3	Stratified	Loose	Yes, in top 2"	None	None	Scattered twigs and leaves	None	None
CB012-SE-1-100919	CB012	China Bend	10/9/2019	11:36	Sed - Bioassay (5 gal)	Fine to medium sand, trace silt	0-2": 10YR2/1; 2-6": 10YR 4/3	Stratified	Loose	Yes, in top 2"	None	None	Scattered twigs and leaves	None	None
CB012-SE-1-100919	CB012	China Bend	10/9/2019	11:36	Sed - Bioassay (2 gal)	Fine to medium sand, trace silt	0-2": 10YR2/1; 2-6": 10YR 4/3	Stratified	Loose	Yes, in top 2"	None	None	Scattered twigs and leaves	None	None
CB012-SE-1-100919	CB012	China Bend	10/9/2019	11:36	Sed - Chemistry (inclusive BSEM)	Fine to medium sand, trace silt	0-2": 10YR2/1; 2-6": 10YR 4/3	Stratified	Loose	Yes, in top 2"	None	None	Scattered twigs and leaves	None	None
CB014-BMI-1-101519	CB014	China Bend	10/15/2019	13:58	Sed - BMI	Fine to medium sand.	10YR2/2	Homogenous	Loose	Present throughout	None	None	None	None	None
CB014-SE-1-101519	CB014	China Bend	10/15/2019	13:12	Sed - Bioassay (5 gal)	Fine to medium sand.	10YR2/2	Homogenous	Loose	Present throughout	None	None	None	None	None
CB014-SE-1-101519	CB014	China Bend	10/15/2019	13:12	Sed - Bioassay (2 gal)	Fine to medium sand.	10YR2/2	Homogenous	Loose	Present throughout	None	None	None	None	None
CB014-SE-1-101519	CB014	China Bend	10/15/2019	13:12	Sed - Chemistry (inclusive BSEM)	Fine to medium sand.	10YR2/2	Homogenous	Loose	Present throughout	None	None	None	None	None
CB014-SE-2-101519	CB014	China Bend	10/15/2019	13:17	Sed - Chemistry (inclusive BSEM)	Fine to medium sand.	10YR2/2	Homogenous	Loose	Present throughout	None	None	None	None	None
CB014-SE-3-101519	CB014	China Bend	10/15/2019	13:12	Sed - Bioassay (2 gal)	Fine to medium sand.	10YR2/2	Homogenous	Loose	Present throughout	None	None	None	None	None
CB016-BMI-1-101119	CB016	China Bend	10/11/2019	14:22	Sed - BMI	Fine to medium sand with silt, trace; rounded gravel	10YR2/1	Homogenous	Loose	Yes, clump of sand in silica	<0.5mm	None	Pine needles and leaves	None	None
CB016-SE-1-101119	CB016	China Bend	10/11/2019	14:22	Sed - Bioassay (5 gal)	Fine to medium sand with subrounded to rounded; fine to coarse gravel, trace; rounded cobble, trace silt	10YR3/2	Homogenous	Loose	Some	None	None	Sticks and pine needles	Fragments	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
CB016-SE-1-101119	CB016	China Bend	10/11/2019	14:22	Sed - Bioassay (2 gal)	Fine to medium sand with subrounded to rounded; fine to coarse gravel, trace; rounded cobble, trace silt	10YR3/2	Homogenous	Loose	Some	None	None	Sticks and pine needles	Fragments	None
CB016-SE-1-101119	CB016	China Bend	10/11/2019	14:22	Sed - Chemistry (inclusive BSEM)	Fine to medium sand with subrounded to rounded; fine to coarse gravel, trace; rounded cobble, trace silt	10YR3/2	Homogenous	Loose	Some	None	None	Sticks and pine needles	Fragments	None
CB018-BMI-1-101119	CB018	China Bend	10/11/2019	10:07	Sed - BMI	Fine to medium sand with silt.	10YR2/1	Homogenous	Loose	Yes	None	None	Pine Needles	None	None
CB018-SE-1-100919	CB018	China Bend	10/9/2019	15:46	Sed - Bioassay (5 gal)	Fine to medium sand	10YR2/1 with pockets of 10YR4/3 with pockets of lighter sand	Homogenous	Loose	Yes, throughout	42mm	Pine needles, leaves, twigs	Gelatinous plant material	Snail	None
CB018-SE-1-100919	CB018	China Bend	10/9/2019	15:46	Sed - Bioassay (2 gal)	Fine to Medium Sand	10YR2/1 with pockets of 10YR4/3 with pockets of lighter sand	Homogenous	Loose	Yes, throughout	42mm	Pine needles, leaves, twigs	Gelatinous plant material	Snail	None
CB018-SE-1-100919	CB018	China Bend	10/9/2019	15:46	Sed - Chemistry (inclusive BSEM)	Fine to Medium Sand	10YR2/1 with pockets of 10YR4/3 with pockets of lighter sand	Homogenous	Loose	Yes, throughout	42mm	Pine needles, leaves, twigs	Gelatinous plant material	Snail	None
CB018-SE-2-100919	CB018	China Bend	10/9/2019	15:46	Sed - Chemistry (inclusive BSEM)	Fine to Medium Sand	10YR2/1 with pockets of 10YR4/3 with pockets of lighter sand	Homogenous	Loose	Yes, throughout	42mm	Pine needles, leaves, twigs	Gelatinous plant material	Snail	None
CB020-BMI-1-101419	CB020	China Bend	10/14/2019	11:15	Sed - BMI	Fine to medium sand, trace fine, subrounded gravel	10YR 2/1	Homogenous	Loose	Present	1mm on surface, sandy silt	Trace twigs	Scattered leaves and pine needles	None	None
CB020-BMI-2-101419	CB020	China Bend	10/14/2019	11:44	Sed - BMI	Fine to medium sand, trace fine, subrounded gravel	10YR 2/1	Homogenous	Loose	Present	1mm on surface, sandy silt	Trace twigs	Scattered leaves and pine needles	None	None
CB020-SE-1-101419	CB020	China Bend	10/14/2019	10:19	Sed - Bioassay (5 gal)	Fine to medium sand, trace fine, subrounded gravel	10YR 2/1	Homogenous	Loose	Present	1mm on surface, sandy silt	Trace twigs	Scattered leaves and pine needles	None	None
CB020-SE-1-101419	CB020	China Bend	10/14/2019	10:19	Sed - Bioassay (2 gal)	Fine to medium sand, trace fine, subrounded gravel	10YR 2/1	Homogenous	Loose	Present	1 mm on surface, sandy silt	Trace twigs	Scattered leaves and pine needles	None	None
CB020-SE-1-101419	CB020	China Bend	10/14/2019	10:19	Sed - Chemistry (inclusive BSEM)	Fine to medium sand, trace fine, subrounded gravel	10YR 2/1	Homogenous	Loose	Present	1mm on surface, sandy silt	Trace twigs	Scattered leaves and pine needles	None	None
CB021-BMI-1-101419	CB021	China Bend	10/14/2019	13:28	Sed - BMI	Silt with pockets of fine sand spongy, trace rounded gravel	10YR 2/1	Homogenous with pockets of fine sand, bottom 2 inches few rounded to sub-rounded gravel	Soft	Scattered silica	1mm at surface	None	Scattered leaves and pine needles	One chronomid in water	None
CB021-SE-1-101419	CB021	China Bend	10/14/2019	12:37	Sed - Bioassay (5 gal)	Silt with pockets of fine sand spongy, trace rounded gravel	10YR 2/1	Homogenous with pockets of fine sand, bottom 2 inches few rounded to sub-rounded gravel	Soft	Scattered silica	1mm at surface	None	Scattered leaves and pine needles	One chronomid in water	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
CB021-SE-1-101419	CB021	China Bend	10/14/2019	12:37	Sed - Bioassay (2 gal)	Silt with pockets of fine sand spongy, trace rounded gravel	10YR 2/1	Homogenous with pockets of fine sand, bottom 2 inches few rounded to sub-rounded gravel	Soft	Scattered silica	1mm at surface	None	Scattered leaves and pine needles	One chronomid in water	None
CB021-SE-1-101419	CB021	China Bend	10/14/2019	12:37	Sed - Chemistry (inclusive BSEM)	Silt with pockets of fine sand spongy, trace rounded gravel	10YR 2/1	Homogenous with pockets of fine sand, bottom 2 inches few rounded to sub-rounded gravel	Soft	Scattered silica	1mm at surface	None	Scattered leaves and pine needles	One chronomid in water	None
CB024-BMI-1-101419	CB024	China Bend	10/14/2019	14:40	Sed - BMI	Fine sand with silt	10YR 2/1	None	Soft	None	2cm, silt	Scattered leaves, wood, pine needles, clams, mites			None
CB024-SE-1-101419	CB024	China Bend	10/14/2019	13:57	Sed - Bioassay (5 gal)	Fine sand, little silt	10YR 2/1	None	Soft		1mm on top	Scattered leaves and twigs, pine needles		Trace mussels	None
CB024-SE-1-101419	CB024	China Bend	10/14/2019	13:57	Sed - Bioassay (2 gal)	Fine sand, little silt	10YR 2/1	None	Soft		1mm on top	Scattered leaves and twigs, pine needles		Trace mussels	None
CB024-SE-1-101419	CB024	China Bend	10/14/2019	13:57	Sed - Chemistry (inclusive BSEM)	Fine sand, little silt	10YR 2/1	None	Soft		1mm on top	Scattered leaves and twigs, pine needles		Trace mussels	None
CB027-BMI-1-101519	CB027	China Bend	10/15/2019	08:52	Sed - BMI	Fine sand little silt	10YR 2/1	None	Loose	Trace silica	2mm on surface	Scattered leaves, pine needles, wood fragments		None	None
CB027-SE-1-101419	CB027	China Bend	10/14/2019	15:30	Sed - Bioassay (5 gal)	Silty fine sand	10YR 2/1	None	Soft	Trace silica in 1/2 cm pockets	1mm on surface	Scattered fragment, pine needles, leaves	Trace shell fragments	None	
CB027-SE-1-101419	CB027	China Bend	10/14/2019	15:30	Sed - Bioassay (2 gal)	Silty fine sand	10YR 2/1	None	Soft	Trace silica in 1/2 cm pockets	1mm on surface	Scattered fragment, pine needles, leaves	Trace shell fragments	None	
CB027-SE-1-101419	CB027	China Bend	10/14/2019	15:30	Sed - Chemistry (inclusive BSEM)	Silty fine sand	10YR 2/1	None	Soft	Trace silica in 1/2 cm pockets	1mm on surface	Scattered fragment, pine needles, leaves	Trace shell fragments	None	
CB029-BMI-1-101519	CB029	China Bend	10/15/2019	10:24	Sed - BMI	Fine sand little silt, trace rounded gravel	5Y 3/1	Homogenous	Loose	Not Evident	2cm, color 10YR 4/2, silty fine sand	Scattered leaves, pine needles, well-decomposed, found one mussel	Trace	None	
CB029-BMI-2-101519	CB029	China Bend	10/15/2019	10:50	Sed - BMI	Fine sand little silt, trace rounded gravel	5Y 3/1	Homogenous	Loose	Not Evident	2cm, color 10YR 4/2, silty fine sand	Scattered leaves, pine needles, well-decomposed, found one mussel	Trace	None	
CB029-SE-1-101519	CB029	China Bend	10/15/2019	09:40	Sed - Bioassay (5 gal)	Fine sand little silt, trace rounded gravel	5Y 3/1	Homogenous	Loose	Not Evident	2cm, color 10YR 4/2, silty fine sand	Scattered leaves, pine needles, well-decomposed, found one mussel	Trace	None	
CB029-SE-1-101519	CB029	China Bend	10/15/2019	09:40	Sed - Bioassay (2 gal)	Fine sand little silt, trace rounded gravel	5Y 3/1	Homogenous	Loose	Not Evident	2cm, color 10YR 4/2, silty fine sand	Scattered leaves, pine needles, well-decomposed, found one mussel	Trace	None	

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
CB029-SE-1-101519	CB029	China Bend	10/15/2019	09:40	Sed - Chemistry (inclusive BSEM)	Fine sand little silt, trace rounded gravel	5Y 3/1	Homogenous	Loose	Not Evident	2cm, color 10YR 4/2, silty fine sand	Scattered leaves, pine needles, well-decomposed, found one mussel	Trace	None	
CB029-SE-3-101519	CB029	China Bend	10/15/2019	09:40	Sed - Bioassay (2 gal)	Fine sand little silt, trace rounded gravel	5Y 3/1	Homogenous	Loose	Not Evident	2cm, color 10YR 4/2, silty fine sand	Scattered leaves, pine needles, well-decomposed, found one mussel	Trace	None	
CB035-BMI-1-100319	CB035	China Bend	10/3/2019	12:35	Sed - BMI	Sand with some gravel medium to coarse sand, gravels are fine	Black and brown sand	Homogenous	Loose	Presence		Bark, twigs, scattered wood chips, pine needles	One macroinvertebrate observed		
CB035-SE-1-100319	CB035	China Bend	10/3/2019	09:40	Sed - Chemistry (inclusive BSEM)	Cobble subrounded, medium to coarse sand some gravel	Black sand, variable, predominate mostly dark	Homogenous	Loose	Presence		None	None	None	
CB035-SE-2-100319	CB035	China Bend	10/3/2019	09:45	Sed - Chemistry (inclusive BSEM)	Cobble subrounded, medium to coarse sand some gravel	Black sand, variable, predominate mostly dark	Homogenous	Loose	Presence		None	None	None	
CB035-SE-3-100319	CB035	China Bend	10/3/2019	09:40	Sed - Chemistry (inclusive BSEM)	Cobble subrounded, medium to coarse sand some gravel	Black sand, variable, predominate mostly dark	Homogenous	Loose	Presence		None	None	None	
CB035-SE-3-100319-Dup	CB035	China Bend	10/3/2019	09:45	Sed - Chemistry (inclusive BSEM)	Cobble subrounded, medium to coarse sand some gravel	Black sand, variable, predominate mostly dark	Homogenous	Loose	Presence		None	None	None	
CB036-BMI-1-100419	CB036	China Bend	10/4/2019	12:54	Sed - BMI	2 Cobbles removed, subrounded, subrounded fine and coarse gravels, gravelly cobble with sand	Variety of black with brown speckles sand, medium to coarse sand predominant medium	Scattered woody debris				Scattered wood fragments (needles and debris)			
CB036-SE-1-100419	CB036	China Bend	10/4/2019	11:10	Sed - Chemistry (inclusive BSEM)	4 Cobbles subrounded, subrounded fine and coarse gravels, gravelly cobble with sand	Variety of black with brown speckles sand, medium to coarse sand predominant medium			Presence		Scattered used twigs/chips and debris			Slight organic odor
CB039-BMI-1-101219	CB039	China Bend	10/12/2019	09:52	Sed - BMI	Medium to fine sand and fine to medium gravel, trace rounded gravel	10YR 2/1	Homogenous	Medium dense	Yes	None	Some twigs	None	None	None
CB039-SE-1-101119	CB039	China Bend	10/11/2019	09:11	Sed - Bioassay (2 gal)	Gravelly medium coarse sand, gravel is subrounded to rounded, some rounded cobble	10YR 2/1	Homogenous	Medium dense	Yes	None	None	None	1 shell	None
CB039-SE-1-101119	CB039	China Bend	10/11/2019	09:11	Sed - Chemistry (inclusive BSEM)	Gravelly medium coarse sand, gravel is subrounded to rounded, some rounded cobble	10YR 2/1	Homogenous	Medium dense	Yes	None	None	None	1 shell	None
CB040-BMI-1-101819	CB040	China Bend	10/18/2019	14:15	Sed - BMI	Gravelly fine to medium sand, few cobbles (rounded)	10YR 2/1	Homogenous	Medium dense	Present	None	None	None	None	None
CB040-SE-1-101819	CB040	China Bend	10/18/2019	12:04	Sed - Chemistry (inclusive BSEM)	Fine to coarse gravel rounded to subrounded, variable little sand medium to fine, trace silt	10YR 2/1	Homogenous	Medium dense	Present	None	Trace leaves	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
CB044-BMI-1-101519	CB044	China Bend	10/15/2019	12:28	Sed - BMI	Fine sand, little silt, trace fine rounded gravel	5YR 3/1	Pockets of light brown sand (10YR 3/2)	Loose	Trace pockets, 1cm diameter	4cm 10YR 3/2, fine sand, few silt	Trace pockets of leaves, pine needles, disintegrated wood	None	None	None
CB044-SE-1-101519	CB044	China Bend	10/15/2019	11:49	Sed - Bioassay (5 gal)	Fine sand, little silt, trace fine rounded gravel	5YR 3/1	Pockets of light brown sand (10YR 3/2)	Loose	Trace pockets, 1cm diameter	4cm 10YR 3/2, fine sand, few silt	Trace pockets of leaves, pine needles, disintegrated wood	None	Trace	None
CB044-SE-1-101519	CB044	China Bend	10/15/2019	11:49	Sed - Bioassay (2 gal)	Fine sand, little silt, trace fine rounded gravel	5YR 3/1	Pockets of light brown sand (10YR 3/2)	Loose	Trace pockets, 1cm diameter	4cm 10YR 3/2, fine sand, few silt	Trace pockets of leaves, pine needles, disintegrated wood	None	Trace	None
CB044-SE-1-101519	CB044	China Bend	10/15/2019	11:49	Sed - Chemistry (inclusive BSEM)	Fine sand, little silt, trace fine rounded gravel	5YR 3/1	Pockets of light brown sand (10YR 3/2)	Loose	Trace pockets, 1cm diameter	4cm 10YR 3/2, fine sand, few silt	Trace pockets of leaves, pine needles, disintegrated wood	None	Trace	None
CB046-BMI-1-100819	CB046	China Bend	10/8/2019	10:48	Sed - BMI	MCS, cobbly, subrounded to rounded cobbles, travel rounded gravel, medium sand	10YR 2/1	Homogenous		Yes	None	Small twigs	1 snail	None	None
CB046-SE-1-100819	CB046	China Bend	10/8/2019	10:48	Sed - Chemistry (inclusive BSEM)	MCS/medium sand with trace fine, 1 rounded cobble (<4" diameter)	10YR 2/1	Homogenous	N/A	Yes	None	Small sticks	None	None	None
CB047-BMI-1-101119	CB047	China Bend	10/11/2019	11:24	Sed - BMI	Medium to coarse sand and fine to medium gravel, subrounded to rounded	10YR 2/1	Homogenous	Medium dense	Yes	None	None	Pine needles	Fragments	None
CB047-SE-1-101119	CB047	China Bend	10/11/2019	11:24	Sed - Bioassay (5 gal)	Medium to coarse sand and fine to coarse gravel, subrounded to rounded	10YR 2/1	Homogenous	Medium dense	Yes	None	None	Pine needles and twigs, unidentified organic matter	Shell fragment	None
CB047-SE-1-101119	CB047	China Bend	10/11/2019	11:24	Sed - Bioassay (2 gal)	Medium to coarse sand and fine to coarse gravel, subrounded to rounded	10YR 2/1	Homogenous	Medium dense	Yes	None	None	Pine needles and twigs, unidentified organic matter	Shell Fragment	None
CB047-SE-1-101119	CB047	China Bend	10/11/2019	11:24	Sed - Chemistry (inclusive BSEM)	Medium to coarse sand and fine to coarse gravel, subrounded to rounded	10YR 2/1	Homogenous	Medium dense	Yes	None	None	Pine needles and twigs, unidentified organic matter	Shell Fragment	None
CB047-SE-3-101119	CB047	China Bend	10/11/2019	11:24	Sed - Chemistry (inclusive BSEM)	Medium to coarse sand and fine to coarse gravel, subrounded to rounded	10YR 2/1	Homogenous	Medium dense	Yes	None	None	Pine needles and twigs, unidentified organic matter	Shell Fragment	None
CB047-SE-3-101119	CB047	China Bend	10/11/2019	11:24	Sed - Bioassay (2 gal)	Medium to coarse sand and fine to coarse gravel, subrounded to rounded	10YR 2/1	Homogenous	Medium dense	Yes	None	None	Pine needles and twigs, unidentified organic matter	Shell Fragment	None
CB056-BMI-1-101719	CB056	China Bend	10/17/2019	14:04	Sed - BMI	Fine to coarse gravel with some subrounded and angular gravel mixed little rounded cobble, little sand fine to medium few silt	10YR 2/1	Homogenous	Medium dense	Trace		Trace pine needles	One larvae, scattered organisms	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
CB056-SE-1-101719	CB056	China Bend	10/17/2019	11:46	Sed - Chemistry (inclusive BSEM)	Fine to coarse gravel with some subrounded and angular gravel mixed little rounded cobble, little sand fine to medium few silt	10YR 2/1	Homogenous	Medium dense	Trace		Trace pine needles	One larvae, scattered organisms	None	None
DM002-BMI-1-100919	DM002	Deadman's Eddy	10/9/2019	12:55	Sed - BMI	Poorly graded medium grain sand with gravel, sand grain subrounded to round	5YR 3/1 very grey	massive	moderate	Yes 50%	None	None	None	Trace	None
DM002-SE-1-100919	DM002	Deadman's Eddy	10/9/2019	12:55	Sed - Bioassay (5 gal)	Poorly graded medium grain sand with gravel, sand grain subrounded to round	5YR 3/1 very grey	none- massive	moderate	Yes 50%	None	None	None	Trace	None
DM002-SE-1-100919	DM002	Deadman's Eddy	10/9/2019	12:55	Sed - Bioassay (2 gal)	Poorly graded medium grain sand with gravel, sand grain subrounded to round	5YR 3/1 very grey	none- massive	moderate	Yes 50%	None	None	None	Trace	None
DM002-SE-1-100919	DM002	Deadman's Eddy	10/9/2019	12:55	Sed - Chemistry (inclusive BSEM)	Poorly graded medium grain sand with gravel, sand grain subrounded to round	5YR 3/1 very grey	none- massive	moderate	Yes 50%	None	None	None	Trace	None
DM007-BMI-1-101519	DM007	Deadman's Eddy	10/15/2019	13:43	Sed - BMI	Fine- medium sand	10 YR 2/1 black	Massive	Loose	Yes, 60%	None	None	None	None	None
DM007-SE-1-101519	DM007	Deadman's Eddy	10/15/2019	12:52	Sed - Bioassay (5 gal)	Fine- medium sand	10 YR 2/1 black	Massive	Loose	Yes, 60%	None	None	None	None	None
DM007-SE-1-101519	DM007	Deadman's Eddy	10/15/2019	12:52	Sed - Bioassay (2 gal)	Fine- medium sand	10 YR 2/1 black	Massive	Loose	Yes, 60%	None	None	None	None	None
DM007-SE-1-101519	DM007	Deadman's Eddy	10/15/2019	12:52	Sed - Chemistry (inclusive BSEM)	Fine- medium sand	10 YR 2/1 black	Massive	Loose	Yes, 60%	None	None	None	None	None
DM008-BMI-1-101119	DM008	Deadman's Eddy	10/11/2019	15:20	Sed - BMI	Poorly graded sand medium grain rounded to well-rounded	5YR 2.5/1 black	Hard crust on surface	Very dense	Yes, 80%	None	None	None	None	no sheen no odor
DM008-SE-1-101119	DM008	Deadman's Eddy	10/11/2019	13:20	Sed - Bioassay (5 gal)	Poorly graded sand medium grain rounded to well-rounded	5YR 2.5/1 black	Hard crust on surface	Very dense	Yes, 80%	None	None	None	None	no sheen no odor
DM008-SE-1-101119	DM008	Deadman's Eddy	10/11/2019	13:20	Sed - Bioassay (2 gal)	Poorly graded sand medium grain rounded to well-rounded	5YR 2.5/1 black	Hard crust on surface	Very dense	Yes, 80%	None	None	None	None	no sheen no odor
DM008-SE-1-101119	DM008	Deadman's Eddy	10/11/2019	13:20	Sed - Chemistry (inclusive BSEM)	Poorly graded sand medium grain rounded to well-rounded	5YR 2.5/1 black	Hard crust on surface	Very dense	Yes, 80%	None	None	None	None	no sheen no odor
DM008-SE-3-101119	DM008	Deadman's Eddy	10/11/2019	13:20	Sed - Bioassay (2 gal)	Poorly graded sand medium grain rounded to well-rounded	5YR 2.5/1 black	Hard crust on surface	Very dense	Yes, 80%	None	None	None	None	no sheen no odor
DM010-BMI-1-101119	DM010	Deadman's Eddy	10/11/2019	11:25	Sed - BMI	Poorly graded medium grain sand, well rounded	5YR 3/1 very dark grey	none observed	Medium	Yes 20%	None	None	None	None	no sheen no odor
DM010-SE-1-101119	DM010	Deadman's Eddy	10/11/2019	10:28	Sed - Bioassay (5 gal)	Poorly graded medium grain sand, well rounded	5YR 3/1 very dark grey	none observed	Medium	Yes 20%	None	None	None	None	no sheen no odor
DM010-SE-1-101119	DM010	Deadman's Eddy	10/11/2019	10:28	Sed - Bioassay (2 gal)	Poorly graded medium grain sand, well rounded	5YR 3/1 very dark grey	none observed	Medium	Yes 20%	None	None	None	None	no sheen no odor
DM010-SE-1-101119	DM010	Deadman's Eddy	10/11/2019	10:28	Sed - Chemistry (inclusive BSEM)	Poorly graded medium grain sand, well rounded	5YR 3/1 very dark grey	none observed	Medium	Yes 20%	None	None	None	None	no sheen no odor
DM010-SE-3-101119	DM010	Deadman's Eddy	10/11/2019	10:28	Sed - Chemistry (inclusive BSEM)	Poorly graded medium grain sand, well rounded	5YR 3/1 very dark grey	none observed	Medium	Yes 20%	None	None	None	None	no sheen no odor
DM015-BMI-1-101019	DM015	Deadman's Eddy	10/10/2019	15:45	Sed - BMI	Medium grain sand, poorly graded sand, rounded	5YR 2.5/1 black	Massive	Medium	YES 50%	None	None	Shells-traces	Trace-broken shells	no sheen no odor
DM015-BMI-2-101019	DM015	Deadman's Eddy	10/10/2019	16:11	Sed - BMI	Medium grain sand, poorly graded sand, rounded	5YR 2.5/1 black	Massive	Medium	YES 50%	None	None	Shells-traces	Trace-broken shells	no sheen no odor
DM015-SE-1-101019	DM015	Deadman's Eddy	10/10/2019	14:45	Sed - Bioassay (5 gal)	Medium grain sand, poorly graded sand, rounded	5YR 2.5/1 black	Massive	Medium	YES 50%	None	None	Shells-traces	Trace-broken shells	no sheen no odor
DM015-SE-1-101019	DM015	Deadman's Eddy	10/10/2019	14:45	Sed - Bioassay (2 gal)	Medium grain sand, poorly graded sand, rounded	5YR 2.5/1 black	Massive	Medium	YES 50%	None	None	Shells-traces	Trace-broken shells	no sheen no odor
DM015-SE-1-101019	DM015	Deadman's Eddy	10/10/2019	14:45	Sed - Chemistry (inclusive BSEM)	Medium grain sand, poorly graded sand, rounded	5YR 2.5/1 black	Massive	Medium	YES 50%	None	None	Shells-traces	Trace-broken shells	no sheen no odor
DM016-BMI-1-101019	DM016	Deadman's Eddy	10/10/2019	14:00	Sed - BMI	Poorly graded sand, medium grained- well rounded	5YR 3/1 very gray	Massive	Loose	Yes 25%	None	None	None	None	None
DM016-SE-1-101019	DM016	Deadman's Eddy	10/10/2019	10:35	Sed - Bioassay (5 gal)	Poorly graded sand, medium grained- well rounded	5YR 3/1 very gray	Massive	Loose	Yes 25%	None	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
DM016-SE-1-101019	DM016	Deadman's Eddy	10/10/2019	10:35	Sed - Bioassay (2 gal)	Poorly graded sand, medium grained- well rounded	5YR 3/1 very gray	Massive	Loose	Yes 25%	None	None	None	None	None
DM016-SE-1-101019	DM016	Deadman's Eddy	10/10/2019	10:35	Sed - Chemistry (inclusive BSEM)	Poorly graded sand, medium grained- well rounded	5YR 3/1 very gray	Massive	Loose	Yes 25%	None	None	None	None	None
DM016-SE-2-101019	DM016	Deadman's Eddy	10/10/2019	13:00	Sed - Chemistry (inclusive BSEM)	Poorly graded sand, medium grained- well rounded	5YR 3/1 very gray	Massive	Loose	Yes 25%	None	None	None	None	None
DM018-BMI-1-100919	DM018	Deadman's Eddy	10/9/2019	15:30	Sed - BMI	Poorly graded sand, medium grain, well rounded	5YR 3/1 Very dark gray	Massive	Loose	Yes 20%	None	None	None	None	None
DM018-SE-1-100919	DM018	Deadman's Eddy	10/9/2019	15:30	Sed - Bioassay (5 gal)	Poorly graded sand, medium grain, well rounded	5YR 3/1 Very dark gray	Massive	Loose	Yes 20%	None	None	None	None	None
DM018-SE-1-100919	DM018	Deadman's Eddy	10/9/2019	15:30	Sed - Bioassay (2 gal)	Poorly graded sand, medium grain, well rounded	5YR 3/1 Very dark gray	Massive	Loose	Yes 20%	None	None	None	None	None
DM018-SE-1-100919	DM018	Deadman's Eddy	10/9/2019	15:30	Sed - Chemistry (inclusive BSEM)	Poorly graded sand, medium grain, well rounded	5YR 3/1 Very dark gray	Massive	Loose	Yes 20%	None	None	None	None	None
DM019-BMI-1-101419	DM019	Deadman's Eddy	10/14/2019	14:14	Sed - BMI	Fine sand	10YR 3/2 Very dark grayish brown	Massive	Loose	Yes, scattered 20%	None	Trace woody debris	Rootlets	Trace	None
DM019-SE-1-101419	DM019	Deadman's Eddy	10/14/2019	13:28	Sed - Bioassay (5 gal)	Fine sand	10YR 3/2 Very dark grayish brown	Massive	Loose	Yes, scattered 20%	None	Trace woody debris	Rootlets	Trace	None
DM019-SE-1-101419	DM019	Deadman's Eddy	10/14/2019	13:28	Sed - Bioassay (2 gal)	Fine sand	10YR 3/2 Very dark grayish brown	Massive	Loose	Yes, scattered 20%	None	Trace woody debris	Rootlets	Trace	None
DM019-SE-1-101419	DM019	Deadman's Eddy	10/14/2019	13:28	Sed - Chemistry (inclusive BSEM)	Fine sand	10YR 3/2 Very dark grayish brown	Massive	Loose	Yes, scattered 20%	None	Trace woody debris	Rootlets	Trace	None
DM020-BMI-1-101419	DM020	Deadman's Eddy	10/14/2019	12:27	Sed - BMI	Fine to medium sand, trace silt	10YR 2/1 black	Massive	Loose	Yes, Scattered 30%	None	Trace small woody debris	Worm annelid - trace	Trace	None
DM020-SE-1-101419	DM020	Deadman's Eddy	10/14/2019	11:25	Sed - Bioassay (5 gal)	Fine to medium sand, trace silt	10YR 2/1 black	Massive	Loose	Yes, Scattered 30%	None	Trace small woody debris	Worm annelid - trace	Trace	None
DM020-SE-1-101419	DM020	Deadman's Eddy	10/14/2019	11:25	Sed - Bioassay (2 gal)	Fine to medium sand, trace silt	10YR 2/1 black	Massive	Loose	Yes, Scattered 30%	None	Trace small woody debris	Worm annelid - trace	Trace	None
DM020-SE-1-101419	DM020	Deadman's Eddy	10/14/2019	11:25	Sed - Chemistry (inclusive BSEM)	Fine to medium sand, trace silt	10YR 2/1 black	Massive	Loose	Yes, Scattered 30%	None	Trace small woody debris	Worm annelid - trace	Trace	None
DM022-BMI-1-092119	DM022	Deadman's Eddy	9/21/2019	13:53	Sed - BMI	Fine to medium sand with trace silt and debris	5YR 3/2 and 3/1	None	Loose	Present	None	Yes	No	Yes	No
DM022-SE-1-092119	DM022	Deadman's Eddy	9/21/2019	12:34	Sed - Chemistry (inclusive BSEM)	Fine to medium sand with trace silt and debris	5YR 3/2 and 3/1	None	Loose	Present	None	Yes	No	Yes	No
DM022-SE-1-092119	DM022	Deadman's Eddy	9/21/2019	12:34	Sed - Bioassay (2 gal)	Fine to medium sand with trace silt and debris	5YR 3/2 and 3/1	None	Loose	Present	None	Yes	No	Yes	No
DM022-SE-1-092119	DM022	Deadman's Eddy	9/21/2019	12:34	Sed - Bioassay (5 gal)	Fine to medium sand with trace silt and debris	5YR 3/2 and 3/1	None	Loose	Present	None	Yes	No	Yes	No
DM023-BMI-1-092119	DM023	Deadman's Eddy	9/21/2019	09:08	Sed - BMI	Well-sorted fine to medium sand	5Y 3/2	No	Loose	Scattered	None	None	None	Trace	No
DM023-SE-1-092119	DM023	Deadman's Eddy	9/21/2019	08:15	Sed - Chemistry (inclusive BSEM)	Well sorted fine to medium sand	5Y 3/2	No	Loose	Scattered	None	None	None	Trace	No
DM023-SE-1-092119	DM023	Deadman's Eddy	9/21/2019	08:15	Sed - Bioassay (2 gal)	Well sorted fine to medium sand	5Y 3/2	No	Loose	Scattered	None	None	None	Trace	No
DM023-SE-1-092119	DM023	Deadman's Eddy	9/21/2019	08:15	Sed - Bioassay (5 gal)	Well sorted fine to medium sand	5Y 3/2	No	Loose	Scattered	None	None	None	Trace	No
DM024-BMI-1-101519	DM024	Deadman's Eddy	10/15/2019	11:05	Sed - BMI	Fine to medium sand	10YR 3/2 Very dark grayish brown	Massively bedded	Loose	Yes, 30%	None	Trace rootlets, trace woody debris	None	Trace	None
DM024-BMI-2-101519	DM024	Deadman's Eddy	10/15/2019	11:40	Sed - BMI	Fine to medium sand	10YR 3/2 Very dark grayish brown	Massively bedded	Loose	Yes, 30%	None	Trace rootlets, trace woody debris	None	Trace	None
DM024-SE-1-101519	DM024	Deadman's Eddy	10/15/2019	09:50	Sed - Bioassay (5 gal)	Fine to medium sand	10YR 3/2 Very dark grayish brown	Massively bedded	Loose	Yes, 30%	None	Trace rootlets, trace woody debris	None	Trace	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
DM024-SE-1-101519	DM024	Deadman's Eddy	10/15/2019	09:50	Sed - Bioassay (2 gal)	Fine to medium sand	10YR 3/2 Very dark grayish brown	Massively bedded	Loose	Yes, 30%	None	Trace rootlets, trace woody debris	None	Trace	None
DM024-SE-1-101519	DM024	Deadman's Eddy	10/15/2019	09:50	Sed - Chemistry (inclusive BSEM)	Fine to medium sand	10YR 3/2 Very dark grayish brown	Massively bedded	Loose	Yes, 30%	None	Trace rootlets, trace woody debris	None	Trace	None
DM024-SE-2-101519	DM024	Deadman's Eddy	10/15/2019	10:05	Sed - Chemistry (inclusive BSEM)	Fine to medium sand	10YR 3/2 Very dark grayish brown	Massively bedded	Loose	Yes, 30%	None	Trace rootlets, trace woody debris	None	Trace	None
DM024-SE-3-101519	DM024	Deadman's Eddy	10/15/2019	09:50	Sed - Bioassay (2 gal)	Fine to medium sand	10YR 3/2 Very dark grayish brown	Massively bedded	Loose	Yes, 30%	None	Trace rootlets, trace woody debris	None	Trace	None
DM025-BMI-1-101219	DM025	Deadman's Eddy	10/12/2019	15:20	Sed - BMI	Poor graded sand- medium grained, subrounded-round	5YR 3/1 Very dark gray	None	Loose	Yes, 60%	None	None	None	Present, occasional - some	None
DM025-SE-1-101219	DM025	Deadman's Eddy	10/12/2019	14:48	Sed - Bioassay (5 gal)	Poor graded sand- medium grained, subrounded-round	5YR 3/1 Very dark gray	None	Loose	Yes, 60%	None	None	None	Present, occasional - some	None
DM025-SE-1-101219	DM025	Deadman's Eddy	10/12/2019	14:48	Sed - Bioassay (2 gal)	Poor graded sand- medium grained, subrounded-round	5YR 3/1 Very dark gray	None	Loose	Yes, 60%	None	None	None	Present, occasional - some	None
DM025-SE-1-101219	DM025	Deadman's Eddy	10/12/2019	14:48	Sed - Chemistry (inclusive BSEM)	Poor graded sand- medium grained, subrounded-round	5YR 3/1 Very dark gray	None	Loose	Yes, 60%	None	None	None	Present, occasional - some	None
DM025-SE-3-101219	DM025	Deadman's Eddy	10/12/2019	14:48	Sed - Bioassay (2 gal)	Poor graded sand- medium grained, subrounded-round	5YR 3/1 Very dark gray	None	Loose	Yes, 60%	None	None	None	Present, occasional - some	None
DM026-BMI-1-092119	DM026	Deadman's Eddy	9/21/2019	11:39	Sed - BMI	Fine to medium sand	5Y 3/2	None	Loose	Present, scattered	None	None	None	None	No
DM026-SE-1-092119	DM026	Deadman's Eddy	9/21/2019	10:08	Sed - Chemistry (inclusive BSEM)	Fine to medium sand	5Y 3/2	None	Loose	Present, scattered	None	None	None	Present	None
DM026-SE-1-092119	DM026	Deadman's Eddy	9/21/2019	10:08	Sed - Bioassay (2 gal)	Fine to medium sand	5Y 3/2	None	Loose	Present, scattered	None	None	None	Present	None
DM026-SE-1-092119	DM026	Deadman's Eddy	9/21/2019	10:08	Sed - Bioassay (5 gal)	Fine to medium sand	5Y 3/2	None	Loose	Present, scattered	None	None	None	Present	None
DM026-SE-2-092119	DM026	Deadman's Eddy	9/21/2019	10:45	Sed - Chemistry (inclusive BSEM)	Fine to medium sand	5Y 3/2	None	Loose	Present, scattered	None	None	None	Present	None
DM026-SE-3-092119	DM026	Deadman's Eddy	9/21/2019	10:08	Sed - Bioassay (2 gal)	Fine to medium sand	5Y 3/2	None	Loose	Present, scattered	None	None	None	Present	None
DM027-BMI-1-101419	DM027	Deadman's Eddy	10/14/2019	15:35	Sed - BMI	Fine to medium sand	10YR 2/1 black	Massive	Loose	Yes, 40%	None	None	None	None	None
DM027-SE-1-101419	DM027	Deadman's Eddy	10/14/2019	15:00	Sed - Bioassay (5 gal)	Fine to medium sand	10YR 2/1 black	Massive	Loose	Yes, 40%	None	None	None	None	None
DM027-SE-1-101419	DM027	Deadman's Eddy	10/14/2019	15:00	Sed - Bioassay (2 gal)	Fine to medium sand	10YR 2/1 black	Massive	Loose	Yes, 40%	None	None	None	None	None
DM027-SE-1-101419	DM027	Deadman's Eddy	10/14/2019	15:00	Sed - Chemistry (inclusive BSEM)	Fine to medium sand	10YR 2/1 black	Massive	Loose	Yes, 40%	None	None	None	None	None
DM036-BMI-1-101819	DM036	Deadman's Eddy	10/18/2019	12:36	Sed - BMI	fine- coarse Gravel with well-graded sand and small cobbles. Trace silt.	Light brown	None	Loose	Scattered	None	Trace rootlets	None	None	None
DM036-SE-1-101819	DM036	Deadman's Eddy	10/18/2019	9:52	Sed - Chemistry (inclusive BSEM)	fine- coarse Gravel with well-graded sand and small cobbles. Trace silt.	light brown	None	Loose	Scattered	None	Trace rootlets	None	None	None
DM036-SE-3-101819	DM036	Deadman's Eddy	10/18/2019	9:52	Sed - Chemistry (inclusive BSEM)	fine- coarse Gravel with well-graded sand and small cobbles. Trace silt.	light brown	None	Loose	Scattered	None	Trace rootlets	None	None	None
DM038-BMI-1-101919	DM038	Deadman's Eddy	10/19/2019	11:11	Sed - BMI	Well graded sand and gravel with sub-round, round cobbles and trace silt.	10YR 2/1	None	Loose	Abundant, 60%	None	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
DM038-SE-1-101919	DM038	Deadman's Eddy	10/19/2019	9:30	Sed - Chemistry (inclusive BSEM)	Well graded sand and gravel with sub-round, round cobbles and trace silt.	10YR 2/1	None	Loose	Abundant, 60%	None	None	None	None	None
DM039-BMI-1-101719	DM039	Deadman's Eddy	10/17/2019	14:45	Sed - BMI	Well graded sand with 2 coarse gravel and 2 small cobble adhered to free sand	10YR 2/1 black	None	Dense	Yes, abundant	None	None	None	Anodonta sp.	None
DM039-SE-1-101719	DM039	Deadman's Eddy	10/17/2019	14:10	Sed - Chemistry (inclusive BSEM)	Well graded sand with 2 coarse gravel and 2 small cobble adhered to free sand	10YR 2/1 black	None	Dense	Yes, abundant	None	None	None	None	None
DM044-BMI-1-101619	DM044	Deadman's Eddy	10/16/2019	16:15	Sed - BMI	Silty fine medium sand. Thin silt layer on top. Very hard crust on of oxidized silica glass underneath with firm sand underneath	7.5YR 3/1	0-1/2 inch split 1/2-2" Hand oxidized silica glass. 2-5" fine-medium sand	Very stiff	Abundant, 50%	None	None	None	None	None
DM044-SE-1-101619	DM044	Deadman's Eddy	10/16/2019	16:25	Sed - Chemistry (inclusive BSEM)	Silty fine medium sand. Thin silt layer on top. Very hard crust on of oxidized silica glass underneath with firm sand underneath	7.5YR 3/1	0-1/2 inch split 1/2-2" Hand oxidized silica glass. 2-5" fine-medium sand	Very stiff	Abundant, 50%	None	None	None	None	None
DM045-BMI-1-091919	DM045	Deadman's Eddy	9/19/2019	10:12	Sed - BMI	Fine sand with few silt	Glay 1 3/N	Homogenous	Loose	None	None	None	1 Mussel	Trace	Sulfur slight
DM045-SE-1-091919	DM045	Deadman's Eddy	9/19/2019	10:12	Sed - Chemistry (inclusive BSEM)	Fine sand with few silt	Glay 1 3/N	Homogenous	Loose	None	None	None	1 Mussel	Trace	Sulfur slight
DM045-SE-1-091919	DM045	Deadman's Eddy	9/19/2019	10:12	Sed - Bioassay (2 gal)	Fine sand with few silt	Glay 1 3/N	Homogenous	Loose	None	None	None	1 Mussel	Trace	Sulfur slight
DM046-BMI-1-092019	DM046	Deadman's Eddy	9/20/2019	13:36	Sed - BMI	Fine sand with few silt	Gley 1 3/N	Homogenous	Loose	None	0.5"	Trace	Mussels	Trace	Slight odor
DM046-SE-1-092019	DM046	Deadman's Eddy	9/20/2019	12:17	Sed - Chemistry (inclusive BSEM)	Fine sand with few silt	Gley 1 3/N	Homogenous	Loose	None	0.5"	Trace	Mussels	Trace	Slight odor
DM046-SE-1-092019	DM046	Deadman's Eddy	9/20/2019	12:17	Sed - Bioassay (2 gal)	Fine sand with few silt	Gley 1 3/N	Homogenous	Loose	None	0.5"	Trace	Mussels	Trace	Slight odor
DM046-SE-1-092019	DM046	Deadman's Eddy	9/20/2019	12:17	Sed - Bioassay (5 gal)	Fine sand with few silt	Gley 1 3/N	Homogenous	Loose	None	0.5"	Trace	Mussels	Trace	Slight odor
DM046-SE-3-092019	DM046	Deadman's Eddy	9/20/2019	12:17	Sed - Bioassay (2 gal)	Fine sand with few silt	Gley 1 3/N	Homogenous	Loose	None	0.5"	Trace	Mussels	Trace	Slight odor
DM047-BMI-1-101819	DM047	Deadman's Eddy	10/18/2019	14:34	Sed - BMI	Sandy fine-coarse gravel with trace cobble, trace silt.	Light brown	None	Loose	Scattered	None	Trace organics	None	None	None
DM047-SE-1-101819	DM047	Deadman's Eddy	10/18/2019	13:34	Sed - Chemistry (inclusive BSEM)	Sandy fine-coarse gravel with trace cobble, trace silt.	Light brown	None	Loose	Scattered	None	Trace organics	None	None	None
DM050-BMI-1-092019	DM050	Deadman's Eddy	9/20/2019	10:32	Sed - BMI	Fine sand with few silt. Trace clay inclusions	Gley 1 3/N	Massive	Loose	Not observed	0.5"	Trace fibers/organics	Mussel	Trace small shells	Trace sheen fluorets
DM050-SE-1-092019	DM050	Deadman's Eddy	9/20/2019	09:08	Sed - Chemistry (inclusive BSEM)	Fine sand with few silt. Trace clay inclusions	Gley 1 3/N	Massive	Loose	Not observed	0.5"	Trace fibers/organics	Mussel	Trace small shells	Trace sheen fluorets
DM050-SE-1-092019	DM050	Deadman's Eddy	9/20/2019	09:08	Sed - Bioassay (2 gal)	Fine sand with few silt. Trace clay inclusions	Gley 1 3/N	Massive	Loose	Not observed	0.5"	Trace fibers/organics	Mussel	Trace small shells	Trace sheen fluorets
DM050-SE-1-092019	DM050	Deadman's Eddy	9/20/2019	09:08	Sed - Bioassay (5 gal)	Fine sand with few silt. Trace clay inclusions	Gley 1 3/N	Massive	Loose	Not observed	0.5"	Trace fibers/organics	Mussel	Trace small shells	Trace sheen fluorets
DM057-SE-1-091819	DM057	Deadman's Eddy	9/18/2019	11:30	Sed - Bioassay (2 gal)	Medium sand, trace fine gravel.	10YR 2/2		Loose	Yes, pockets and scattered	No	Sticks, leaves	No	Yes, partial and full spiral shell	No
DM057-SE-1-091819	DM057	Deadman's Eddy	9/18/2019	11:30	Sed - Chemistry (inclusive BSEM)	Medium sand, trace fine gravel.	10YR 2/2		Loose	Yes, pockets and scattered	No	Sticks, leaves	No	Yes, partial and full spiral shell	No
DM061-BMI-1-101619	DM061	Deadman's Eddy	10/16/2019	10:35	Sed - BMI	Silty very fine sand	Gley 1 2.5/W	None	Very loose	None observed	Present 0.5cm	Yes, vegetation, woody	Eolden canadium grass, trace organics	Trace	None observed
DM061-SE-1-101219	DM061	Deadman's Eddy	10/12/2019	11:45	Sed - Bioassay (2 gal)	Poor graded silty sand, very fine grained, contains pieces of black glassy sand	5Y 2.5/1 black	None	Soft	Yes, 25%	None	None	Variety of organisms, organic, micro benthic	Mussels	No sheen, Slight sulfuric odor

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
DM061-SE-1-101219	DM061	Deadman's Eddy	10/12/2019	11:45	Sed - Chemistry (inclusive BSEM)	Poor graded silty sand, very fine grained, contains pieces of black glassy sand	5Y 2.5/1 black	None	Soft	Yes, 25%	None	None	Variety of organisms, organic, micro benthic	Mussels	No sheen, Slight sulfuric odor
EV001-BMI-1-092619	EV001	Evans	9/26/2019	11:03	Sed - BMI	Fine-coarse sand	10YR 2/1	Fining upwards	Loose	Abundant	None	None	None	Trace	None
EV001-SE-1-092619	EV001	Evans	9/26/2019	11:03	Sed - Chemistry (inclusive BSEM)	Fine-coarse sand	10YR 2/1	Fining upwards	Loose	Abundant	None	None	None	Trace	None
EV001-SE-1-092619	EV001	Evans	9/26/2019	11:03	Sed - Bioassay (2 gal)	Fine-coarse sand	10YR 2/1	Fining upwards	Loose	Abundant	None	None	None	Trace	None
EV001-SE-1-092619	EV001	Evans	9/26/2019	11:03	Sed - Bioassay (5 gal)	Fine-coarse sand	10YR 2/1	Fining upwards	Loose	Abundant	None	None	None	Trace	None
EV001-SE-2-092619	EV001	Evans	9/26/2019	11:33	Sed - Chemistry (inclusive BSEM)	Fine-coarse sand	10YR 2/1	Fining upwards	Loose	Abundant	None	None	None	Trace	None
EV002-BMI-1-092419	EV002	Evans	9/24/2019	08:31	Sed - BMI	Fine - medium sand w/ trace sub-rounded gravel (<1%)	10YR 2/2/	<1 cm silt on top of	Loose	Abundant	Not observed	1 stick	None	None	None
EV002-SE-1-092419	EV002	Evans	9/24/2019	08:31	Sed - Bioassay (2 gal)	Fine - medium sand w/ trace sub-rounded gravel (<1%)	10YR 2/2/	<1 cm silt on top of	Loose	Abundant	Not observed	1 stick	None	None	None
EV002-SE-1-092419	EV002	Evans	9/24/2019	08:31	Sed - Bioassay (5 gal)	Fine - medium sand w/ trace sub-rounded gravel (<1%)	10YR 2/2/	<1 cm silt on top of	Loose	Abundant	Not observed	1 stick	None	None	None
EV002-SE-1-092419	EV002	Evans	9/24/2019	08:31	Sed - Chemistry (inclusive BSEM)	Fine - medium sand w/ trace sub-rounded gravel (<1%)	10YR 2/2/	<1 cm silt on top of	Loose	Abundant	Not observed	1 stick	None	None	None
EV002-SE-3-092419	EV002	Evans	9/24/2019	08:31	Sed - Bioassay (2 gal)	Fine - medium sand w/ trace sub-rounded gravel (<1%)	10YR 2/2/	<1 cm silt on top of	Loose	Abundant	Not observed	1 stick	None	None	None
EV003-BMI-1-092019	EV003	Evans	9/20/2019	10:02	Sed - BMI	Gravelly medium sand with coarse sand rounded to sub-rounded	7.5 YR 4/1	Homogenous	Loose	Yes	No	Yes. Sticks	Yes. Mussels, shells	Y	N
EV003-SE-1-092019	EV003	Evans	9/20/2019	10:02	Sed - Chemistry (inclusive BSEM)	Gravelly medium sand with coarse sand rounded to sub-rounded	7.5YR 4/1	Homogenous	Loose	Yes	No	Yes. Sticks	Yes. Mussels, shells	Y	N
EV003-SE-1-092019	EV003	Evans	9/20/2019	10:02	Sed - Bioassay (2 gal)	Gravelly medium sand with coarse sand rounded to sub-rounded	7.5YR 4/1	Homogenous	Loose	Yes	No	Yes. Sticks	Yes. Mussels, shells	Y	N
EV003-SE-1-092019	EV003	Evans	9/20/2019	10:02	Sed - Bioassay (5 gal)	Gravelly medium sand with coarse sand rounded to sub-rounded	7.5YR 4/1	Homogenous	Loose	Yes	No	Yes. Sticks	Yes. Mussels, shells	Y	N
EV005-BMI-1-091219	EV005	Evans	9/12/2019	14:40	Sed - BMI	Silt o-1 cm olive gray, > 1 cm sand fine to coarse	Black w/ brown speckles	Massive	Loose	Present	1 mm silt redox layer	None	1 clam - very small, 1 piece of grass	None	None
EV005-SE-1-091119	EV005	Evans	9/11/2019	15:15	Sed - Chemistry (inclusive BSEM)	Silt o-1 cm olive gray, > 1 cm sand fine to coarse	Black w/ brown speckles	Massive	Loose	Present	0-1 cm	None	Scattered surface H20/silt had blood worms	None	None
EV005-SE-1-091119	EV005	Evans	9/11/2019	15:15	Sed - Bioassay (2 gal)	Silt o-1 cm olive gray, > 1 cm sand fine to coarse	Black w/ brown speckles	Massive	Loose	Present	0-1 cm	None	Scattered surface H20/silt had blood worms	None	None
EV005-SE-1-091119	EV005	Evans	9/11/2019	15:15	Sed - Bioassay (5 gal)	Silt o-1 cm olive gray, > 1 cm sand fine to coarse	Black w/ brown speckles	Massive	Loose	Present	0-1 cm	None	Scattered surface H20/silt had blood worms	None	None
EV008-BMI-1-092319	EV008	Evans	9/23/2019	09:43	Sed - BMI	Fine - medium sand <1cm layer silt on top	5Y 2.5/2	1 cm silt, massively bedded sand to bottom	Loose	Abundant	Not observed	None	None	None	None
EV008-SE-1-092319	EV008	Evans	9/23/2019	09:43	Sed - Chemistry (inclusive BSEM)	Fine - medium sand <1cm layer silt on top	5Y 2.5/2	1 cm silt, massively bedded sand to bottom	Loose	Abundant	Not observed	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
EV008-SE-1-092319	EV008	Evans	9/23/2019	09:43	Sed - Bioassay (2 gal)	Fine - medium sand <1cm layer silt on top	5Y 2.5/2	1 cm silt, massively bedded sand to bottom	Loose	Abundant	Not observed	None	None	None	None
EV008-SE-1-092319	EV008	Evans	9/23/2019	09:43	Sed - Bioassay (5 gal)	Fine - medium sand <1cm layer silt on top	5Y 2.5/2	1 cm silt, massively bedded sand to bottom	Loose	Abundant	Not observed	None	None	None	None
EV010-BMI-1-091219	EV010	Evans	9/12/2019	17:00	Sed - BMI	Thin veneer of silt, dark olive brown on top	Black sand w/ brown speckles	Gravely fine to coarse sand w/trace silt, subrounded-subangular	Loose	Yes - present	0-1 mm Yes			None	
EV010-SE-1-091219	EV010	Evans	9/12/2019	15:30	Sed - Chemistry (inclusive BSEM)	Thin veneer of silt, dark olive brown on top	Black sand w/ brown speckles	Gravely fine to coarse sand w/trace silt, subrounded-subangular	Loose	Yes - present	0-1 mm Yes	Trace sticks and wood chunks		1 dead mussel	
EV010-SE-1-091219	EV010	Evans	9/12/2019	15:30	Sed - Bioassay (2 gal)	Thin veneer of silt, dark olive brown on top	Black sand w/ brown speckles	Gravely fine to coarse sand w/trace silt, subrounded-subangular	Loose	Yes - present	0-1 mm Yes	Trace sticks and wood chunks		1 dead mussel	
EV010-SE-1-091219	EV010	Evans	9/12/2019	15:30	Sed - Bioassay (5 gal)	Thin veneer of silt, dark olive brown on top	Black sand w/ brown speckles	Gravely fine to coarse sand w/trace silt, subrounded-subangular	Loose	Yes - present	0-1 mm Yes	Trace sticks and wood chunks		1 dead mussel	
EV011-BMI-1-100119	EV011	Evans	10/1/2019	11:24	Sed - BMI	Gravelly sandy silt and fine sand	Dark brown	Homogenous	Soft	None	None	None	Macroinvertebrates observed. Chironimid larvae, several red worms	None	None
EV011-SE-1-092819	EV011	Evans	9/28/2019	14:19	Sed - Chemistry (inclusive BSEM)	Rounded fine to coarse gravel w/ scattered fine to medium sand, sub-angular	10YR 4/3	None	Loose	Scattered	None	None	None	None	None
EV012-BMI-1-091319	EV012	Evans	9/13/2019	11:30	Sed - BMI	0-1mm dark brown silt, very soft, >1mm fine to coarse gravelly sand, subrounded to subangular	Black	Homogenous	Loose	Present		Trace small sticks w/ brown speckles	1 fresh H20 sponge w/ trace macrophytes	Trace shell fragments	
EV012-SE-1-091319	EV012	Evans	9/13/2019	09:55	Sed - Chemistry (inclusive BSEM)	0-1mm dark brown silt, very soft, >1mm fine to coarse gravelly sand, subrounded to subangular	Black	Homogenous	Loose	Present		Trace small sticks w/ brown speckles		Trace shell fragments	None
EV012-SE-1-091319	EV012	Evans	9/13/2019	09:55	Sed - Bioassay (2 gal)	0-1mm dark brown silt, very soft, >1mm fine to coarse gravelly sand, subrounded to subangular	Black	Homogenous	Loose	Present		Trace small sticks w/ brown speckles		Trace shell fragments	None
EV012-SE-1-091319	EV012	Evans	9/13/2019	09:55	Sed - Bioassay (5 gal)	0-1mm dark brown silt, very soft, >1mm fine to coarse gravelly sand, subrounded to subangular	Black	Homogenous	Loose	Present		Trace small sticks w/ brown speckles		Trace shell fragments	None
EV013-BMI-1-091319	EV013	Evans	9/13/2019	14:00	Sed - BMI	0-1 mm dark brown silt >1mm black w/brown speckles, gravelly sand, fine to coarse, subangular to subrounded gravels		Homogenous	Loose	Present	None	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
EV013-SE-1-091319	EV013	Evans	9/13/2019	12:15	Sed - Chemistry (inclusive BSEM)	0-1 mm dark brown silt >1mm black w/brown speckles, gravelly sand, fine to coarse, subangular to subrounded gravels		Homogenous	Loose	Present	None	None	None	None	None
EV013-SE-1-091319	EV013	Evans	9/13/2019	12:15	Sed - Bioassay (2 gal)	0-1 mm dark brown silt >1mm black w/brown speckles, gravelly sand, fine to coarse, subangular to subrounded gravels		Homogenous	Loose	Present	None	None	None	None	None
EV013-SE-1-091319	EV013	Evans	9/13/2019	12:15	Sed - Bioassay (5 gal)	0-1 mm dark brown silt >1mm black w/brown speckles, gravelly sand, fine to coarse, subangular to subrounded gravels		Homogenous	Loose	Present	None	None	None	None	None
EV020-SE-1-100219	EV020	Evans	10/2/2019	09:35	Sed - Chemistry (inclusive BSEM)	Gravelly cobbles with some sand	Brown	Homogeneous	Loose	Present	None	None	None	None	Slight sulfur odor
EV020-SE-3-100219	EV020	Evans	10/2/2019	09:35	Sed - Chemistry (inclusive BSEM)	Gravelly cobbles with some sand	Brown	Homogeneous	Loose	Present	None	None	None	None	Slight sulfur odor
EV022-BMI-1-093019	EV022	Evans	9/30/2019	13:07	Sed - BMI	Gravel angular to subrounded fine to coarse sand with gravel. Gravel is fine, trace coarse gravel	Greyish brown w/ brown/white speckles	NA	Loose	Not observed	N/A	No	No	No	None
EV022-SE-1-092819	EV022	Evans	9/28/2019	12:00	Sed - Chemistry (inclusive BSEM)	Fine sand w/ trace medium to coarse sand. 1 coarse gravel	10YR 4/3	None	Loose	Scattered	None	None	None	None	None
EV026-BMI-1-092019	EV026	Evans	9/20/2019	14:31	Sed - BMI	Fine to medium sand. Trace gravel	10YR 4/1	Homogenous	Loose	Y	No				
EV026-SE-1-092019	EV026	Evans	9/20/2019	14:31	Sed - Bioassay (2 gal)	Fine to medium sand, trace silt, trace rounded gravel fine to coarse	10YR 4/1	Homogenous	Loose	Y	No	Twigs	No	No	No
EV026-SE-1-092019	EV026	Evans	9/20/2019	14:31	Sed - Bioassay (5 gal)	Fine to medium sand, trace silt, trace rounded gravel fine to coarse	10YR 4/1	Homogenous	Loose	Y	No	Twigs	No	No	No
EV026-SE-1-092019	EV026	Evans	9/20/2019	14:31	Sed - Chemistry (inclusive BSEM)	Fine to medium sand, trace silt, trace rounded gravel fine to coarse	10YR 4/1	Homogenous	Loose	Y	No	Twigs	No	No	No
EV027-BMI-1-092119	EV027	Evans	9/21/2019	09:25	Sed - BMI	Medium to coarse sand (subrounded to sub angular) with fine to coarse rounded gravel. Trace silt	10YR 2/1	1 mm of silt (dark reddish brown)	Loose	Yes	<1mm thick	N	N	Y	N
EV027-SE-1-092119	EV027	Evans	9/21/2019	09:25	Sed - Chemistry (inclusive BSEM)	Medium to coarse sand (subrounded to sub angular) with fine to coarse rounded gravel. Trace silt	10YR 2/1	1 mm of silt (dark reddish brown)	Loose	Yes	<1mm thick	N	N	Y	N
EV027-SE-1-092119	EV027	Evans	9/21/2019	09:25	Sed - Bioassay (2 gal)	Medium to coarse sand (subrounded to sub angular) with fine to coarse rounded gravel. Trace silt	10YR 2/1	1 mm of silt (dark reddish brown)	Loose	Yes	<1mm thick	N	N	Y	N
EV027-SE-1-092119	EV027	Evans	9/21/2019	09:25	Sed - Bioassay (5 gal)	Medium to coarse sand (subrounded to sub angular) with fine to coarse rounded gravel. Trace silt	10YR 2/1	1 mm of silt (dark reddish brown)	Loose	Yes	<1mm thick	N	N	Y	N
EV027-SE-3-092119	EV027	Evans	9/21/2019	09:25	Sed - Bioassay (2 gal)	Medium to coarse sand (subrounded to sub angular) with fine to coarse rounded gravel. Trace silt	10YR 2/1	1 mm of silt (dark reddish brown)	Loose	Yes	<1mm thick	N	N	Y	N

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
EV036-BMI-1-091419	EV036	Evans	9/14/2019	13:45	Sed - BMI	F-E Gravelly fine to coarse sand with cobbles and silt	Dark brown sand/silt but variable gravel colors	Homogenous	Loose - after defrost	Present - trace	0 - 0.1 mm	None	None	None	No sheen. Trace sulfur odor
EV036-BMI-2-100119	EV036	Evans	10/1/2019	13:26	Sed - BMI	Sandy gravel; 1 discarded cobble. Sand fine to coarse; gravel fine to coarse subrounded to subangular	Greyish brown	Homogenous	Loose	None	N/A	None	1 chironomid larvae	None	Slight sulfur odor, no sheen
EV036-SE-1-091419	EV036	Evans	9/14/2019	13:30	Sed - Chemistry (inclusive BSEM)	Slightly sandy (fine to coarse) cobbely gravel (subrounded coarse to fine) trace silt	Dark brown sand/silt but highly variable gravel colors		Loose - after defrost	Trace	Thin film 0-1mm	None	None	Trace shell fragments	Slight sulfur odor
EV037-BMI-1-092319	EV037	Evans	9/23/2019	12:28	Sed - BMI	Fine-medium sand, 1 cm overlying silt		0-1 cm silt, laminated sand and silica glass to 6" depth	Loose	Abundant	Not observed	None	None	None	None
EV037-BMI-2-092319	EV037	Evans	9/23/2019	13:59	Sed - BMI	Fine-medium sand, 1 cm overlying silt		0-1 cm silt, laminated sand and silica glass to 6" depth	Loose	Abundant	Not observed	None	None	None	None
EV037-SE-1-092319	EV037	Evans	9/23/2019	12:28	Sed - Chemistry (inclusive BSEM)	Fine to medium sand w/ 1 cm silt overlying	5Y 2.5/2	1 cm silt 0-6" sand w/ 1 inch silt, lamination @ 3" depth		Abundant	Not observed	None	None	None	None
EV037-SE-1-092319	EV037	Evans	9/23/2019	13:00	Sed - Bioassay (2 gal)	Fine to medium sand w/ 1 cm silt overlying	5Y 2.5/2	1 cm silt 0-6" sand w/ 1 inch silt, lamination @ 3" depth		Abundant	Not observed	None	None	None	None
EV037-SE-1-092319	EV037	Evans	9/23/2019	13:00	Sed - Bioassay (5 gal)	Fine to medium sand w/ 1 cm silt overlying	5Y 2.5/2	1 cm silt 0-6" sand w/ 1 inch silt, lamination @ 3" depth		Abundant	Not observed	None	None	None	None
EV037-SE-2-092319	EV037	Evans	9/23/2019	13:00	Sed - Chemistry (inclusive BSEM)	Fine to medium sand w/ 1 cm silt overlying	5Y 2.5/2	1 cm silt 0-6" sand w/ 1 inch silt, lamination @ 3" depth		Abundant	Not observed	None	None	None	None
EV037-SE-3-092319	EV037	Evans	9/23/2019	12:28	Sed - Chemistry (inclusive BSEM)	Fine to medium sand w/ 1 cm silt overlying	5Y 2.5/2	1 cm silt 0-6" sand w/ 1 inch silt, lamination @ 3" depth		Abundant	Not observed	None	None	None	None
EV044-BMI-1-092419	EV044	Evans	9/24/2019	10:01	Sed - BMI	Silt w/ very fine sand	2.5Y 3/2	None/ homogenous	Soft	Not observed	Not observed	Trace small sticks	None	None	None
EV044-SE-1-092419	EV044	Evans	9/24/2019	10:01	Sed - Bioassay (2 gal)	Silt w/ very fine sand	2.5Y 3/2	None/ homogenous	Soft	Not observed	Not observed	Trace small sticks	None	None	None
EV044-SE-1-092419	EV044	Evans	9/24/2019	10:01	Sed - Bioassay (5 gal)	Silt w/ very fine sand	2.5Y 3/2	None/ homogenous	Soft	Not observed	Not observed	Trace small sticks	None	None	None
EV044-SE-1-092419	EV044	Evans	9/24/2019	10:01	Sed - Chemistry (inclusive BSEM)	Silt w/ very fine sand	2.5Y 3/2	None/ homogenous	Soft	Not observed	Not observed	Trace small sticks	None	None	None
EV044-SE-3-092419	EV044	Evans	9/24/2019	10:01	Sed - Bioassay (2 gal)	Silt w/ very fine sand	2.5Y 3/2	None/ homogenous	Soft	Not observed	Not observed	Trace small sticks	None	None	None
EV048-BMI-1-092419	EV048	Evans	9/24/2019	11:37	Sed - BMI	Fine-medium sand w/ trace sub-rounded coarse sand <1% sub-rounded fine gravel		<1 cm overlying silt. Massively bedded sand to 6"	Loose	Abundant	Not observed	None	None	None	None
EV048-SE-1-092419	EV048	Evans	9/24/2019	11:37	Sed - Bioassay (2 gal)	Fine-medium sand w/ trace sub-rounded coarse sand <1% sub-rounded fine gravel		<1 cm overlying silt. Massively bedded sand to 6"	Loose	Abundant	Not observed	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
EV048-SE-1-092419	EV048	Evans	9/24/2019	11:37	Sed - Bioassay (5 gal)	Fine-medium sand w/ trace sub-rounded coarse sand <1% sub-rounded fine gravel		<1 cm overlying silt. Massively bedded sand to 6"	Loose	Abundant	Not observed	None	None	None	None
EV048-SE-1-092419	EV048	Evans	9/24/2019	11:37	Sed - Chemistry (inclusive BSEM)	Fine-medium sand w/ trace sub-rounded coarse sand <1% sub-rounded fine gravel		<1 cm overlying silt. Massively bedded sand to 6"	Loose	Abundant	Not observed	None	None	None	None
EV049-BMI-1-092719	EV049	Evans	9/27/2019	10:51	Sed - BMI	Fine-coarse sand. Trace gravel <1%	10YR 2/1	None	Loose	Abundant	None	None	None	None	None
EV049-SE-1-092719	EV049	Evans	9/27/2019	10:51	Sed - Chemistry (inclusive BSEM)	Fine-coarse sand. Trace gravel <1%	10YR 2/1	None	Loose	Abundant	None	None	None	None	None
EV051-BMI-1-092419	EV051	Evans	9/24/2019	13:00	Sed - BMI	Fine to medium sand w. few coarse sand. sub-rounded to round	10YR 3/1	<1cm silt, massively bedded sand to 6"	Loose	Abundant	None	A stick		A half mussel shell	None
EV051-SE-1-092419	EV051	Evans	9/24/2019	13:00	Sed - Chemistry (inclusive BSEM)	Fine to medium sand w. few coarse sand. sub-rounded to round	10YR 3/1	<1cm silt, massively bedded sand to 6"	Loose	Abundant	None	A stick		A half mussel shell	None
EV051-SE-1-092419	EV051	Evans	9/24/2019	13:00	Sed - Bioassay (2 gal)	Fine to medium sand w. few coarse sand. sub-rounded to round	10YR 3/1	<1cm silt, massively bedded sand to 6"	Loose	Abundant	None	A stick		A half mussel shell	None
EV051-SE-1-092419	EV051	Evans	9/24/2019	13:00	Sed - Bioassay (5 gal)	Fine to medium sand w. few coarse sand. sub-rounded to round	10YR 3/1	<1cm silt, massively bedded sand to 6"	Loose	Abundant	None	A stick		A half mussel shell	None
EV052-BMI-1-092619	EV052	Evans	9/26/2019	12:26	Sed - BMI	Fine-coarse sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	Trace small wood chips	None	None	None
EV052-SE-1-092619	EV052	Evans	9/26/2019	12:26	Sed - Chemistry (inclusive BSEM)	Fine-coarse sand w/trace gravel (~3-5%)	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	Trace small wood chips	None	None	None
EV052-SE-1-092619	EV052	Evans	9/26/2019	12:26	Sed - Bioassay (2 gal)	Fine-coarse sand w/trace gravel (~3-5%)	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	Trace small wood chips	None	None	None
EV052-SE-1-092619	EV052	Evans	9/26/2019	12:26	Sed - Bioassay (5 gal)	Fine-coarse sand w/trace gravel (~3-5%)	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	Trace small wood chips	None	None	None
EV054-BMI-1-092319	EV054	Evans	9/23/2019	15:51	Sed - BMI	Silt w/ scattered clay inclusions	Gley 1 3/10Y	Homogenous/massive	Very soft	Not observed	Present, 1 cm	Trace rootlets, concentrated in top inch	None	None	None
EV054-SE-1-091119	EV054	Evans	9/11/2019	13:00	Sed - Chemistry (inclusive BSEM)	Silt with trace fine sand with clay = mud	Very dark grayish brown 0-1mm, black >1mm	Massive	Soft	None	0-1mm redox	None	Scattered rootlets. Trace macroinverts in overlaying H20		Slight sulfur odor
EV054-SE-1-091119	EV054	Evans	9/11/2019	13:00	Sed - Bioassay (2 gal)	Silt with trace fine sand with clay = mud	Very dark grayish brown 0-1mm, black >1mm	Massive	Soft	None	0-1mm redox	None	Scattered rootlets. Trace macroinverts in overlaying H20		Slight sulfur odor
EV054-SE-1-091119	EV054	Evans	9/11/2019	13:00	Sed - Bioassay (5 gal)	Silt with trace fine sand with clay = mud	Very dark grayish brown 0-1mm, black >1mm	Massive	Soft	None	0-1mm redox	None	Scattered rootlets. Trace macroinverts in overlaying H20		Slight sulfur odor
EV057-BMI-1-092319	EV057	Evans	9/23/2019	15:10	Sed - BMI	Silt w/little clay	Gley 1 3/10Y	Massive/ homogenous	Very soft	Not observed	Present, 1 cm	Trace rootlets		Trace shells	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
EV057-SE-1-091119	EV057	Evans	9/11/2019	12:00	Sed - Chemistry (inclusive BSEM)	Sandy silt, mud, very fine sand	Very Dark Gray	Massive	Soft	Absence	None to very thin 1mm	None	Scattered rootlets + grasses	1 worm live	Slight sulfur odor, no sheen
EV057-SE-1-091119	EV057	Evans	9/11/2019	12:00	Sed - Bioassay (2 gal)	Sandy silt, mud, very fine sand	Very Dark Gray	Massive	Soft	Absence	None to very thin 1mm	None	Scattered rootlets + grasses	1 worm live	Slight sulfur odor, no sheen
EV057-SE-1-091119	EV057	Evans	9/11/2019	12:00	Sed - Bioassay (5 gal)	Sandy silt, mud, very fine sand	Very Dark Gray	Massive	Soft	Absence	None to very thin 1mm	None	Scattered rootlets + grasses	1 worm live	Slight sulfur odor, no sheen
EV060-BMI-1-092119	EV060	Evans	9/21/2019	12:55	Sed - BMI	Med sane, trace silt	10 YR 2/1	1/2 mm silt on top; homogenous	Loose	Y	Y 1/2mm	~	~	~	~
EV060-SE-1-092119	EV060	Evans	9/21/2019	12:55	Sed - Chemistry (inclusive BSEM)	Med sane, trace silt	10 YR 2/1	1/2 mm silt on top; homogenous	Loose	Y	Y 1/2mm	~	~	~	No gravel or cobble
EV060-SE-1-092119	EV060	Evans	9/21/2019	12:55	Sed - Bioassay (2 gal)	Med sane, trace silt	10 YR 2/1	1/2 mm silt on top; homogenous	Loose	Y	Y 1/2mm	~	~	~	No gravel or cobble
EV060-SE-1-092119	EV060	Evans	9/21/2019	12:55	Sed - Bioassay (5 gal)	Med sane, trace silt	10 YR 2/1	1/2 mm silt on top; homogenous	Loose	Y	Y 1/2mm	~	~	~	No gravel or cobble
EV063-BMI-1-091019	EV063	Evans	9/10/2019	16:00	Sed - BMI	Silt with trace fine sand and trace clay (MUD)	>1cm Very dark clay	Massive structure	At 3 inches soft		1cm 0-1cm very dark gray brown	none	Scattered fine roots, trace bloodworm cronicles	2-inch mussel - dead	Slight organic sulfur odor, no sheen
EV063-SE-1-091019	EV063	Evans	9/10/2019	15:00	Sed - Chemistry (inclusive BSEM)	Silt with trace fine sand and trace clay (MUD)	>1cm Very dark clay	Massive structure	At 3 inches soft		1cm 0-1cm very dark gray brown	none	Scattered fine roots, trace bloodworm cronicles	2-inch mussel - dead	Slight organic sulfur odor, no sheen
EV063-SE-1-091019	EV063	Evans	9/10/2019	15:00	Sed - Bioassay (2 gal)	Silt with trace fine sand and trace clay (MUD)	>1cm Very dark clay	Massive structure	At 3 inches soft		1cm 0-1cm very dark gray brown	none	Scattered fine roots, trace bloodworm cronicles	2-inch mussel - dead	Slight organic sulfur odor, no sheen
EV063-SE-1-091019	EV063	Evans	9/10/2019	15:00	Sed - Bioassay (5 gal)	Silt with trace fine sand and trace clay (MUD)	>1cm Very dark clay	Massive structure	At 3 inches soft		1cm 0-1cm very dark gray brown	none	Scattered fine roots, trace bloodworm cronicles	2-inch mussel - dead	Slight organic sulfur odor, no sheen
EV064-BMI-1-091019	EV064	Evans	9/10/2019	13:45	Sed - BMI	Silty fine sand	Silty fine sand	structure = massive	Soft	No	None	None	Scattered fine rootlets	None	Slight organic odor, no sheen
EV064-SE-1-091019	EV064	Evans	9/10/2019	11:30	Sed - Chemistry (inclusive BSEM)	Silty fine sand	Silty fine sand	structure = massive	Soft	No	None	None	Scattered fine rootlets	None	Slight organic odor, no sheen
EV064-SE-1-091019	EV064	Evans	9/10/2019	11:30	Sed - Bioassay (2 gal)	Silty fine sand	Silty fine sand	structure = massive	Soft	No	None	None	Scattered fine rootlets	None	Slight organic odor, no sheen
EV064-SE-1-091019	EV064	Evans	9/10/2019	11:30	Sed - Bioassay (5 gal)	Silty fine sand	Silty fine sand	structure = massive	Soft	No	None	None	Scattered fine rootlets	None	Slight organic odor, no sheen
EV065-BMI-1-092519	EV065	Evans	9/25/2019	08:16	Sed - BMI	Fine-med SAND w/few R coarse sand, trace fine gravel <1%	10 YR 2/1	<1cm silt overlaying massively bedded sand	Loose	Abundant	None	None	None	None	None
EV065-SE-1-092519	EV065	Evans	9/25/2019	08:16	Sed - Chemistry (inclusive BSEM)	Fine-med sand w/few R coarse sand, trace fine gravel <1%	10 YR 2/1	<1cm silt overlaying massively bedded sand	Loose	Abundant	None	None	None	None	None
EV065-SE-1-092519	EV065	Evans	9/25/2019	08:16	Sed - Bioassay (2 gal)	Fine-med SAND w/few R coarse SAND, trace fine gravel <1%	10 YR 2/1	<1cm silt overlaying massively bedded sand	Loose	Abundant	None	None	None	None	None
EV065-SE-1-092519	EV065	Evans	9/25/2019	08:16	Sed - Bioassay (5 gal)	Fine-med SAND w/few R coarse SAND, trace fine gravel <1%	10 YR 2/1	<1cm silt overlaying massively bedded sand	Loose	Abundant	None	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
EV065-SE-2-092519	EV065	Evans	9/25/2019	08:55	Sed - Chemistry (inclusive BSEM)	Fine-med SAND w/few R coarse SAND, trace fine gravel <1%	10 YR 2/1	<1cm silt overlaying massively bedded sand	Loose	Abundant	None	None	None	None	None
EV066-BMI-1-092519	EV066	Evans	9/25/2019	09:28	Sed - BMI	Fine-Med SAND	10 YR 2/1	<1cm silt overlaying massive sand	Loose	Abundant	None	None	None	None	None
EV066-SE-1-092519	EV066	Evans	9/25/2019	09:28	Sed - Chemistry (inclusive BSEM)	Fine-Med SAND	10 YR 2/1	<1cm silt overlaying massive sand	Loose	Abundant	None	None	None	None	None
EV066-SE-1-092519	EV066	Evans	9/25/2019	09:28	Sed - Bioassay (2 gal)	Fine-Med SAND	10 YR 2/1	<1cm silt overlaying massive sand	Loose	Abundant	None	None	None	None	None
EV066-SE-1-092519	EV066	Evans	9/25/2019	09:28	Sed - Bioassay (5 gal)	Fine-Med SAND	10 YR 2/1	<1cm silt overlaying massive sand	Loose	Abundant	None	None	None	None	None
EV069-BMI-1-092519	EV069	Evans	9/25/2019	10:49	Sed - BMI	Fine-med SAND w/ Trace R fine gravel (<1%)	10 YR 2/1	<1cm Silt overlaying alternating 1/2" laminations of silica glass and sand.	Loose	Abundant	None	1 small stick	None	Trace	None
EV069-BMI-2-092519	EV069	Evans	9/25/2019	12:15	Sed - BMI	Fine-med SAND w/ Trace R fine gravel (<1%)	10 YR 2/1	<1cm Silt overlaying alternating 1/2" laminations of silica glass and sand.	Loose	Abundant	None	1 small stick	None	Trace	None
EV069-SE-1-092519	EV069	Evans	9/25/2019	10:49	Sed - Chemistry (inclusive BSEM)	Fine-med SAND w/ Trace R fine gravel (<1%)	10 YR 2/1	<1cm Silt overlaying alternating 1/2" laminations of silica glass and sand.	Loose	Abundant	None	1 small stick	None	Trace	None
EV069-SE-1-092519	EV069	Evans	9/25/2019	10:49	Sed - Bioassay (2 gal)	Fine-med SAND w/ Trace R fine gravel (<1%)	10 YR 2/1	<1cm Silt overlaying alternating 1/2" laminations of silica glass and sand.	Loose	Abundant	None	1 small stick	None	Trace	None
EV069-SE-1-092519	EV069	Evans	9/25/2019	10:49	Sed - Bioassay (5 gal)	Fine-med SAND w/ Trace R fine gravel (<1%)	10 YR 2/1	<1cm Silt overlaying alternating 1/2" laminations of silica glass and sand.	Loose	Abundant	None	1 small stick	None	Trace	None
EV069-SE-3-092519	EV069	Evans	9/25/2019	10:49	Sed - Bioassay (2 gal)	Fine-med SAND w/ Trace R fine gravel (<1%)	10 YR 2/1	<1cm Silt overlaying alternating 1/2" laminations of silica glass and sand.	Loose	Abundant	None	1 small stick	None	Trace	None
EV071-BMI-1-092519	EV071	Evans	9/25/2019	14:53	Sed - BMI	Fine-medium sand	10YR 2/1	1/2 inch silt underlain by massively bedded sand	Loose	Abundant	Present in top inch	None		Trace, snail and 1/2 mussel	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
EV071-SE-1-092519	EV071	Evans	9/25/2019	14:53	Sed - Chemistry (inclusive BSEM)	Fine-medium sand	10YR 2/1	1/2 inch silt underlain by massively bedded sand	Loose	Abundant	Present in top inch	None		Trace, snail and 1/2 mussel	None
EV071-SE-1-092519	EV071	Evans	9/25/2019	14:53	Sed - Bioassay (5 gal)	Fine-medium sand	10YR 2/1	1/2 inch silt underlain by massively bedded sand	Loose	Abundant	Present in top inch	None		Trace, snail and 1/2 mussel	None
EV071-SE-1-092519	EV071	Evans	9/25/2019	14:53	Sed - Bioassay (2 gal)	Fine-medium sand	10YR 2/1	1/2 inch silt underlain by massively bedded sand	Loose	Abundant	Present in top inch	None		Trace, snail and 1/2 mussel	None
EV072-BMI-1-092619	EV072	Evans	9/26/2019	14:49	Sed - BMI	Fine-coarse sand w/trace (<1%) round gravel	10YR 7/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 wood chip	None	None	None
EV072-SE-1-092619	EV072	Evans	9/26/2019	14:49	Sed - Chemistry (inclusive BSEM)	Fine-coarse sand w/trace (<1%) round gravel	10YR 7/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 wood chip	None	None	None
EV072-SE-1-092619	EV072	Evans	9/26/2019	14:49	Sed - Bioassay (2 gal)	Fine-coarse sand w/trace (<1%) round gravel	10YR 7/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 wood chip	None	None	None
EV072-SE-1-092619	EV072	Evans	9/26/2019	14:49	Sed - Bioassay (5 gal)	Fine-coarse sand w/trace (<1%) round gravel	10YR 7/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 wood chip	None	None	None
EV072-SE-2-092619	EV072	Evans	9/26/2019	15:20	Sed - Chemistry (inclusive BSEM)	Fine-coarse sand w/trace (<1%) round gravel	10YR 7/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 wood chip	None	None	None
EV075-BMI-1-091219	EV075	Evans	9/12/2019	12:15	Sed - BMI	0 - 0.2 mm silt w. fine sand, fine-medium sand	0 - 0.2mm very dark grayish brown/>0.2mm black w/brown speckles	No structure, massive	Loose	Present - abundant	0 - 0.2mm	None	None except one blood worm	None	None
EV075-SE-1-091119	EV075	Evans	9/11/2019	09:40	Sed - Chemistry (inclusive BSEM)	0 - 0.2 mm silt w. fine sand, fine-medium sand	0 - 0.2mm very dark grayish brown/>0.2mm black w/brown speckles	No structure, massive	Loose	Present - abundant	0 - 0.2mm	None	None except one blood worm	None	None
EV075-SE-1-091119	EV075	Evans	9/11/2019	09:40	Sed - Bioassay (2 gal)	0 - 0.2 mm silt w. fine sand, fine-medium sand	0 - 0.2mm very dark grayish brown/>0.2mm black w/brown speckles	No structure, massive	Loose	Present - abundant	0 - 0.2mm	None	None except one blood worm	None	None
EV075-SE-1-091119	EV075	Evans	9/11/2019	09:40	Sed - Bioassay (5 gal)	0 - 0.2 mm silt w. fine sand, fine-medium sand	0 - 0.2mm very dark grayish brown/>0.2mm black w/brown speckles	No structure, massive	Loose	Present - abundant	0 - 0.2mm	None	None except one blood worm	None	None
REF001-BMI-1-092819	REF001	Reference Birchbank	9/28/2019	10:14	Sed - BMI	Sand, well graded medium coarse grain with gravel, 2 inches sand-subrounded-rounded	Reddish-gray 5YR 5/2	None - massive	Loose	None	None	Minor woody debris	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
REF001-SE-1-092819	REF001	Reference Birchbank	9/28/2019	10:14	Sed - Chemistry (inclusive BSEM)	Well graded sand medium-coarse grain with gravel (up to 2")	Reddish gray 5YR 5/2	None - massive	Loose	None	None	Woody debris minor	None	None	None
REF001-SE-1-092819	REF001	Reference Birchbank	9/28/2019	10:14	Sed - Bioassay (2 gal)	Well graded sand medium-coarse grain with gravel (up to 2")	Reddish gray 5YR 5/2	None - massive	Loose	None	None	Woody debris minor	None	None	None
REF001-SE-1-092819	REF001	Reference Birchbank	9/28/2019	10:14	Sed - Bioassay (5 gal)	Well graded sand medium-coarse grain with gravel (up to 2")	Reddish gray 5YR 5/2	None - massive	Loose	None	None	Woody debris minor	None	None	None
REF002-BMI-1-092819	REF002	Reference Birchbank	9/28/2019	08:57	Sed - BMI	Poorly graded sand medium grained/well round (beach sand)	5YR 5/2 Reddish gray	No bedding	Loose	None	None	None	None	None	None
REF002-SE-1-092819	REF002	Reference Birchbank	9/28/2019	08:57	Sed - Chemistry (inclusive BSEM)	Poorly graded sand medium grained/well round (beach sand)	5YR 5/2 Reddish gray	No bedding	Loose	None	None	None	None	None	None
REF002-SE-1-092819	REF002	Reference Birchbank	9/28/2019	08:57	Sed - Bioassay (5 gal)	Poorly graded sand medium grained/well round (beach sand)	5YR 5/2 Reddish gray	No bedding	Loose	None	None	None	None	None	None
REF002-SE-1-092819	REF002	Reference Birchbank	9/28/2019	08:57	Sed - Bioassay (2 gal)	Poorly graded sand medium grained/well round (beach sand)	5YR 5/2 Reddish gray	No bedding	Loose	None	None	None	None	None	None
REF003-BMI-1-092719	REF003	Reference Birchbank	9/27/2019	09:50	Sed - BMI	Poorly graded medium grain sand, sand grain subround to round	Reddish gray 5YR 5/2	None obvious	Loose	None	None	None	Worm	None	None
REF003-BMI-2-092719	REF003	Reference Birchbank	9/27/2019	09:50	Sed - BMI	Poorly graded medium grain sand, sand grain subround to round	Reddish gray 5YR 5/2	None obvious	Loose	None	None	None	Worm	None	None
REF003-SE-1-092719	REF003	Reference Birchbank	9/27/2019	09:50	Sed - Bioassay (2 gal)	Poorly graded medium grain sand, sand grain subround to round	Reddish gray 5YR 5/2	None obvious	Loose	None	None	None	Worm	None	None
REF003-SE-1-092719	REF003	Reference Birchbank	9/27/2019	09:50	Sed - Chemistry (inclusive BSEM)	Poorly graded medium grain sand, sand grain subround to round	Reddish gray 5YR 5/2	None obvious	Loose	None	None	None	Worm	None	None
REF003-SE-1-092719	REF003	Reference Birchbank	9/27/2019	09:50	Sed - Bioassay (5 gal)	Poorly graded medium grain sand, sand grain subround to round	Reddish gray 5YR 5/2	None obvious	Loose	None	None	None	Worm	None	None
REF004-BMI-1-092719	REF004	Reference Birchbank	9/27/2019	11:54	Sed - BMI	Gravel with sand, multiple sized grains, subangular to rounded	5YR 5/1 Gray	Massive no bedding	Dense	None	None	None	Trace Organics	None	None
REF004-SE-1-092719	REF004	Reference Birchbank	9/27/2019	11:54	Sed - Bioassay (2 gal)	Well graded (multiple sizes) gravel with sand grains subangular to rounded	5YR 5/1 Gray	Massive no bedding	Dense	None	None	None	Trace organics	None	None
REF004-SE-1-092719	REF004	Reference Birchbank	9/27/2019	11:54	Sed - Chemistry (inclusive BSEM)	Well graded (multiple sizes) gravel with sand grains subangular to rounded	5YR 5/1 Gray	Massive no bedding	Dense	None	None	None	Trace organics	None	None
REF004-SE-1-092719	REF004	Reference Birchbank	9/27/2019	11:54	Sed - Bioassay (5 gal)	Well graded (multiple sizes) gravel with sand grains subangular to rounded	5YR 5/1 Gray	Massive no bedding	Dense	None	None	None	Trace organics	None	None
REF004-SE-3-092719	REF004	Reference Birchbank	9/27/2019	11:54	Sed - Bioassay (2 gal)	Well graded (multiple sizes) gravel with sand grains subangular to rounded	5YR 5/1 Gray	Massive no bedding	Dense	None	None	None	Trace organics	None	None
REF005-BMI-1-100319	REF005	Reference Genelle-Upper	10/3/2019	12:50	Sed - BMI	Gravelly sand, sand well graded, medium to coarse, sub rounded to rounded	5YR 5/1 Gray	No	Med. dense	No	No	No	No	No	No
REF005-SE-1-100319	REF005	Reference Genelle-Upper	10/3/2019	10:00	Sed - Bioassay (5 gal)	Gravelly sand, sand well graded, medium to coarse, sub rounded to rounded	5YR 5/1 Gray	No	Med. dense	No	No	No	No	No	No
REF005-SE-1-100319	REF005	Reference Genelle-Upper	10/3/2019	10:00	Sed - Bioassay (2 gal)	Gravelly sand, sand well graded, medium to coarse, sub rounded to rounded	5YR 5/1 Gray	No	Med. dense	No	No	No	No	No	No

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
REF005-SE-1-100319	REF005	Reference Genelle-Upper	10/3/2019	10:00	Sed - Chemistry (inclusive BSEM)	Gravelly sand, sand well graded, medium to coarse, sub rounded to rounded	5YR 5/1 Gray	No	Med. dense	No	No	No	No	No	No
REF006-BMI-1-100219	REF006	Reference Genelle-Upper	10/2/2019	16:15	Sed - BMI	Well graded sand w/ gravel, sand is fine to coarse subrounded to rounded, gravel is up to 2 1/2" subrounded	5YR 5/1 Gray	None (lenses w/ organics)	Firm	None	None	Wood, debris, sticks	None	None	None
REF006-SE-1-100219	REF006	Reference Genelle-Upper	10/2/2019	14:00	Sed - Bioassay (5 gal)	Well graded sand w/ gravel, sand is fine to coarse subrounded to rounded, gravel is up to 2 1/2" subrounded	5YR 5/1 Gray	None (lenses w/ organics)	Firm	None	None	Wood, plants	None	None	None
REF006-SE-1-100219	REF006	Reference Genelle-Upper	10/2/2019	14:00	Sed - Bioassay (2 gal)	Well graded sand w/ gravel, sand is fine to coarse subrounded to rounded, gravel is up to 2 1/2" subrounded	5YR 5/1 Gray	None (lenses w/ organics)	Firm	None	None	Wood, plants	None	None	None
REF006-SE-1-100219	REF006	Reference Genelle-Upper	10/2/2019	14:00	Sed - Chemistry (inclusive BSEM)	Well graded sand w/ gravel, sand is fine to coarse subrounded to rounded, gravel is up to 2 1/2" subrounded	5YR 5/1 Gray	None (lenses w/ organics)	Firm	None	None	Wood, plants	None	None	None
REF007-BMI-1-093019	REF007	Reference Genelle-Upper	9/30/2019	13:01	Sed - BMI	Mud - coarse sand, well graded sand w/ silt	5YR 3/1 Very dary gray	None	Loose, massive	None	None	None	None	None	None
REF007-SE-1-093019	REF007	Reference Genelle-Upper	9/30/2019	11:41	Sed - Bioassay (2 gal)	Mud - coarse sand, well graded sand w/ silt	5YR 3/1 Very dary gray	None	Loose, massive	None	None	None	None	None	None
REF007-SE-1-093019	REF007	Reference Genelle-Upper	9/30/2019	11:41	Sed - Bioassay (5 gal)	Mud - coarse sand, well graded sand w/ silt	5YR 3/1 Very dary gray	None	Loose, massive	None	None	None	None	None	None
REF007-SE-1-093019	REF007	Reference Genelle-Upper	9/30/2019	11:41	Sed - Chemistry (inclusive BSEM)	Mud - coarse sand, well graded sand w/ silt	5YR 3/1 Very dary gray	None	Loose, massive	None	None	None	None	None	None
REF007-SE-3-093019	REF007	Reference Genelle-Upper	9/30/2019	11:41	Sed - Bioassay (2 gal)	Mud - coarse sand, well graded sand w/ silt	5YR 3/1 Very dary gray	None	Loose, massive	None	None	None	None	None	None
REF008-BMI-1-093019	REF008	Reference Genelle-Upper	9/30/2019	15:01	Sed - BMI	Well graded sand, medium to coarse grain - subrounded to rounded	5Y 5/2 Reddish gray	None	Loose	No	None	None	None	None	None
REF008-SE-1-093019	REF008	Reference Genelle-Upper	9/30/2019	14:20	Sed - Bioassay (5 gal)	Well graded sand, medium to coarse grain - subrounded to rounded	5Y 5/2 Reddish gray	None	Loose	No	None	None	None	None	None
REF008-SE-1-093019	REF008	Reference Genelle-Upper	9/30/2019	14:20	Sed - Bioassay (2 gal)	Well graded sand, medium to coarse grain - subrounded to rounded	5Y 5/2 Reddish gray	None	Loose	No	None	None	None	None	None
REF008-SE-1-093019	REF008	Reference Genelle-Upper	9/30/2019	14:20	Sed - Chemistry (inclusive BSEM)	Well graded sand, medium to coarse grain - subrounded to rounded	5Y 5/2 Reddish gray	None	Loose	No	None	None	None	None	None
REF009A-BMI-1-100219	REF009A	Reference Genelle-Upper	10/2/2019	12:12	Sed - BMI	Poorly graded sand, medium to coarse sand, subrounded to rounded, no silt	5YR 5/1 Gray	No	Loose	No	None	Grasses	No	No	No
REF009A-SE-1-100219	REF009A	Reference Genelle-Upper	10/2/2019	9:56	Sed - Bioassay (5 gal)	Poorly graded sand, medium to coarse sand, subrounded to rounded, no silt	5YR 5/1 Gray	No	Loose	No	None	Grasses	No	No	No
REF009A-SE-1-100219	REF009A	Reference Genelle-Upper	10/2/2019	9:56	Sed - Bioassay (2 gal)	Poorly graded sand, medium to coarse sand, subrounded to rounded, no silt	5YR 5/1 Gray	No	Loose	No	None	Grasses	No	No	No
REF009A-SE-1-100219	REF009A	Reference Genelle-Upper	10/2/2019	9:56	Sed - Chemistry (inclusive BSEM)	Poorly graded sand, medium to coarse sand, subrounded to rounded, no silt	5YR 5/1 Gray	No	Loose	No	None	Grasses	No	No	No
REF010-BMI-1-100319	REF010	Reference Genelle-Upper	10/3/2019	16:30	Sed - BMI	Well graded, sand w/ gravel, sand is medium to coarse subrounded to rounded	5YR 5/1 Gray	No	Dense	No	None	Wood debris (minor)	No	No	No

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
REF010-SE-1-100319	REF010	Reference Genelle-Upper	10/3/2019	14:30	Sed - Bioassay (5 gal)	Well graded, sand w/ gravel, sand is medium to coarse subrounded to rounded	5YR 5/1 Gray	No	Dense	No	None	Wood debris (minor)	No	No	No
REF010-SE-1-100319	REF010	Reference Genelle-Upper	10/3/2019	14:30	Sed - Bioassay (2 gal)	Well graded, sand w/ gravel, sand is medium to coarse subrounded to rounded	5YR 5/1 Gray	No	Dense	No	None	Wood debris (minor)	No	No	No
REF010-SE-1-100319	REF010	Reference Genelle-Upper	10/3/2019	14:30	Sed - Chemistry (inclusive BSEM)	Well graded, sand w/ gravel, sand is medium to coarse subrounded to rounded	5YR 5/1 Gray	No	Dense	No	None	Wood debris (minor)	No	No	No
REF011-BMI-1-100119	REF011	Reference Upstream of Genelle	10/1/2019	12:50	Sed - BMI	Poorly graded sand, medium sand subrounded to rounded, no silt	7.5 YR 5/2 Brown	None	Loose	None	None observed	None	None observed	None	None
REF011-BMI-2-100119	REF011	Reference Upstream of Genelle	10/1/2019	13:15	Sed - BMI	Poorly graded sand, medium sand subrounded to rounded, no silt	7.5 YR 5/2 Brown	None	Loose	None	None observed	None	None observed	None	None
REF011-SE-1-100119	REF011	Reference Upstream of Genelle	10/1/2019	10:30	Sed - Bioassay (5 gal)	Poorly graded sand, medium sand subrounded to rounded, no silt	7.5 YR 5/2 Brown	None	Loose	None	None observed	None	None observed	None	None
REF011-SE-1-100119	REF011	Reference Upstream of Genelle	10/1/2019	10:30	Sed - Bioassay (2 gal)	Poorly graded sand, medium sand subrounded to rounded, no silt	7.5 YR 5/2 Brown	None	Loose	None	None observed	None	None observed	None	None
REF011-SE-1-100119	REF011	Reference Upstream of Genelle	10/1/2019	10:30	Sed - Chemistry (inclusive BSEM)	Poorly graded sand, medium sand subrounded to rounded, no silt	7.5 YR 5/2 Brown	None	Loose	None	None observed	None	None observed	None	None
REF011-SE-2-100119	REF011	Reference Upstream of Genelle	10/1/2019	11:55	Sed - Chemistry (inclusive BSEM)	Poorly graded sand, medium sand subrounded to rounded, no silt	7.5 YR 5/2 Brown	None	Loose	None	None observed	None	None observed	None	None
REF012-BMI-1-100419	REF012	Reference Upstream of Genelle	10/4/2019	11:15	Sed - BMI	Well graded gravelly silty sand, medium to coarse sand, subangular to subrounded	5YR 3/1 V. dark gray	No	Medium	No	No	No	Mussels, worms	No	No
REF012-SE-1-100319	REF012	Reference Upstream of Genelle	10/4/2019	09:30	Sed - Chemistry (inclusive BSEM)	Well graded gravelly silty sand, medium to coarse sand, subangular to subrounded	5YR 3/1 V. dark gray	No	Medium	No	No	No	Mussels, worms	No	No
REF012-SE-1-100419	REF012	Reference Upstream of Genelle	10/4/2019	09:30	Sed - Bioassay (5 gal)	Well graded gravelly silty sand, medium to coarse sand, subangular to subrounded	5YR 3/1 V. dark gray	No	Medium	No	No	No	Mussels, worms	No	No
REF012-SE-1-100419	REF012	Reference Upstream of Genelle	10/4/2019	09:30	Sed - Bioassay (2 gal)	Well graded gravelly silty sand, medium to coarse sand, subangular to subrounded	5YR 3/1 V. dark gray	No	Medium	No	No	No	Mussels, worms	No	No
REF013-BMI-1-092419	REF013	Reference Arrow Lake	9/24/2019	13:01	Sed - BMI	Silty sand	5YR 5/1 Gray	Massive	Medium	None	0.5m 5YR 4/2 dark reddish gray	No	Grass		No
REF013-SE-1-092419	REF013	Reference Arrow Lake	9/24/2019	11:29	Sed - Chemistry (inclusive BSEM)	Silty sand	5YR 5/1 gray - 5YR 4/2 (redox) dark reddish gray	Massive	Medium	None	0.5 mm	No	No	Present bivalve ??	No
REF013-SE-1-092419	REF013	Reference Arrow Lake	9/24/2019	11:29	Sed - Bioassay (2 gal)	Silty sand	5YR 5/1 gray - 5YR 4/2 (redox) dark reddish gray	Massive	Medium	None	0.5mm	No	No	Present bivalve ??	No
REF013-SE-1-092419	REF013	Reference Arrow Lake	9/24/2019	11:29	Sed - Bioassay (5 gal)	Silty sand	5YR 5/1 gray - 5YR 4/2 (redox) dark reddish gray	Massive	Medium	None	0.5mm	No	No	Present bivalve ??	No
REF014-BMI-1-092619	REF014	Reference Arrow Lake	9/26/2019	13:40	Sed - BMI	Silt organic	7.5 YR 5/1 Gray	Massive	Soft	None	2 cm 5YR 4/2 Dark reddish gray	Wood	Wood	None	Slight sulfur odor
REF014-SE-1-092619	REF014	Reference Arrow Lake	9/26/2019	11:42	Sed - Chemistry (inclusive BSEM)	Organic sandy silt	7.5 YR 5/1 Gray	Massive	Soft	None	2 cm 5YR 4/2 Dark reddish gray	Wood	Wood	None	Slight sulfur odor

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
REF014-SE-1-092619	REF014	Reference Arrow Lake	9/26/2019	11:42	Sed - Bioassay (2 gal)	Organic sandy silt	7.5 YR 5/1 Gray	Massive	Soft	None	2 cm 5YR 4/2 Dark reddish gray	Wood	Wood	None	Slight sulfur odor
REF014-SE-1-092619	REF014	Reference Arrow Lake	9/26/2019	11:42	Sed - Bioassay (5 gal)	Organic sandy silt	7.5 YR 5/1 Gray	Massive	Soft	None	2 cm 5YR 4/2 Dark reddish gray	Wood	Wood	None	Slight sulfur odor
REF014-SE-2-092619	REF014	Reference Arrow Lake	9/26/2019	14:22	Sed - Chemistry (inclusive BSEM)	Organic sandy silt	7.5 YR 5/1 Gray	Massive	Soft	None	2 cm 5YR 4/2 Dark reddish gray	Wood	Wood	None	Slight sulfur odor
REF015-BMI-1-092419	REF015	Reference Arrow Lake	9/24/2019	14:28	Sed - BMI	Sandy silt	5YR 5/1 Gray	Massive	Soft	None	1 cm	None	Moderate woody debris	Bivalve - ???	None
REF015-SE-1-092619	REF015	Reference Arrow Lake	9/26/2019	09:20	Sed - Chemistry (inclusive BSEM)	Silt (organics) 2 cm oxidized layer depleted below	7.5 YR 5/1 Gray	Massive	Soft	None	2.0 cm dark reddish gray 5YR 4/2	Branches	(20% organics)		Slight sulfuric
REF015-SE-1-092619	REF015	Reference Arrow Lake	9/26/2019	09:20	Sed - Bioassay (2 gal)	Silt (organics) 2 cm oxidized layer depleted below	7.5 YR 5/1 Gray	Massive	Soft	None	2.0 cm dark reddish gray 5YR 4/2	Branches	(20% organics)		Slight sulfuric
REF015-SE-1-092619	REF015	Reference Arrow Lake	9/26/2019	09:20	Sed - Bioassay (5 gal)	Silt (organics) 2 cm oxidized layer depleted below	7.5 YR 5/1 Gray	Massive	Soft	None	2.0 cm dark reddish gray 5YR 4/2	Branches	(20% organics)		Slight sulfuric
REF015-SE-3-092619	REF015	Reference Arrow Lake	9/26/2019	09:20	Sed - Bioassay (2 gal)	Silt (organics)	7.5YR 5/1 Gray	Massive	Soft	None	2 cm Dark reddish gray 5YR 4/2 silt	Branch	Organics	Mussel	Slight sulfuric
REF016-BMI-1-092519	REF016	Reference Arrow Lake	9/25/2019	13:07	Sed - BMI	Sandy silt brown top 4 cm gray below	Gray 5YR 5/1, Brown 5YR 4/3 coarse	Massive	Soft	None	0.5	Mostly branches	Some woody material	None	No sheen/slight sulfur odor
REF016-SE-1-092519	REF016	Reference Arrow Lake	9/25/2019	11:40	Sed - Chemistry (inclusive BSEM)	Sandy silt minor organics, brown 4cm/gray	Gray 5YR 5/1	Massive	Soft	None	0.5 cm 5YR 4/3 brown sand 4 cm sandy silt/medium grain coarse subangular	None	None	None	No sheen, slight sulfur odor
REF016-SE-1-092519	REF016	Reference Arrow Lake	9/25/2019	11:40	Sed - Bioassay (5 gal)	Sandy silt minor organics, brown 4cm/gray	Gray 5YR 5/1	Massive	Soft	None	0.5 cm 5YR 4/3 brown sand 4 cm sandy silt/medium grain coarse subangular	None	None	None	No sheen, slight sulfur odor
REF016-SE-1-092519	REF016	Reference Arrow Lake	9/25/2019	11:40	Sed - Bioassay (2 gal)	Sandy silt minor organics, brown 4cm/gray	Gray 5YR 5/1	Massive	Soft	None	0.5 cm 5YR 4/3 brown sand 4 cm sandy silt/medium grain coarse subangular	None	None	None	No sheen, slight sulfur odor
REF017-BMI-1-092519	REF017	Reference Arrow Lake	9/25/2019	15:05	Sed - BMI	Top 2 cm - silt 5 YR 4/2 dark reddish brown / silt 5YR 6/1 Gray		Massive	soft	None	None	Organics	None	None	None
REF017-SE-1-092519	REF017	Reference Arrow Lake	9/25/2019	14:05	Sed - Chemistry (inclusive BSEM)	Silt bown top 2 cm silt, minor organic soft below, gray silt soft minor organics, plastic, light gray lens	5YR 4/2 dark reddish gray, gray - 5YR 6/1	Massive (no bedding)	Soft	None	None	Minor organics	None	Mussel shell	No sheen/None
REF017-SE-1-092519	REF017	Reference Arrow Lake	9/25/2019	14:05	Sed - Bioassay (5 gal)	Silt bown top 2 cm silt, minor organic soft below, gray silt soft minor organics, plastic, light gray lens	5YR 4/2 dark reddish gray, gray - 5YR 6/1	Massive (no bedding)	Soft	None	None	Minor organics	None	Mussel shell	No sheen/None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
REF017-SE-1-092519	REF017	Reference Arrow Lake	9/25/2019	14:05	Sed - Bioassay (2 gal)	Silt bown top 2 cm silt, minor organic soft below, gray silt soft minor organics, plastic, light gray lens	5YR 4/2 dark reddish gray, gray - 5YR 6/1	Massive (no bedding)	Soft	None	None	Minor organics	None	Mussel shell	No sheen/None
REF018-BMI-1-092519	REF018	Reference Arrow Lake	9/25/2019	11:00	Sed - BMI	Sandy silt moderate	Gray sandy silt	Massive	Soft	None	0.25 cm / 3 cm brown sandy silt	Minor organics	None	None	No sheen
REF018-SE-1-092519	REF018	Reference Arrow Lake	9/25/2019	10:07	Sed - Chemistry (inclusive BSEM)	Sandy silt not as much organics as #4, layer of fine sand at surface	Gray 5 YR 4/1, Reddish brown 0.5 cm lg gray 1 cm, gray	Massive	Soft	None	0.5 cm reddish brown 5TR 5/3, 5YR 7/1 (silt) 1 cm layer	Woody	None	Slight sulfur odor reducing environment	
REF018-SE-1-092519	REF018	Reference Arrow Lake	9/25/2019	10:07	Sed - Bioassay (5 gal)	Sandy silt not as much organics as #4, layer of fine sand at surface	Gray 5 YR 4/1, Reddish brown 0.5 cm lg gray 1 cm, gray	Massive	Soft	None	0.5 cm reddish brown 5TR 5/3, 5YR 7/1 (silt) 1 cm layer	Woody	None	Slight sulfur odor reducing environment	
REF018-SE-1-092519	REF018	Reference Arrow Lake	9/25/2019	10:07	Sed - Bioassay (2 gal)	Sandy silt not as much organics as #4, layer of fine sand at surface	Gray 5 YR 4/1, Reddish brown 0.5 cm lg gray 1 cm, gray	Massive	Soft	None	0.5 cm reddish brown 5TR 5/3, 5YR 7/1 (silt) 1 cm layer	Woody	None	Slight sulfur odor reducing environment	
1-B5-NRT-BMI-1-101519	1-B5-NRT	Deadman's Eddy	10/15/2019	16:07	Sed - BMI	Silty very fine to fine sand	Gley 2.5/ 10Y Greenish Black	Massive	Loose, very loose	Yes, 15% scattered	5mm scattered, trace	Small woody, rootlets	Vegetation	Trace	None
1-B5-NRT-SE-1-101519	1-B5-NRT	Deadman's Eddy	10/15/2019	15:28	Sed - Bioassay (5 gal)	Silty very fine to fine sand	Gley 2.5/ 10Y Greenish Black	Massive, 5mm redox layer on surface	Loose, very loose	Yes, 15% scattered	5mm scattered, trace	Small woody, rootlets	Vegetation	Trace	None
1-B5-NRT-SE-1-101519	1-B5-NRT	Deadman's Eddy	10/15/2019	15:28	Sed - Bioassay (2 gal)	Silty very fine to fine sand	Gley 2.5/ 10Y Greenish Black	Massive	Loose, very loose	Yes, 15% scattered	5mm scattered, trace	Small woody, rootlets	Vegetation	Trace	None
1-B5-NRT-SE-1-101519	1-B5-NRT	Deadman's Eddy	10/15/2019	15:28	Sed - Chemistry (inclusive BSEM)	Silty very fine to fine sand	Gley 2.5/ 10Y Greenish Black	Massive	Loose, very loose	Yes, 15% scattered	5mm scattered, trace	Small woody, rootlets	Vegetation	Trace	None
1-B6-NRT-BMI-1-101619	1-B6-NRT	Deadman's Eddy	10/16/2019	09:42	Sed - BMI	0-3 in fine sand, trace silt. 3-6 in well graded sand, trace subrounded fine gravel, abundance silica glass.	10 YRR 2/1 Black	See sediment type description	Loose	Yes 50%	None	None	None	Trace	None
1-B6-NRT-SE-1-101619	1-B6-NRT	Deadman's Eddy	10/16/2019	09:12	Sed - Chemistry (inclusive BSEM)	0-3 in fine sand, trace silt. 3-6 in well graded sand, trace subrounded fine gravel, abundance silica glass.	10 YRR 2/1 Black	See sediment type description	Loose	Yes 50%	None	None	None	Trace	None
1-B6-NRT-SE-1-101619	1-B6-NRT	Deadman's Eddy	10/16/2019	09:12	Sed - Bioassay (5 gal)	0-3 in fine sand, trace silt. 3-6 in well graded sand, trace subrounded fine gravel, abundance silica glass.	10 YR 2/1 Black	See sediment type description	Loose	Yes 50%	None	None	None	Trace	None
1-B6-NRT-SE-1-101619	1-B6-NRT	Deadman's Eddy	10/16/2019	09:12	Sed - Bioassay (2 gal)	0-3 in fine sand, trace silt. 3-6 in well graded sand, trace subrounded fine gravel, abundance silica glass.	10 YR 2/1 Black	See sediment type description	Loose	Yes 50%	None	None	None	Trace	None
3-R7-2019-BMI-1-101519	3-R7-2019	China Bend	10/15/2019	15:15	Sed - BMI	Medium to coarse sand, little cobbles, rounded	Colors of grains range from 10YR 6/3 to 10YR 2/1	Homogenous	Loose	Present	None	None	None	None	None
3-R7-2019-SE-1-101519	3-R7-2019	China Bend	10/15/2019	14:31	Sed - Bioassay (5 gal)	Medium to coarse sand, little cobbles, rounded	Colors of grains range from 10YR 6/3 to 10YR 2/1	Homogenous	Loose	Present	None	None	None	None	None
3-R7-2019-SE-1-101519	3-R7-2019	China Bend	10/15/2019	14:31	Sed - Bioassay (2 gal)	Medium to coarse sand, little cobbles, rounded	Colors of grains range from 10YR 6/3 to 10YR 2/1	Homogenous	Loose	Present	None	None	None	None	None
3-R7-2019-SE-1-101519	3-R7-2019	China Bend	10/15/2019	14:31	Sed - Chemistry (inclusive BSEM)	Medium to coarse sand, little cobbles, rounded	Colors of grains range from 10YR 6/3 to 10YR 2/1	Homogenous	Loose	Present	None	None	None	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
3-R8-2019-BMI-1-101619	3-R8-2019	China Bend	10/16/2019	11:16	Sed - BMI	Medium to coarse sand, trace gravel (rounded to subrounded), little cobble (rounded to subrounded)	Black 10YR 2/1	Homogenous	Medium dense	Present	None	None	None	None	None
3-R8-2019-SE-1-101619	3-R8-2019	China Bend	10/16/2019	09:54	Sed - Bioassay (2 gal)	Medium to coarse sand	Black 10YR 2/1	None	Loose	Present	None	None	None	None	None
3-R8-2019-SE-1-101619	3-R8-2019	China Bend	10/16/2019	09:54	Sed - Chemistry (inclusive BSEM)	Medium to coarse sand	Black 10YR 2/1	None	Loose	Present	None	None	None	None	None
3-R8-2019-SE-1-101619	3-R8-2019	China Bend	10/16/2019	09:54	Sed - Bioassay (5 gal)	Medium to coarse sand	Black 10YR 2/1	None	Loose	Present	None	None	None	None	None
4-B1-2019-BMI-1-092619	4-B1-2019	Evans	9/26/2019	08:31	Sed - BMI	Fine to medium sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 stick	None	None	None
4-B1-2019-SE-1-092619	4-B1-2019	Evans	9/26/2019	08:13	Sed - Chemistry (inclusive BSEM)	Fine to medium sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	None	Live mussel	None	None
4-B1-2019-SE-1-092619	4-B1-2019	Evans	9/26/2019	08:13	Sed - Bioassay (5 gal)	Fine to medium sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	None	Live mussel	None	None
4-B1-2019-SE-1-092619	4-B1-2019	Evans	9/26/2019	08:13	Sed - Bioassay (2 gal)	Fine to medium sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	None	Live mussel	None	None
4-B6-2019-BMI-1-092619	4-B6-2019	Evans	9/26/2019	09:42	Sed - BMI	Fine-medium sand w/ trace (<1%) round fine gravel	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	Pine needle. 1/2 inch small woody debris 0.5" depth in places	None	Trace	None
4-B6-2019-SE-1-092619	4-B6-2019	Evans	9/26/2019	09:42	Sed - Chemistry (inclusive BSEM)	Fine-medium sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 twig	None	Trace	None
4-B6-2019-SE-1-092619	4-B6-2019	Evans	9/26/2019	09:42	Sed - Bioassay (5 gal)	Fine-medium sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 twig	None	Trace	None
4-B6-2019-SE-1-092619	4-B6-2019	Evans	9/26/2019	09:42	Sed - Bioassay (2 gal)	Fine-medium sand	10YR 2/1	<1cm silt overlying massively bedded sand	Loose	Abundant	None	1 twig	None	Trace	None
JS001-BMI-1-101019	JS001	China Bend	10/10/2019	10:22	Sed - BMI	Fine to medium sand with trace coarse sand top 1mm is silty	10YR 2/1	Homogenous	Very loose	Yes, throughout	1mm 10YR 3/2	Fishing line	Small piece of burnt wood	1 shell fragment	None
JS001-SE-1-101019	JS001	China Bend	10/10/2019	10:22	Sed - Bioassay (5 gal)	Fine to medium sand, top 1mm is silty, trace coarse sand below 1mm	10YR 2/1	Homogenous	Very loose	Yes, throughout	1mm 10YR 3/2	One stick	None	None	None
JS001-SE-1-101019	JS001	China Bend	10/10/2019	10:22	Sed - Bioassay (2 gal)	Fine to medium sand, top 1mm is silty, trace coarse sand below 1mm	10YR 2/1	Homogenous	Very loose	Yes, throughout	1mm 10YR 3/2	One stick	None	None	None
JS001-SE-1-101019	JS001	China Bend	10/10/2019	10:22	Sed - Chemistry (inclusive BSEM)	Fine to medium sand, top 1mm is silty, trace coarse sand below 1mm	10YR 2/1	Homogenous	Very loose	Yes, throughout	1mm 10YR 3/2	One stick	None	None	None
JS001-SE-3-101019	JS001	China Bend	10/10/2019	10:22	Sed - Bioassay (2 gal)	Fine to medium sand, top 1mm is silty, trace coarse sand below 1mm	10YR 2/1	Homogenous	Very loose	Yes, throughout	1mm 10YR 3/2	One stick	None	None	None
JS002-BMI-1-101019	JS002	China Bend	10/10/2019	12:34	Sed - BMI	Sand, trace silt on surface fine to medium	10YR 3/3	Homogenous	Loose	Yes, scattered	<0.25mm	Twigs	Goose feces, no film	None	None

Table 11. Sediment Characterization Based on Field Observations

Sample ID	Location ID	Area	Sample Date	Sample Time	Type of Sample	Sediment Type/Texture	Color	Stratification	Density	Silica Glass	Redox Boundary	Debris	Biological Structures	Shells	Sheen/ Odor
JS002-SE-1-101019	JS002	China Bend	10/10/2019	12:34	Sed - Bioassay (5 gal)	Medium to coarse sand	10YR 3/3	Homogenous	Loose	Yes, scattered	<0.5mm with silt	Some woody debris	None	None	None
JS002-SE-1-101019	JS002	China Bend	10/10/2019	12:34	Sed - Bioassay (2 gal)	Medium to coarse sand	10YR 3/3	Homogenous	Loose	Yes, scattered	<0.5mm with silt	Some woody debris	None	None	None
JS002-SE-1-101019	JS002	China Bend	10/10/2019	12:34	Sed - Chemistry (inclusive BSEM)	Medium to coarse sand	10YR 3/3	Homogenous	Loose	Yes, scattered	<0.5mm with silt	Some woody debris	None	None	None

Notes:

BMI – benthic macroinvertebrate
BSEM – back scatter electron microscopy
cm – centimeter
gal – gallon
ID – Identifier
mm – millimeter
Sed – sediment

Table 12. Sediment Sample Centroid Locations

Location ID	Centroid Coordinates - UTM (meters)	
	X Coordinate	Y Coordinate
CB002	429474.207	5407449.233
CB005	429466.787	5407333.620
CB006	429539.863	5407413.510
CB007	429564.577	5407463.883
CB009	429606.275	5407433.485
CB010	429620.173	5407417.633
CB012	429600.617	5407386.910
CB014	429612.930	5407339.380
CB016	429673.605	5407403.105
CB018	429706.620	5407380.507
CB020	429734.450	5407363.995
CB021	429791.410	5407362.250
CB024	429795.295	5407333.340
CB027	429793.870	5407320.120
CB029	429819.007	5407311.627
CB035	430352.055	5407151.917
CB036	430400.590	5407139.406
CB039	430652.587	5407207.297
CB040	430616.253	5407248.850
CB044	430666.095	5407348.185
CB046	430800.188	5407319.490
CB047	431021.368	5407419.324
CB056	432088.586	5407672.128
DM002	445979.065	5421228.283
DM007	446081.780	5421187.767
DM008	446073.128	5421203.401
DM010	446114.200	5421212.860
DM015	446162.892	5421228.242
DM016	446174.200	5421156.100
DM018	446203.610	5421137.003
DM019	446210.203	5421183.553
DM020	446226.778	5421210.778
DM022	446236.460	5421154.720
DM023	446260.440	5421164.360
DM024	446255.527	5421105.473
DM025	446316.750	5421096.870
DM026	446291.930	5421071.073
DM027	446314.173	5421057.260
DM036	446707.323	5420447.410
DM038	446765.383	5420446.223
DM039	446776.287	5420446.273

Table 12. Sediment Sample Centroid Locations

Location ID	Centroid Coordinates - UTM (meters)	
	X Coordinate	Y Coordinate
DM044	446810.176	5420321.828
DM045	446834.087	5420282.343
DM046	446851.860	5420281.695
DM047	446817.443	5420451.813
DM050	446899.000	5420307.240
DM057	447031.780	5420489.140
DM061	447099.125	5420646.995
EV001	422460.375	5391534.180
EV002	422495.030	5391672.735
EV003	422511.505	5391490.808
EV005	422606.320	5391704.725
EV008	422713.035	5391655.450
EV010	422657.092	5391528.055
EV011	422758.733	5391457.553
EV012	422815.355	5391576.318
EV013	422908.522	5391591.246
EV020	423490.516	5391765.100
EV022	423601.985	5391715.628
EV026	423839.800	5392159.866
EV027	423869.088	5392027.563
EV036	424414.078	5392091.455
EV037	424269.435	5392319.055
EV044	424999.925	5392737.620
EV048	424637.750	5392929.705
EV049	424686.700	5392942.795
EV051	424659.075	5393065.945
EV052	424619.315	5393165.450
EV054	425058.535	5393185.595
EV057	424823.750	5393493.000
EV060	424564.708	5393682.685
EV063	424890.780	5393900.285
EV064	424645.577	5393929.813
EV065	424462.675	5393913.645
EV066	424475.015	5393993.380
EV069	424426.345	5394118.555
EV071	424433.180	5394261.780
EV072	424377.620	5394303.075
EV075	424379.580	5394452.320
REF001	447454.010	5446001.175
REF002	447492.505	5446070.325
REF003	447871.090	5446881.990

Table 12. Sediment Sample Centroid Locations

Location ID	Centroid Coordinates - UTM (meters)	
	X Coordinate	Y Coordinate
REF004	447859.020	5446933.490
REF005	448591.070	5450159.006
REF006	448648.943	5450148.091
REF007	448723.107	5450204.470
REF008	448616.665	5450237.330
REF009A	448650.593	5450377.165
REF010	448688.245	5450497.229
REF011	451256.280	5453271.133
REF012	451479.000	5453439.500
REF013	435360.237	5466486.543
REF014	435317.873	5466528.667
REF015	435187.160	5466559.057
REF016	418673.627	5492199.353
REF017	418652.010	5492299.117
REF018	418572.340	5492363.550
1-B5-NRT	446376.660	5421110.365
1-B6-NRT	446333.675	5421021.790
3-R7-2019	430298.950	5407149.970
3-R8-2019	429439.560	5407286.660
4-B1-2019	424499.200	5393516.180
4-B6-2019	423101.155	5391739.645
JS001	430963.815	5407513.120
JS002	431067.813	5407575.390

Table 13. Porewater Sample Locations

Location ID	Coordinates - UTM (meters)	
	X Coordinate	Y Coordinate
CB002-PW	429475.360	5407451.730
CB005-PW	429468.440	5407338.980
CB006-PW	429538.860	5407415.570
CB007-PW	429560.080	5407458.230
CB009-PW	429612.770	5407433.370
CB010-PW	429620.880	5407419.220
CB012-PW	429601.410	5407389.450
CB014-PW	429614.200	5407342.370
CB016-PW	429675.360	5407400.490
CB018-PW	429709.350	5407377.430
CB020-PW	429733.380	5407363.180
CB021-PW	429788.370	5407363.620
CB024-PW	429797.450	5407333.520
CB027-PW	429794.350	5407318.590
CB029-PW	429820.940	5407309.490
CB035-PW	430355.360	5407157.410
CB036-PW	430402.560	5407139.350
CB039-PW	430645.660	5407204.210
CB040-PW	430618.670	5407248.570
CB041-PW	430770.670	5407130.110
CB043-PW	430661.040	5407261.390
CB044-PW	430666.530	5407349.120
CB046-PW	430800.080	5407321.000
CB047-PW	431014.550	5407414.530
CB048-PW	431088.410	5407419.520
CB049-PW	431241.050	5407330.770
CB052-PW	431594.440	5407515.800
CB055-PW	431789.590	5407692.900
CB056-PW	432089.300	5407672.090
DM002-PW	445983.400	5421235.600
DM007-PW	446085.390	5421191.980
DM008-PW	446070.220	5421203.700
DM010-PW	446113.590	5421212.460
DM015-PW	446157.610	5421231.670
DM016-PW	446171.010	5421158.450
DM018-PW	446210.490	5421136.000
DM019-PW	446207.400	5421190.860
DM020-PW	446226.870	5421209.740
DM022-PW	446232.500	5421157.900
DM023-PW	446259.240	5421167.060
DM024-PW	446252.980	5421105.070
DM025-PW	446314.190	5421098.910
DM026-PW	446292.150	5421074.170
DM027-PW	446314.680	5421058.350

Table 13. Porewater Sample Locations

Location ID	Coordinates - UTM (meters)	
	X Coordinate	Y Coordinate
DM030-PW	446548.030	5420839.410
DM036-PW	446704.950	5420445.260
DM038-PW	446763.250	5420452.770
DM039-PW	446780.760	5420451.470
DM043-PW	446767.870	5420318.930
DM044-PW	446811.010	5420321.360
DM045-PW	446834.050	5420285.420
DM046-PW	446850.500	5420280.780
DM047-PW	446818.380	5420453.520
DM050-PW	446902.900	5420309.190
DM059-PW	447028.920	5420602.520
DM061-PW	447096.950	5420648.260
DM063-PW	447334.100	5420971.390
DM064-PW	447286.310	5421163.980
EV001-PW	422461.400	5391534.320
EV002-PW	422494.880	5391672.000
EV003-PW	422506.570	5391490.490
EV005-PW	422602.540	5391707.410
EV008-PW	422711.840	5391652.400
EV010-PW	422649.660	5391526.430
EV011-PW	422760.550	5391459.870
EV012-PW	422812.860	5391570.920
EV013-PW	422903.750	5391591.040
EV015-PW	423072.390	5391621.230
EV018-PW	423348.470	5391683.160
EV022-PW	423611.560	5391700.890
EV023-PW	423863.420	5391827.940
EV024-PW	423912.680	5391859.420
EV026-PW	423831.850	5392163.500
EV027-PW	423866.180	5392023.500
EV032-PW	424200.900	5391990.060
EV036-PW	424412.550	5392096.400
EV037-PW	424267.840	5392315.540
EV038-PW	424510.020	5392193.370
EV043-PW	424733.520	5392703.960
EV044-PW	424996.420	5392737.250
EV046-PW	425173.300	5392793.050
EV048-PW	424636.080	5392927.630
EV049-PW	424687.690	5392941.890
EV051-PW	424659.540	5393066.690
EV052-PW	424617.180	5393165.360
EV054-PW	425056.100	5393187.960
EV057-PW	424820.590	5393493.930
EV059-PW	424553.850	5393581.720

Table 13. Porewater Sample Locations

Location ID	Coordinates - UTM (meters)	
	X Coordinate	Y Coordinate
EV060-PW	424563.290	5393683.580
EV063-PW	424891.810	5393897.950
EV064-PW	424642.820	5393930.690
EV065-PW	424462.560	5393916.010
EV066-PW	424473.460	5393993.730
EV069-PW	424427.600	5394124.640
EV071-PW	424434.190	5394266.330
EV072-PW	424379.400	5394306.770
EV075-PW	424383.010	5394451.900
REF001-PW	447483.040	5445987.180
REF002-PW	447491.690	5446069.320
REF003-PW	447864.560	5446885.350
REF004-PW	447850.550	5446937.860
REF005-PW	448589.510	5450162.930
REF006-PW	448652.540	5450145.720
REF007-PW	448723.070	5450208.670
REF008-PW	448615.270	5450240.990
REF009A-PW	448643.490	5450377.150
REF009-PW	448708.790	5450311.070
REF010-PW	448686.200	5450496.090
REF011-PW	451256.180	5453268.800
REF012-PW	451457.300	5453408.920
REF013-PW	435360.020	5466490.130
REF014-PW	435276.220	5466530.800
REF015-PW	435190.690	5466559.240
REF016-PW	418672.760	5492198.330
REF017-PW	418634.200	5492296.540
REF018-PW	418597.490	5492360.110
1-B5-NRT-PW	446376.600	5421109.880
1-B6-NRT-PW	446335.340	5421022.380
3-R7-2019-PW	430298.280	5407149.840
3-R8-2019-PW	429441.440	5407286.300
4-B1-2019-PW	424493.510	5393513.280
4-B6-2019-PW	423103.350	5391740.170
JS001-PW	430961.740	5407514.300
JS002-PW	431068.650	5407577.350

Appendix A

Health and Safety Forms

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 10/23/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Video Recon at Deadman's Eddy

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Northport Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [◐] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [◐] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [◐] Specialized PPE Needs
- [ ] [◐] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [◐] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
N/A	N/A

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stuart Holmes	Date 10/23/19 Time 1615

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Helmes AECOM		In & Fit 0830 SH	Out & Fit 1615 SH
J Weatherman CNTI		In & Fit 0830 JW	Out & Fit
Brandon Heaver CNTI		In & Fit 0830	Out & Fit
John Shade Gravity		In & Fit 0830 JS	Out & Fit
Gabriel Sedberry JACOBS		In & Fit 0800 GS	Out & Fit
Ryan Mc Gravity		In & Fit 0800 RM	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Anthony Palmieri

Date: 10.23.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Porewater Sampling in Evans AOI

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Anthony Palmieri	Anthony Palmieri	10.23.19 1347

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anthony Palmieri AECOM		In & Fit 0830 AP	Out & Fit
Brian Kleps CNF		In & Fit 0630	Out & Fit
Doug Scally CNF		In & Fit 0630	Out & Fit
Emma Rigby Gravity	Emma Rigby	In & Fit 0700 ER	Out & Fit
Bart Chachuda CMA		In & Fit 0700	Out & Fit
Lisa Peterink Jacobs		In & Fit 0630	Out & Fit
JOEL OVERZOW CMA		In & Fit 0630 JO	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit GAP

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: S. Holmes

Date: 10-22-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: 3 porewater locations, video CB022

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
China Beach Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe).

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

- [✓] Biological/ Chemical / Electrical Hazards
- [✓] Ergonomics - Lifting, Body Position
- [ ] [■] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [■] Simultaneous/ Neighbouring Operations
- [✓] Slip/ Trip/ Fall Hazards
- [ ] [■] Specialized PPE Needs
- [ ] [■] Traffic Control
- [✓] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [✓] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [✓] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [■] Other Topics (describe/attach):
- [✓] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
N/A	N/A

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stuart Holmes	10/22/19 1700

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM		In & Fit 0755 SH	Out & Fit 1700 SH
Doug Hadley CNT		In & Fit 0615 DH	Out & Fit
Josh Klepe CNT		In & Fit 0615	Out & Fit
JOEL GUERRERO CMA		In & Fit 0755 JG	Out & Fit
Bart Chadwick CMA		In & Fit 0755 BC	Out & Fit
Steve Cox USGS		In & Fit 755	Out & Fit
Lisa Raterink Jacobs		In & Fit 0755 LR	Out & Fit
Remi Trudeau GRAVITY		In & Fit 0630 R	Out & Fit
Emma Rigby Gravity	Emma Rigby	In & Fit 0630 ER	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Anthony Palmieri

Date: 10.22.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW @ Evans 030, 032, 038, 043

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Anthony Palmieri		10.22.19 / 1515

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your Initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anthony Palmieri AECOM		In & Fit AP 0730	Out & Fit JAP
Joss Hurst CMA		In & Fit JH 0730	Out & Fit
Ryan McElree Gravity		In & Fit RM 0730	Out & Fit
Brandon Hoover CWI		In & Fit 0730 BH	Out & Fit
John Schaefer Gravity		In & Fit 0730 JS	Out & Fit
J Weatherman CWI	CWI	In & Fit 0730 JW	Out & Fit
Gabe Solberry JACOBS		In & Fit 0800 GS	Out & Fit
Alan Sims CMA		In & Fit 0800 AJS	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 10-21-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: China Bend
RV Veti – porewater sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [x] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [■] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [■] Simultaneous/ Neighbouring Operations
- [x] Slip/ Trip/ Fall Hazards
- [■] Specialized PPE Needs
- [■] Traffic Control
- [x] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [■] Other Topics (describe/attach):
- [x] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
N/A

Describe Lessons Learned/ Improvement Areas from today:
N/A

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stu Holmes	10-21-19 1600

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM		In & Fit 0800 SH	Out & Fit 1600 SH
Doug Hadley CNI		In & Fit 0630	Out & Fit
Jordan Klopke CNI		In & Fit 0630	Out & Fit
JOEL GUERRERO CMA		In & Fit 0630	Out & Fit
Matt Chadwick CMA		In & Fit 0730 ML	Out & Fit
Lisa Ratering Jacobs		In & Fit 0730 LR	Out & Fit
René Trudeau GRAVITY		In & Fit 0630R	Out & Fit
Emma Rigby, Gravity		In & Fit 0630 ER	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Anthony Palmieri

Date: 10.21.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Pw e DME-036 + 038

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] Simultaneous/ Neighbouring Operations
- [x] Slip/ Trip/ Fall Hazards
- [ ] Specialized PPE Needs
- [ ] Traffic Control
- [x] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] Other Topics (describe/attach):
- [x] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Anthony Palmieri		10.21.19 1540

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anthony Palmieri AECOM		In & Fit 0800 AP	Out & Fit gap
Joss Moore CMT		In & Fit 0800 JM	Out & Fit
Alan Sims CMT		In & Fit 08.0 AS	Out & Fit
John Schafer		In & Fit 0800 JS	Out & Fit
Kym McFlieri		In & Fit 0800 KM	Out & Fit
Steve Cox CMT		In & Fit 800 SC	Out & Fit
Brandon Hoover CMT		In & Fit 0800 BH	Out & Fit
J Weatherman CMT		In & Fit 0800 JW	Out & Fit
Gabriel Selberg JACOBS		In & Fit 0800 GS	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Sarah Kintner

Date: 10·19·19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

PW sampling in Chimd Bend

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Sarah Kintner	Sarah Kintner	Date 10/19/19 Time 1709

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Sarah Kintner AECOM	Sarah Kintner	In & Fit CKK 0745	Out & Fit gap
Chris Ackerman CMA		In & Fit JEO CP	Out & Fit
Bart Chadwick CMA		In & Fit 0740 mc	Out & Fit
Lisa Ratering Jacobs		In & Fit 0740 LR	Out & Fit
Jordan Thorpe LNI		In & Fit 0615	Out & Fit
Doug Hadley CMI	Doug Hadley	In & Fit 0615 DHA	Out & Fit
Emma Rigby, Gravity	Emma Rigby	In & Fit 0630 ER	Out & Fit
René Trudeau GRAVITY		In & Fit 0630 R	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Anthony Palmer

Date: 10-19-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sampling in Deadman's Eddy. Safety obervations from yesterday & this morning: water on the road, water levels up - debris in water, complacency.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Linda M. Howard	Date 10-19-19 Time 1427

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda M Howard	In & Fit LH 0800	Out & Fit gap
Marilyn Gauthier Jacobs	MGauthier	In & Fit MG 0800	Out & Fit
Mike Duffield Gravity		In & Fit MJ 0800	Out & Fit
John Schaefer Gravity		In & Fit JS 0800	Out & Fit
Ryan McElrea Gravity		In & Fit RM 0800	Out & Fit
Ed Sha GRAVITY		In & Fit ES 800	Out & Fit
Mark Biser CMA		In & Fit 0800	Out & Fit
Alan Sims CMA		In & Fit 0800 AS	Out & Fit
BRIAN STROBEL CNI		In & Fit 0800	Out & Fit
Sh Holmes AECOM	Sh Holmes	In & Fit 0800 SH	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
DENNIS GROSS	CNI	0800		
@ Schernitzki	Geo Eng	0800		
J Weatherman	Weatherman CNI	0800		
Ragan Driver		0800		
Anthony Palmieri		0800		

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard

Date: 10-18-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sampling in Deadman's Eddy

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [■] Biological/ Chemical / Electrical Hazards
- [x] [x] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [x] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [x] [ ] Other Topics (describe/attach): Dark while driving, pedestrians, deer, elk, complacency, lifting, check boats equipment
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Linda M. Howard	10-18-19 1650

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda M Howard	In & Fit 0800 LMH	Out & Fit JAP
Ryan McElece Gravity	RJM	In & Fit 0800 RJM	Out & Fit
BRIAN STROBEL CNI	BJS	In & Fit 0800 BJS	Out & Fit
DENNIS GROSS/CNI	Dennis Gross	In & Fit 0800	Out & Fit
G Schernitzel	Geo Zbl	In & Fit 0800	Out & Fit
J Weatherman/CNI	JWeatherman	In & Fit 0800 JW	Out & Fit
John Schafer Gravity		In & Fit 0800 JS	Out & Fit
Ed Sloan Gravity	EJS	In & Fit 0800ES	Out & Fit
Mike Dobbelaar Gravity		In & Fit 0800 MD	Out & Fit
Stu Holmes AECOM	Stuart Holmes	In & Fit 0800 SH	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Anthony Palmieri	AECOM	0800 AP		
Ragan Briner	WCE	0800 RB		
Elle Anzinger	JACOBS	0800 EA		
Mark Biser	CMA	0800 MB		
Alan Sims	CMA	0800 AS		

10/18/19
pg 1/3

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Michelle Stagner

Date: 10/18/2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Shira Adrovel		Date 10-18-2019 Time 1625

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your Initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Michelle Stegner AECOM		In & Fit 8 am MS	Out & Fit JAP
Sarah Kantner Aecom		In & Fit 0745 SK	Out & Fit
Doug Hadley CNI		In & Fit 0620 DH	Out & Fit
Robert Tan EPA		In & Fit 8 am RT	Out & Fit
Jordan Kapp CWI		In & Fit 0620	Out & Fit
Chris Pladsen CMA		In & Fit 0735 CP	Out & Fit
Bart Chadwick CMA		In & Fit 0735	Out & Fit
Lisa Ratering Jacobs		In & Fit 0735	Out & Fit
Marlyn Gauthier Jacobs		In & Fit 800 MG	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Charlie Kellogg		In & Fit 0630 dk	Out & Fit JAP
Michaela McCoog AECOM		In & Fit 0700 MM	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0630 PJ	Out & Fit
Shira Debroux AECOM		In & Fit 0730 SD	Out & Fit
STEVE BRUCHMAN		In & Fit 0700 SB	Out & Fit
Eric Weatherman	E Weatherman	In & Fit 0700 E.W.	Out & Fit
René Trudeau GRAVITY		In & Fit 0630 RT	Out & Fit
Emma Rigby Gravity	Emma Rigby	In & Fit 0630 ER	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jeff Walker **Phone Number:**	
AECOM SH&E Rep. Name: Kelly Islam **Phone Number:**	
Meeting Leader: Michelle Brownell	

Date: 10/17/19 **Project Name/Location:** Creek Sediment Sample **Project Number:**

Today's Scope of Work:

Driving samples from Kettle Falls to Kelso
Return rental truck to Tukwila

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [ ] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [ ] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] ■ **Check ☑ as reviewed or mark ■ as not applicable**
- [ ] ■ Biological/ Chemical / Electrical Hazards
- [x] ☐ Ergonomics - Lifting, Body Position
- [ ] ■ Lock Out/ Tag Out

  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] ■ Simultaneous/ Neighbouring Operations
- [x] ☐ Slip/ Trip/ Fall Hazards
- [ ] ■ Specialized PPE Needs
- [ ] ■ Traffic Control
- [ ] ■ Waste Management/ Decontamination
- [x] ☐ Weather Hazards / Heat Stress / Cold Stress
- [ ] ■ Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [ ] ■ Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] ■ Other Topics (describe/attach):
- [ ] ☐ Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
	Jennifer Pretare	March 12, 2020

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Michelle Brownell AECOM	Michelle Brownell	In & Fit 6AM	Out & Fit
JD Brooks AECOM	JD Brooks	In & Fit 6AM	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard

Date: 10-17-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sampling in Deadman's Eddy

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today: None

Describe Lessons Learned/ Improvement Areas from today: none

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Linda M. Howard	10-17-19 1600

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda M Howard	In & Fit LH 0800	Out & Fit JAP
Ragan Driver, WCE		In & Fit 0800 RD	Out & Fit
Stu Holmes AECOM	Stuart Holmes	In & Fit 0800 SH	Out & Fit
GLEN MEJIA AECOM		In & Fit 0800 GM	Out & Fit
Alan Sims CMA		In & Fit 0800 ABS	Out & Fit
Mark Biser CMA		In & Fit 0800 A	Out & Fit
TAMARA KNUDSON	Tamara Knudson	In & Fit 0800 TK	Out & Fit
Ryan McElroy Gravity		In & Fit 0800 RM	Out & Fit
Eli Slem Gravity		In & Fit 0800	Out & Fit
John Smith Gravity		0800 JS	
Mike Duffield Gravity		In & Fit 0800 MD	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
J Weatherman	CNI	0800		
BRIAN STRODEL	CNI	0800		
C Schramm	CNI	0800		
DENNIS GROSS	CNI	0800		

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Anders Utter

Date: 10-17-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Data management, sample processing, general warehouse tasks; refill ethanol tanks, prep samples for shipment to ALS, transport dry Ice

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
China Bend Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

[✓]	Biological/ Chemical / Electrical Hazards
[✓]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[✓]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[✓]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[✓]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[✓]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[✓]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Safety observation- use dolly wherever possible to avoid strain

Describe Lessons Learned/ Improvement Areas from today:

N/A

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Michelle Stegner		Date 10-17-19 Time 5:30

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anders Utter AECOM	~~Anders Utter~~	In & Fit 0830 AU	Out & Fit JAP
Josie Smith AECOM	Josie Smith	In & Fit 0845 JAS	Out & Fit
DENISE YEE AECOM	Denise Yee	In & Fit 0830 DY	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

1

1/2

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Michaela McCoog

Date: 10-17-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment sampling & pw sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[■]	Check as reviewed or mark as not applicable
[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Michael	Michaela McCoog	10/17/19 1700

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
STEVE BRUCHMAN CNI		In & Fit 0730 SB	Out & Fit JAP
Marilyn Gunther		In & Fit 0700 MG	Out & Fit
Eric Weatherman	E. Weatherman	In & Fit 0730 E.W	Out & Fit
Shira DeGood AECOM		In & Fit 0730 SD	Out & Fit
CHRIS PLACEWAY CMA		In & Fit 0745 CP	Out & Fit
Bart Chadwick CMA		In & Fit 0745 BC	Out & Fit
Sarah Kintner	Sarah Kintner	In & Fit 0745 SGK	Out & Fit
Lisa Rakeriae Jacobs		In & Fit 0745 LR	Out & Fit
Robert Tan EPA		In & Fit 0745 RT	Out & Fit
Michelle Stegner AECOM		In & Fit 745 MS	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses: meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Michaela McCoog AECOM	Michaela McCoog	In & Fit 0615	Out & Fit JAP
Jordan Klappe CNI	Jordan Klappe	In & Fit 0615	Out & Fit
Doug Hadley CNI	Doug Hadley	In & Fit 0615 DH	Out & Fit
PETER JENKINS GRAVITY	Peter Jenkins	In & Fit 0630 PJ	Out & Fit
Charlie Tennis	Charlie Tennis	In & Fit 0630 CT	Out & Fit
René Trudeau GRAVITY	René Trudeau	In & Fit 0630 RT	Out & Fit
Emma Rigby, Gravity	Emma Rigby	In & Fit 0630 ER	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

1/2

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Michelle Stegner

Date: 10/16/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment and porewater sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Ø

Describe Lessons Learned/ Improvement Areas from today:
Ø

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Michelle Stegner		Date 10/16/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Michelle Steiger AECOM		In & Fit 8 AM MS	Out & Fit JAP
Mariela McCoy AECOM		In & Fit 8 AM	Out & Fit
Shira DeGood/AECOM		In & Fit 8 SD	Out & Fit
Sarah Kimmer	Sarah Kimmer	In & Fit 0830 SKK	Out & Fit
Lisa Katerine Jacobs		In & Fit 0800 LJ	Out & Fit
Emma Rigby, Gravity	Emma Rigby	In & Fit 0700 ER	Out & Fit
CHRIS PICKERELL		In & Fit 7:45 CP	Out & Fit
Doug Nadler CWI	Doug Nadler	In & Fit 06:00 AM	Out & Fit
Brandon Hoover CWI	Brandon Hoover	In & Fit 0600 am	Out & Fit
Charlie Kellogg		In & Fit 0650 CK	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
PETER JENKINS GRAVITY		In & Fit 0630 PJ	Out & Fit JAP
René Trudeau GRAVITY		In & Fit 0630 R	Out & Fit
SARAH KIMMER	Sarah Eic Kimmer	In & Fit 0745 SEKIC	Out & Fit
Bart Chadwick CMA		In & Fit 0745 BC	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 10.16.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Data management, sample processing, general warehouse tasks: refill ethanol tanks, prep samples for shipment to ALS.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

[✓]	Biological/ Chemical / Electrical Hazards
[✓]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[✓]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[✓]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[✓]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[✓]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[✓]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
N/A	N/A

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Josie Smith		Date 10-16-19 Time 1840

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM	Josie Smith	In & Fit 0930 JAS	Out & Fit 1840 JAS
Anders Utter AECOM	Anders Utter	In & Fit 0900 AU	Out & Fit 1840 AU
Denise Yee AECOM	Denise Yee	In & Fit 0910 DY	Out & Fit DY 1840
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda M. Howard

Date: 10.16.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Linda M Howard	Date 10-16-19 Time 1525

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda M. Howard	In & Fit 0800 LH	Out & Fit JAP
Mark Biser CMA		In & Fit 0800	Out & Fit
Alan Sims CMA		In & Fit 0800	Out & Fit
Marilyn Gauthier		In & Fit 0800	Out & Fit
Tamara Knudson	Tamara Knudson	In & Fit 0800	Out & Fit
Sky Holmes AECOM		In & Fit 0800 SH	Out & Fit
Ragan Driver WCE		In & Fit 0800 RD	Out & Fit
Glen Mejia AECOM		In & Fit 0800	Out & Fit
Mike Duffield Gravity		In & Fit 0800	Out & Fit
Ryan McElrea Gravity		In & Fit 0800	Out & Fit
ED SLOAN GRAVITY		0800	

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
J Weatherman	CNI	0800		
BRIAN STROBEL	CNI	0800		
DENNIS GROSS	CNI	0800		
George Schermerhorn		0800		

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jeff Walker
Phone Number:

AECOM SH&E Rep. Name: Kelly Isham
Phone Number:

Meeting Leader:

Date: 10/16/19	**Project Name/Location:** Teck Sediment Sample	**Project Number:**

Today's Scope of Work:
Driving rental refrigerator truck from Tukwila to Kettle Falls to pick up Sediment samples.

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
Truck		behind seat	N/A

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] N/A Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [ ] N/A Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

- [✓] Biological/ Chemical / Electrical Hazards
- [✓] Ergonomics - Lifting, Body Position
- [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] Simultaneous/ Neighbouring Operations
- [✓] Slip/ Trip/ Fall Hazards
- [ ] Specialized PPE Needs
- [ ] Traffic Control
- [ ] Waste Management/ Decontamination
- [✓] Weather Hazards / Heat Stress / Cold Stress (ice/rain while driving)
- [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] Other Topics (describe/attach):
- [ ] Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature** Jennifer Pretare	**Date** March 12, 2020 **Time** (at end of day / shift)

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Michelle Braunell AECOM	Michelle Braunell	In & Fit 6:15 AM MB	Out & Fit
JD Brooks AECOM		In & Fit 6:30 AM JDB	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Michelle Stegner

Date: 10.15.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Porewater sampling @ China Bed

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] Simultaneous/ Neighbouring Operations
- [x] Slip/ Trip/ Fall Hazards
- [ ] Specialized PPE Needs
- [ ] Traffic Control
- [x] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] Other Topics (describe/attach):
- [x] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Michelle Stegner	Jennifer Pretare for Michelle S.	Date 10.15.19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Lisa Ratering Jones		In & Fit 7:45 VL	Out & Fit JAP
Chris Ackerman		In & Fit 7:45 CP	Out & Fit
Bart Chadwick		In & Fit 745	Out & Fit
Sarah Kintner	Sarah Kintner	In & Fit 745 SEKIC	Out & Fit
Doug Hadley CNI	Doug Hadley	In & Fit 0600	Out & Fit
Shira DeGroot		In & Fit 0800 SD	Out & Fit
Marilyn Grow Hog		In & Fit 0800 MH	Out & Fit
Steve Brueckman		In & Fit 0730 SB	Out & Fit
Eric Weatherman	E. Weatherman	In & Fit 0730 EW	Out & Fit
Andrew Paynter/AECOM		In & Fit 0730	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Shannon Cook	AECOM	7:30		
Michael Steigner	AECOM	7:30		

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Emma Rigby, Gravity	Emma Rigby	In & Fit 0630 ER	Out & Fit JAP
Charlie Kellogg, Gravity		In & Fit 0630 CK	Out & Fit
René Trudeau GRAVITY		In & Fit 0630 RT	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0630 PJ	Out & Fit
		In & Fit 0630	Out & Fit
Michaela McGoog AECOM		In & Fit 0630 MM	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader:

Date: 10/15/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sampling in Dennamans Eddy

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach): Water temp drop. ↓ 11° ; earlier start time - school buses)
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Jennifer Pretare for Linda H.	Date 10/15/19 Time

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda M Howard	In & Fit 0500 LH	Out & Fit 1642 LH
Kris McCaig Teak	Kris McCaig	In & Fit 0800 KMc	Out & Fit
Reagan Driver, WCE	RD	In & Fit 0300 RD	Out & Fit
Glen Mejia AECOM	GM	In & Fit 0800 GM	Out & Fit
Steve Holmes AECOM	Steve Holmes	In & Fit 0800 SH	Out & Fit
Ryan McElrea Gravity	RM	In & Fit 0800 RM	Out & Fit 1700 RM
Mike Duffield Gravity		In & Fit 0830 MD	Out & Fit
Ed Stone Gravity		In & Fit 0800	Out & Fit
TAMARA KNUDSON		In & Fit 0800	Out & Fit
BRIAN STROBEL CNI		0800	
John Schuetz Gravity		In & Fit 0800 JS	Out & Fit 1700 JS
DENNIS GROSS CNI		0800	

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
J Weatherwax	CNI	0800 JW		
George Schuetz	Gravity	0800		
Alan Sims	CMA	0800 AS	1650 AS	
Mark Bisor	CMA	0800 MB	1650 MB	
Rob Ostrick		0800 RO		
Elle Anzinger	JACOBS	1015	1650	

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard

Date: 10.14.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sampling in Deadman's Eddy.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today: Safety observations: Sunscreen, safety glasses, 2 people on anchors

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda M. Howard	Linda Howard	Date 10/14/19 Time 1645

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda Howard	In & Fit 0830 LH	Out & Fit 1640 LH
Ryan McElree Gravity	Ryan McElree	In & Fit 0830 RM	Out & Fit
John Schaefer Gravity		In & Fit 0830 JS	Out & Fit
Ragan Driver WCE		In & Fit 0830 RD	Out & Fit
Michael Duffield / Gravity		In & Fit 0830 MD	Out & Fit
Stu Holmes AECOM	Stuart Holmes	In & Fit 0830 SH	Out & Fit
BRIAN STROHEL CNI		In & Fit 0830 BS	Out & Fit
ED SLOAN GRAVITY		In & Fit 0830 ES	Out & Fit
George Schrantz	George Schrantz	In & Fit 8 AM	Out & Fit
GLEN MEJIA		In & Fit 0830 GM	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
DENNIS GROSS	CNI	0800 AM		
Mark Bisio	CMA	0800 AM	1645 PM	
Alan Sims	CMA	0800 ABS	1645 PM	
Elle Anzinger	JACOBS	0800 EA	1642	
J Weatherman	CNI	0800 JW		

AECOM

Ingalls 10/14/19

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) **certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:**

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Lisa Ratering / Jacobs		In & Fit 0730 LR	Out & Fit
Tamara Knudson / Spokane Tribe	Tamara Knudson	In & Fit 0730 TK	Out & Fit
Kris McCaig / Teck	Kris McCaig	In & Fit 0730 KM	Out & Fit
Chris Packman / CMA		In & Fit 0730 CP	Out & Fit
Bart Chadwick / CMA		In & Fit 0730 BC	Out & Fit
Michaela McCloog AECOM		In & Fit 0730 MM	Out & Fit
Michelle Stegner AECOM		In & Fit 0730 MS	Out & Fit
Rene Trudeau GRAVITY		In & Fit 0555 R	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Doug Hadley CNI	Doug Hadley	In & Fit 0600 DHC	Out & Fit
Jordan Keefe CNI		In & Fit 0600 JK	Out & Fit
Eric Weatherman CNI	E. Weatherman	In & Fit 0700 EW	Out & Fit
Steve Beuchaw CNI		In & Fit 0630 SB	Out & Fit
Emma Rigby, Gravity	Emma Rigby	In & Fit 0600 ER	Out & Fit
Shira DeGrood, AECOM		In & Fit 0700 SD	Out & Fit
Charlie Kellogg Guernsey		In & Fit 0800 CK	Out & Fit
PETER JENKINS		In & Fit 0630 PJ	Out & Fit
SARAH KINMAN	Sarah Kinman	In & Fit 0600 SEICH	Out & Fit
Rob Orr		In & Fit 0730 RO	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Michelle Stegner

Date: 10/9/2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: freeze grabs, be careful getting onto boat - awkward location, work space awareness, dry ice

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

ϕ

Describe Lessons Learned/ Improvement Areas from today:

ϕ

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Michelle Stegner		Date 10/9/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda M. Howard	In & Fit 0631	Out & Fit JAP
Michelle Stegner AECOM		In & Fit 730 MS	Out & Fit
Michaela McCoog	Michaela McCoog	In & Fit 730 MM	Out & Fit
Jeff Schut Gravity		In & Fit 0615 JS	Out & Fit
Eric Weatherman	E. Weatherman	In & Fit 0630 E.W	Out & Fit
STEVE BRUCHMAN		In & Fit 0630 SB	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0630 PJ	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Elle Anzinger	JACOBS	0811		

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 10-14-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Drive porewater samples to Spokane warehouse operations, data management

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Foggy conditions, drive with lights on.

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
[signature]	DENISE YEE	10/14/19 1900

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM	Josie Smith	In & Fit 0915 JAS	Out & Fit 1850 JAS
Denise Yu AECOM	Denise Yu	In & Fit 0915 DY	Out & Fit 1850 DY
Anders Utter AECOM	Anders Utter	In & Fit 1018	Out & Fit 1850 AU
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Hamad

Date: 10/12/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sediment Sampling w/ Hamon

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Hamad	Linda Hamad	10/12/2019

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Michelle Stegner AECOM		In & Fit 8am MS	Out & Fit 1630 MS
Michaela McCoog AECOM		In & Fit MM 8am	Out & Fit 1630 MM
Linda Howard AECOM	Linda Howard	In & Fit LH. 0800	Out & Fit 1630 LH
STEVE BRUCHMAN		In & Fit 0730 SB	Out & Fit
Elle Amzinger		In & Fit 0730	Out & Fit 1630
Eric Weatherman	E. Weatherman	In & Fit 0730 EW	Out & Fit
PETER JENKINS		In & Fit 0700 PJ	Out & Fit
Jeff Schul		In & Fit 0700 JS	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: J. Pretare

Date: 10-12-19 **Project Name/Location:** Phase 3 Sediment Sampling **Project Number:** 60612698

Today's Scope of Work: PW sampling at CB CBQ47 first

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss. unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[■]	Check [x] as reviewed or mark [■] as not applicable
[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Jenny Pretare		10.12.19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness. injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Emma Rigby, Gravity	Emma Rigby	In & Fit 0630 ER	Out & Fit JAP
Doug Hadley CNI	Doug Hadley	In & Fit 0615	Out & Fit
Nicole Badon Jacobs		In & Fit 0815	Out & Fit
Chris Placerson CNA		In & Fit 0800 CP	Out & Fit
Joss Moore CNA		In & Fit 0810 JM	Out & Fit
Sarah Kuntner Aecom	Sarah Kuntner	In & Fit 0700 & SRK	Out & Fit
Jenny Pretare AECOM		In & Fit 1830 JP	Out & Fit
René Trudeau GRAVITY		In & Fit R 0630	Out & Fit
Jordan Klippe		In & Fit 0630	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hosk

Date: 10/12/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment and Porewater Sampling in Deadmans Eddy Brook

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
North Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Opening day of Madawaska Gun Deer Season. Two shots heard during Tailgate Meeting.

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hosk	David R. Hosk	Date 10/12/19 Time 1700

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hosie / AECOM	David R. Hosie	In & Fit 0830 DH	Out & Fit 1630 DH
Alan Sims CMA		In & Fit 0830 AS	Out & Fit 1700 DH
Anders Utter AECOM	Anders UA	In & Fit 0830 AU	Out & Fit 1700 DH
John Schaefer / Gravity		In & Fit 0830 JS	Out & Fit 1700 DH
Ragan Driver / WCE		In & Fit 0830 RD	Out & Fit 1630 DH
Karla Savage / Jacobs		In & Fit 0830 KS	Out & Fit 1630 DH
Chris Smith CMA		In & Fit 0830 CS	Out & Fit 1700 DH
DENNIS GROSS / CNI		In & Fit 0830	Out & Fit 1630 DH
Ed Stone Grady		In & Fit 0930	Out & Fit 1630 DH
J. Weatherman	J Weatherman	In & Fit 0830 JW	Out & Fit 1700 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
George Scherwitzki		In & Fit 0300	Out & Fit 1620 DH 1700
BRIAN STROBEL CNI		In & Fit 0800	Out & Fit 1700 DH
Glen Mejia		In & Fit 0700	Out & Fit 1620 DH
Mike Duffield		In & Fit 0800 MD	Out & Fit 1620 DH
Larry LeSueur		In & Fit 0800 LL	Out & Fit 1700 DH
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting – Warehouse

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 10/12/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Project supplies handling, procurement; delivery to sampling crews; sample receiving/processing

Data input, management, + communications

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Denise Yee	[signature]	10/12/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Al Thatcher / AECOM		In & Fit ats. 0910	Out & Fit JAP
Denise Yee / AECOM		In & Fit DY 0900	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting - Warehouse

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 11 Oct 2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: AlT. +Chelsey G transporting BMI samples to EcoAnalyst lab, meeting in Spokane. Denise Y. and Sarah K at whse: supplies inventory, distribution + procurement; sample kit preparation, communication with vessel sampling staff + project mgt. Data entry, forms processing, Sharepoint update

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher	Al Thatcher	12 Oct 19 / 19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Al Thatcher / AECOM	AT Thatcher	In & Fit AT 0900	Out & Fit AT 1851
Denise Yee / AECOM	DY	In & Fit DY 0900	Out & Fit DY 1910
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard

Date: 10-11-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
sediment sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Linda M. Howard	10-11-19 / 0730

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Eric Weatherman CNI	E Weatherman	In & Fit 0730 EW	Out & Fit
STEVE BRUCHMAN CNI		In & Fit 0730 SB	Out & Fit
Elle Anzinger		In & Fit 0730	Out & Fit
Linda Howard	Linda M. Howard	In & Fit 0730 LH	Out & Fit 1445 LH
Jeff Schut		In & Fit 0730 JS	Out & Fit 1730 JS
Michelle Steigner		In & Fit 0730 MS	Out & Fit 1730 MS
PETER JENKINS GRAVITY		In & Fit 0645 PG	Out & Fit 1730 PG
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: J. Pretare

Date: 10-11-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW sampling @ China Bend
JS001 JS002 CB007

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
None
Noted train at unguarded RR crossing

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
J Pretare		10-11-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Doug Hadley CNI	Doug Hadley	In & Fit 0615 DH	Out & Fit 1700 DH
Nicole Bacon, Jacobs	Nicole Bacon	In & Fit 0810 NB	Out & Fit
Joss Moore, CMA		In & Fit 0810 JM	Out & Fit
CHRIS ACKERSON, CMA		In & Fit 0610 CA	Out & Fit
Emma Rigby, Grantly	Emma Rigby	In & Fit 0630 ER	Out & Fit
John Kapp		In & Fit 0615	Out & Fit
Rene Tudeau GRNFTT		In & Fit 0630 RT	Out & Fit
J. Prefure AECOM		In & Fit 0810	Out & Fit ✓
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hoss

Date: 10/1/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment and Porewater Sampling in Deadmans Eddy Area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] Simultaneous/ Neighbouring Operations
- [x] Slip/ Trip/ Fall Hazards
- [ ] Specialized PPE Needs
- [ ] Traffic Control
- [x] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] Other Topics (describe/attach):
- [x] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
Icy surfaces to start in morning Came moving gear on dock	

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hoss	David B. Hoss	Date 10-11-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hose / AECOM	David R. Hose	In & Fit 0830 DH	Out & Fit 1600 DH
Kaila Savage / Jacobs	K E S	In & Fit 0830 KS	Out & Fit 1700 DH
John Schuster / Gravity		In & Fit 0830 JS	Out & Fit 1700 DH
Joe Wichman / CCL	Joe Wichman	In & Fit 8:30 JW	Out & Fit 1600 DH
DENNIS GROSS / CNI		In & Fit 830	Out & Fit 1600 DH
George Schernitzki		In & Fit 930	Out & Fit 1600 DH
J. Weatherman / CWI	J Weatherman	In & Fit 0830 JW	Out & Fit 1700 DH
E. Sen / Gravity		In & Fit 0830 ES	Out & Fit 1600 DH
BRIAN STROJEC		In & Fit 0536 BS	Out & Fit 1700 DH
Larry LaSueur		In & Fit 830 LL	Out & Fit 1700 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Ragan Drive / WCE		In & Fit 0830 RD	Out & Fit 1600 RD
Anders Utter / AECOM		In & Fit 0830 AU	Out & Fit 1700 AU
Glen Meyer / AECOM		In & Fit 0830 GM	Out & Fit 1600 GM
Alan Sims CMA		In & Fit 0830 AS	Out & Fit 1700 AS
Mike Duffield Grant		In & Fit 0830 MD	Out & Fit 1600 MD
Chris Smith CMA		In & Fit 0830 CS	Out & Fit 1700 CS
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Ken Yang
Phone Number: 206-390-0074

AECOM SH&E Rep. Name: Ken Yang
Phone Number: 206-390-0074

Meeting Leader: Ken Yang

Date: 10/ /d19	Project Name/Location: UCR	Project Number: 60612698

Today's Scope of Work:

drive the truck from colville to Kelso, unload soil samples back to Tukwila, then Seattle

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
in Truck	In Truck	In Truck	

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [x] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [ ] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

- [ ] [■] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [■] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [■] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [■] Specialized PPE Needs
- [ ] [■] Traffic Control
- [ ] [■] Waste Management/ Decontamination
- [x] [ ] Weather Hazards / Heat Stress / Cold Stress
- [ ] [■] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [ ] [■] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [ ] [ ] Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

heavy fog on some section.

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time
Ken Yang	Kenyang	Date 10/10/2019 Time (at end of day / shift) 7:00pm

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Ken Yang, AECOM	KY	In & Fit 6:00am KY	Out & Fit 7:00pm KY
Dave Lewis, AECOM		In & Fit 6:00am	Out & Fit 7:00pm DL
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting – Warehouse

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 10 Oct 2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Materials handling, inventory, ordering, sample receiving/processing, Kits assembly, communications with Sampling vessel staff + project manager
Data entry, forms processing, driving BMI samples to Moscow, ID

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] Simultaneous/ Neighbouring Operations
- [x] Slip/ Trip/ Fall Hazards
- [ ] Specialized PPE Needs
- [ ] Traffic Control
- [x] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach).
- [ ] Other Topics (describe/attach):
- [x] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Observations: 10/10

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher	Al Thatcher	10 Oct 19 / 2100

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
DENISE YEE AECOM		In & Fit DY 0900	Out & Fit
Al Thatcher / AECOM		In & Fit AT 0900	Out & Fit AT 2100
Chelsey Cook AECOM		In & Fit 0700 CRC	Out & Fit
Sarah Kintner		In & Fit 0700 SEKK	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard

Date: 10-10-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sediment sampling, plan to head to JS001 & JS002 first.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today: make sure to put PFD back on after changing coats, transfer between boats.

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Linda Howard	Date 10-10-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard, AECOM	Linda M. Howard	In & Fit LH. 0830	Out & Fit 1700 LH.
Michaela McCoog AECOM	Michael McCoog	In & Fit MM 0830	Out & Fit
Michelle Stegner	MS	In & Fit MS 8:30	Out & Fit 1701 MS
Jeff Schut	JS	In & Fit JS 0700	Out & Fit 1700 JS
PETER JENKINS GRAVITY	PJ	In & Fit 0645 PJ	Out & Fit 1700 PJ
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Elle Ameringer	JACOBS	0815 EA		Elle Ameringer
Alan Oisen	CCT	0830		Alan Oisen

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: J. Pretare

Date: 10-10-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW sampling at China Bend on RV Yeti

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Jenny Pretare		10-10-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Doug Hadley CNT		In & Fit 0630 DH	Out & Fit 1800 J.P
Jordan Burke		In & Fit 0630	Out & Fit
Emma Rigby		In & Fit 0630 ER	Out & Fit
CHRIS PICKEREL		In & Fit 0800	Out & Fit
Joss Moore CMA		In & Fit 0800 JM	Out & Fit
Rene Tudeau GRAVITY		In & Fit 0630 RT	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0645 PJ	Out & Fit
Michaela McCoog AECOM		In & Fit 0830 MM	Out & Fit
Linda Howard		In & Fit 0830 LH.	Out & Fit
AREN ORSEN CCT		In & Fit 0930 AO	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Michelle Stegner	AECOM	8 30		
Elle Anzinger	JACOBS	0815		
Nicole Badon	Jacobs	0745 NB		
Eric Weatherman	CNT	0730		
STEVE BRADMAN	CMI	0730		

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hose

Date: 10/10/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment and Porewater Sampling in Deadmans Eddy Area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	■	Biological/ Chemical / Electrical Hazards
☑	☐	Ergonomics - Lifting, Body Position
☐	☐	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
☐	☐	Simultaneous/ Neighbouring Operations
☑	☐	Slip/ Trip/ Fall Hazards
☐	☐	Specialized PPE Needs
☐	☐	Traffic Control
☑	☐	Waste Management/ Decontamination
■	☐	Weather Hazards / Heat Stress / Cold Stress
☑	☐	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	☐	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	☐	Other Topics (describe/attach):
☑	☐	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Icy Dock in the morning

Describe Lessons Learned/ Improvement Areas from today:

Walked Supplies down Boat launch to avoid sloped Dock Ramp

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hose	David R. Hose	Date 10/10/19 Time 1630

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hose / AECOM		In & Fit 0800 DH	Out & Fit 1630 DA
Glen Meju AECOM		In & Fit 0800 GM	Out & Fit 1630 DA
Anders Utter AECOM		In & Fit 0800 AU	Out & Fit 1630 DA
Chris Smith CMA		In & Fit 0800 CS	Out & Fit 1630 DA
Alan Sims CMA		In & Fit 0800 AS	Out & Fit 1630 DA
BRIAN STROBEL CNI		In & Fit 0800 BS	Out & Fit 1630 DA
J. Weatherman / CNI		In & Fit 0800 JW	Out & Fit 1630 DA
DENNIS GROSS / CNI		In & Fit 0800	Out & Fit 1630 DA
George Schernitzki		In & Fit 0800	Out & Fit 1630 DA
Ed Stan / Gravity		In & Fit 0800	Out & Fit 1630 DA

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Mike Duffield / Gravity		In & Fit 0930 MD	Out & Fit 1630 MD
Casey LeVeur / Gravity		In & Fit 0830 CL	Out & Fit 1630 MD
John Schafer / Gravity		In & Fit 0830 JS	Out & Fit 1630 MD
Ragan Driver / WCE		In & Fit 0830 RD	Out & Fit 1630 MD
Shawn Roark / Jacobs		In & Fit 0830 SAR	Out & Fit 1630 MD
Karla Savage / Jacobs		In & Fit 0830 KS	Out & Fit 1630 MD
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: J. Pretare

Date: 10-9-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW sampling in Evans
EVD15, EVD20

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Evans Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

[✓]	Biological/ Chemical / Electrical Hazards
[✓]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[✓]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[✓]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[✓]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[✓]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[✓]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today: wind picked up late yesterday.
0630 - Boat crew saw small snowflakes at Kettle Falls launch

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
J. Pretare		10-9-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Emma Rigby, Gravity	Emma Rigby	In & Fit 0630 ER	Out & Fit 1530 JP
Nicole Badon, Jacobs		In & Fit 0820 NB	Out & Fit
Doug Nadler CNI		In & Fit 0700 DN	Out & Fit
Josh Klopp		In & Fit 0700	Out & Fit
René Trudeau		In & Fit 0630 R	Out & Fit
CHRIS PICKERELL		In & Fit 8:20	Out & Fit
Joss Moore		In & Fit 0820 JM	Out & Fit
Jenny Preture		In & Fit 0830 JP	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting – Warehouse

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 9 Oct 2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Materials inventory, procurement, distribution; Sample processing, kits preparation; communications with sampling vessel staff + proj. mgt.
Data entry, forms processing,

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Observation: Utilized portable lights/headlamps when sample processing in outdoor area to package into sample delivery vehicles

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher	[signature]	9 Oct 19 / 1930

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Al Thatcher / AECOM	AGT Thatcher	In & Fit AGT 0910	Out & Fit AGT 1930
DENISE YEE AECOM	[signature]	In & Fit DY 0910	Out & Fit DY 1930
Chelsey Cook AECOM	[signature]	In & Fit CRC 0910	Out & Fit
Sarah Kuhner	Sarah Kuhner	In & Fit SEICK 0910	Out & Fit 1930 SEICK
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Ken Yang
Phone Number: 206-390-0074

AECOM SH&E Rep. Name: Ken Yang
Phone Number: 206-390-0074

Meeting Leader: Ken Yang

Date: 10/9/19	Project Name/Location: UCR	Project Number: 60612698

Today's Scope of Work:

Driver a ref truck from Tukwila to Kettle Falls, WA

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
in Truck	In Truck	In Truck	

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [x] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [ ] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] **Check [✓] as reviewed or mark [■] as not applicable**
- [ ] [■] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [■] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [■] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [■] Specialized PPE Needs
- [ ] [■] Traffic Control
- [ ] [■] Waste Management/ Decontamination
- [x] [ ] Weather Hazards / Heat Stress / Cold Stress
- [ ] [■] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [ ] [■] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [ ] [ ] Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time
Ken Yang	Ken Yang	Date 10/9/2019 Time (at end of day / shift) 7:45 am

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Ken Yang, AECOM	[signature]	In & Fit Y 6:15 am	Out & Fit Y 7:45 PM
DAVE LEWIS aecom	DL	In & Fit 06:15 DL	Out & Fit DL 7:45 PM
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Michaela McCoog

Date: 10-9-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sediment Sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linh Howard	Linda Mathews	Date 10-9-19 / Time 1645

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
STEVE BRUCHMAN CNI		In & Fit 730 SB	Out & Fit
Eric Weatherman CNI	E. Weatherman	In & Fit 0730 E.W.	Out & Fit
Linda Howard AECOM	Linda M Howard	In & Fit 0900 LH	Out & Fit LH 1645
Jeff Schut Gravity		In & Fit 0730 JS	Out & Fit
Michelle Stegner AECOM		In & Fit 730 MS	Out & Fit MS 1645
PETER JENKINS GRAVITY		In & Fit 0730 PJ	Out & Fit
Michaela McCoog AECOM		In & Fit 0730 MMM	Out & Fit MMM 1645
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Elle Anzinger	JACOBS	0815		

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hose

Date: 10/9/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment And Porewater Sampling in Deadmans Eddy Area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Northport Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

[x]	[■] Check [✓] as reviewed or mark [■] as not applicable
[x]	[ ] Biological/ Chemical / Electrical Hazards
[x]	[ ] Ergonomics - Lifting, Body Position
[ ]	[ ] Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ] Simultaneous/ Neighbouring Operations
[x]	[ ] Slip/ Trip/ Fall Hazards
[ ]	[ ] Specialized PPE Needs
[ ]	[ ] Traffic Control
[x]	[ ] Waste Management/ Decontamination
[■]	[ ] Weather Hazards / Heat Stress / Cold Stress
[x]	[ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ] Other Topics (describe/attach):
[x]	[ ] Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
None	

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hose	David A. Hose	Date 10/9/19 Time 1704

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hose / AECOM	David P. Hose	In & Fit 0830 DH	Out & Fit 1704 DH
Glen Myers / AECOM		In & Fit 0830 GM	Out & Fit 1704 DH
Ragan Driver / WCE		In & Fit 0830 CD	Out & Fit 1704 DH
Joe Wichmann / CCC		In & Fit 0830 JW	Out & Fit 1704 DH
Tamara Knudson / STI	Tamara Knudson	In & Fit 830 AK	Out & Fit 1704 DH
J Weatherman / CWI	J Weatherman	In & Fit 0830 JW	Out & Fit 1704 DH
Shawn Rourke / Jacobs		In & Fit 0830 SR	Out & Fit 1704 DH
Ed Slon / Graig		In & Fit 0830 ES	Out & Fit 1704 DH
Mike Duffield		In & Fit 0830 MD	Out & Fit 1704 DH
Larry LeSueur		In & Fit 0830 LL	Out & Fit 1704 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
John Schaefer - Glaus		In & Fit 0830 JS	Out & Fit 1704 JA
Anders Vater - AECOM		In & Fit 0830 AV	Out & Fit 1704 JA
DENNIS GROSS		In & Fit 08:30	Out & Fit 1704 JA
George Schernitzki		In & Fit 8:30	Out & Fit 1704 JA
BRIAN STRODEL CNI		In & Fit 0830	Out & Fit 1704 JA
Alan Sims CMA		In & Fit 0930 ~~955~~	Out & Fit 1704 JA
Chris Smith CMA		In & Fit 0830 CS	Out & Fit 1704 JA
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hosé

Date: 10-8-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment and Porewater Sampling in The Dorchman Eddy Area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hosé	David Hosé	10/8/19 1630

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hosie / AECOM		In & Fit 0730 DH	Out & Fit 1615 DH
Ed Slon / Gravity		In & Fit 0730 ES	Out & Fit 1615 DH
Chris Smith CMA		In & Fit 0730 CS	Out & Fit 1650 DA
Alan Sims CMA		In & Fit 0730 AS	Out & Fit 1650 DA
Mike Duffield		In & Fit 0730 MD	Out & Fit 1615 DA
Larry LaSueur / Gravity		In & Fit 0730 LA	Out & Fit 1650 DA
John Schaefer / Gravity		In & Fit 0730 JS	Out & Fit 1650 DA
J. Weatherman / CNI	CNI	In & Fit 0730 JW	Out & Fit 1650 DA
BRIAN STROBEL / CNI		In & Fit 0730 B.S	Out & Fit 1650 DA
George Schernitzki		In & Fit 0730	Out & Fit 1615 DA

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
DENNIS GROSS		In & Fit 07:30	Out & Fit 1615 DG
Tamara Knudson / STI	Tamara Knudson	In & Fit 7:30	Out & Fit 1615 TK
Anders Utter AECOM	~~Anders~~ ~~Utter~~	In & Fit 0730 AU	Out & Fit 1650 AU
Glen Meyer AECOM		In & Fit 0730 AM	Out & Fit 1615 GM
Ragan Driver WCE		In & Fit 0730	Out & Fit 1615 RD
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: J. Pretare

Date: 10-8-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: porewater sampling in Evans AOI.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Evans Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:
3 people sick after long weekend! Cold + flu season has started.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Jenny Pretare		Date 10-8-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Doug Hadley CMI	Doug Hadley	In & Fit 0615 DH	Out & Fit 1600 DD
Joshua Hare		In & Fit 0605	Out & Fit
Joss Mouré		In & Fit 0730 JM	Out & Fit
René Trudeau		In & Fit 0615 R	Out & Fit
CHRIS PICKEREL		In & Fit 0730	Out & Fit
Emma Rigby	Emma Rig	In & Fit 06:15 ER	Out & Fit
Nicole Badon		In & Fit 0730 NB	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 8 Oct 2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Bring BMI samples to Spokane for hand off to EcoAnalyst Lab, pickup Sarah K @ airport
Check samples in storage
Inventory + forms

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Warehouse ~~Boat Launch~~	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Observation: Since dry ice being stored in refrig truck, will have 2 staff present when checking temp inside refrig truck. Staff person entered refrig compartment of truck, moved to free standing thermometer near middle of truck & took a breath that seemed non-productive. While moving towards the open door to exit, drew 2 more

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher	Al Thatcher	Date 8 Oct 2019

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

Similar breaths. Once lift gate outside truck was reached, breathing returned to normal.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Sarah Kuntner	Sarah Kuntner	In & Fit SEKIC 3:30	Out & Fit JAP
AI Thatcher / AECOM	AI Thatcher	In & Fit AT 330	Out & Fit
DENISE YEE / AECOM		In & Fit DY 401	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 10-4-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Dave Lewis driving to Spokane to p/u Nitrogen gas. Data Management + Sample processing

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Josie Smith	Jennifer Pretare for Josie S.	Date 10.4.19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM		In & Fit 0830 JS	Out & Fit 1845 JS
Mason Struna		In & Fit 0830 MS	Out & Fit 1845 MS
DAVE LEWIS		In & Fit 0600 DL	Out & Fit 840pm DL
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Nicky Moody

Date: 10 | 4 | 2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment sampling at China Bend
- Freeze grab.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody	Jennifer Pretare for Nicky M.	Date 10.4.19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicky Moody AECOM		In & Fit NM 0800	Out & Fit 1745 NM
DENNIS GROSS		In & Fit 07:00	Out & Fit 1730 DG
George Schermitzler		In & Fit 0700	Out & Fit 1730 GS
Brad Sapka Ecological Risk		In & Fit 0746 BES	Out & Fit 1615 BES
Jeff Schut Gravity		In & Fit 0700 JS	Out & Fit 1700 JS
PETER JENKINS GRAVITY		In & Fit 0700 PJ	Out & Fit 1700 PJ
Anisa Sheppherd-Becker	Anisa QS Becker	In & Fit 08:00 AQSB	Out & Fit AQSB. 1715
Andy Chatterton		In & Fit 0800 ac	Out & Fit 1715 ac
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: JENNIFER RAY

Date: 10/4/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
PW sampling at EVANS A01

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
JENNIFER RAY		Date 10/4/19 Time 1730

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
JENNIFER RAY AECOM		In & Fit 0630 JR	Out & Fit 1700 JR
JOEL GUERRERO CMA		In & Fit 0630 JHy	Out & Fit 1600 JHy
JOSS MOORE CMA		In & Fit 0730 JM	Out & Fit ~~1530~~ 1600 JM
Ryan McElwee Gravity		In & Fit 0630 RM	Out & Fit 1550
René Trudeau GRAVITY		In & Fit 0615 R	Out & Fit 1550
Jordan		In & Fit 0600	Out & Fit 1600
Doug Hadley		In & Fit 0600	Out & Fit 1600
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hoss

Date: 10/4/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment and Bioassay Sampling in Grenville Area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	☐	Biological/ Chemical / Electrical Hazards
☑	☐	Ergonomics - Lifting, Body Position
☐	☐	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
☐	☐	Simultaneous/ Neighbouring Operations
☑	☐	Slip/ Trip/ Fall Hazards
☐	☐	Specialized PPE Needs
☐	☐	Traffic Control
☑	☐	Waste Management/ Decontamination
■	☐	Weather Hazards / Heat Stress / Cold Stress
☑	☐	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	☐	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	☐	Other Topics (describe/attach):
☑	☐	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Added Spikes to Honor Grab 50
Required Much More Care To Place in Creek

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hoss	David R. Hoss	Date 10/4/19 Time 1315

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
J Weatherman CWI	J Weatherman	In & Fit JW 0700	Out & Fit 1315 LOA
BRIAN STROBEL CWI	BS	In & Fit 0700 BS	Out & Fit 1315 LOA
Paul Hamidi AECOM	Paul Hamidi	In & Fit 0700 PH	Out & Fit 1315 LOA
STEVE BRUCKMAN	SB	In & Fit 0700 SB	Out & Fit 1315 LOA
Chris Smith	CS	In & Fit 0730 CS	Out & Fit 1315 LOA
Mark Biser	CMA	In & Fit 0730 MB	Out & Fit 1315 LOA
Eric Weatherman	E. Weatherman	In & Fit 0730 E.W.	Out & Fit 1315 LOA
John Schaefer Gruity	JS	In & Fit 0730 JS	Out & Fit 1315 LOA
CLIFFORD J. PEARSON AECOM	CP	In & Fit 0730 CP	Out & Fit 1315 LOA
Shawn Roark Jacobs	SR	In & Fit 0730 SR	Out & Fit 1315 LOA

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicole Badon / Jacobs		In & Fit 0730 NB	Out & Fit 1315 LOA
Chad Furlie Gravity		In & Fit 0730 CF	Out & Fit 1315 LOA
Mike Duffield Gravity		In & Fit 0730 MD	Out & Fit 1315 LOA
MARK HALE AECOM		In & Fit 0730 MH	Out & Fit 1315 LOA
Maggie McKeon Gravity		In & Fit 0730 MAM	Out & Fit 1315 LOA
David Hoss / AECOM		In & Fit 0730 DH	Out & Fit 1315 LOA
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David R. Hosé

Date: 10/03/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment and Porewater Sampling in Grenville Area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

[x]	[■]	**Check [✓] as reviewed or mark [■] as not applicable**
[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hosé	David R. Hosé	Date 10/03/19 Time 1730

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hosie / AECOM	David R. Hosie	In & Fit 0730 DH	Out & Fit 1730 DH
Maggie Mahan Grouty		In & Fit 0730 MMG	Out & Fit 1730 DH
Michael Duffield Grouty		In & Fit 0730 MDG	Out & Fit 1730 DH
Paul Hamidi	Paul Hamidi	In & Fit 0730 PH	Out & Fit 1730 DH
Shawn Roark / Jacobs	Shawn A Roark	In & Fit 0730 SAR	Out & Fit 1730 DH
Nicole Badon / Jacobs	Nicole Badon	In & Fit 0730 NB	Out & Fit 1730 DH
CLIFFORD J. PEARSON AECOM	Clifford J Pearson	In & Fit 0730 CP	Out & Fit 1730 DH
MARK HALT / AECOM	Mark Halt	In & Fit 0730 MH	Out & Fit 1730 DH
Chris Smith CMK	Chris Smith	In & Fit 0730 CS	Out & Fit 1730 DH
STEVE BRUCHMAN CNI	Steve Bruchman	In & Fit 0730 SB	Out & Fit 1730 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Eric Weatherman	EWeatherman	In & Fit 0700 E.W	Out & Fit 1730 KH
BRIAN STRODEL		In & Fit 0700 B.S.	Out & Fit 1730 KH
J Weatherman	JWeatherman	In & Fit 0700 JW	Out & Fit 1730 KH
Mark Bisco		In & Fit 0700 MB	Out & Fit 1730 KH
John Schaefer Gravity		In & Fit 0700 JS	Out & Fit 1730 KH
Chad Furlie Gravity		In & Fit 0700 CF	Out & Fit 1730 KH
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 10-3-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Data management, Sample processing, P/U samples in Canada. P/U dri Ice

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] **Check [✓] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Make sure to lower or raise lift gate all the way, not halfway

Describe Lessons Learned/ Improvement Areas from today:

Make sure buckets ~~are~~ SW2 + ethanol secure when transporting in rental car

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Mason Strung		10/3 19:45

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM	Josie Smith	In & Fit 0830 JSS	Out & Fit JSS 1945
Mason Struna AECOM	MS	In & Fit 0830 MS	Out & Fit 1945 MS
DAVE LEWIS AECOM	DL	In & Fit 0830 DL	Out & Fit 1945 DL
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Micky Moody

Date: 10/3/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Ingalls in China Bend – Freeze Grab Sediment

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] **Check [✓] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [x] [ ] Other Topics (describe/attach):
  Safe vessel boarding
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody		10/3/19 1743

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Jeff Schut Gravity		In & Fit 0730 JS	Out & Fit 1736 JS
DENNIS GROSS		In & Fit 0730	Out & Fit 17:30
George Schornitzki		In & Fit 0700	Out & Fit 17:30
PETER JENKINS GRAVITY		In & Fit 0630 PJ	Out & Fit 1730 PJ
Andy Clodfelter AECOM		In & Fit 0800 ac	Out & Fit 1800 NM
Brad Smith Ecologist/Risk		In & Fit 0800 BES	Out & Fit 1700 BES
Anisa Shepherd-Becker		In & Fit 08:00 ASSB	Out & Fit 1800 NM
Nicky Moody		In & Fit 0800 NM	Out & Fit 1800 NM
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identity number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: JENNIFER RAY

Date: 10/3/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW sampling EVANS

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
EVANS Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

- [x] [■] **Check [✓] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
JENNIFER RAY		10/3/19 1600

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
JENNIFER RAY AECOM		In & Fit 0700 JR	Out & Fit 1630 JR
JOEL GUERRERO CMA		In & Fit 0700 JG	Out & Fit 1600
JOSS MOORE CMA		In & Fit 0730 JM	Out & Fit 1600
René Trudeau GRAVITY		In & Fit 0600R	Out & Fit 1600
Ryan McElrea Gravity		In & Fit 0600 RM	Out & Fit 1600
Doug Hadley CMI		In & Fit 0600 DH	Out & Fit 1600
Justin Hill		In & Fit 0600	Out & Fit 1600
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jeremy Profaro
Phone Number:

AECOM SH&E Rep. Name:
Phone Number:

Meeting Leader: Ken Yong

Date: 10/3/19 | **Project Name/Location:** PB Tech | **Project Number:**

Today's Scope of Work:

Drive samples from Kettle Falls to Kelso WA

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [x] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☐	☑ Biological/ Chemical / Electrical Hazards
☑	☐ Ergonomics - Lifting, Body Position
☐	☑ Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	☑ Simultaneous/ Neighbouring Operations
☑	☐ Slip/ Trip/ Fall Hazards
☐	☑ Specialized PPE Needs
☐	☑ Traffic Control
☐	☑ Waste Management/ Decontamination
☑	☐ Weather Hazards / Heat Stress / Cold Stress
☐	☑ Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☐	☑ Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	☑ Other Topics (describe/attach):
☐	☑ Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
/	/

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Ken Yong	Ken Yong	10/3/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
D Burke AECOM		In & Fit 600 am	Out & Fit 715 pm
Kar Vong AECOM		In & Fit 600 am	Out & Fit 715 pm
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jenny Probert
Phone Number:

AECOM SH&E Rep. Name:
Phone Number:

Meeting Leader: Ken Viana

Date: 10/2/19 | **Project Name/Location:** PB Test | **Project Number:**

Today's Scope of Work:
Drive box van to Keppel Falls

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [x] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [x] Lock Out/ Tag Out
- [x] Short Service Employees - visual identifier and mentor/ oversight assignment
- [x] Simultaneous/ Neighbouring Operations
- [x] Slip/ Trip/ Fall Hazards
- [x] Specialized PPE Needs
- [x] Traffic Control
- [x] Waste Management/ Decontamination
- [x] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [x] Other Topics (describe/attach):
- [x] Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
/	/

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Ken Viana	Ken Viana	10/2/19 @ 4:45pm

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
JD Brooks AECOM		In & Fit 615 am	Out & Fit 845 pm
[illegible]		In & Fit 600 am	Out & Fit 845 pm
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Nicky Moody

Date: 10/2/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Yeti in Evans - PW
Ingalls in Evans - Freeze grab sediment.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody	Nicky Moody	10/2/19 4pm

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Steve Cox 4565	Stephen Cox	In & Fit 7:30 SC	Out & Fit
Ryan McElroy Gravity	R-Mc	In & Fit 07:30 RM	Out & Fit
George Schernitzki	GS	In & Fit 0700	Out & Fit
Doug Hadley	Doug Hadley	In & Fit 0600 DH	Out & Fit
Justin Bloore		In & Fit 0600	Out & Fit
René Trudeau GRAVITY		In & Fit 0615 R	Out & Fit
JENNIFER RAM AECOM		In & Fit 0600 JR	Out & Fit
Joss Moore CMA		In & Fit 0730 JM	Out & Fit
JOEL GUERRERO CMA		In & Fit 0730 JG	Out & Fit
Andy Clouthier AECOM		In & Fit 0730 AC	Out & Fit 1505 AC

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anisa Sheppherd-Becker	Anisa@SBecker	In & Fit 7:30.	Out & Fit 15:05 AQSB
Jeff Schul		In & Fit 7:00 JS	Out & Fit 15:15 JS
Brad Sayle Escalyint Risk	Brad i Sayle	In & Fit 7:~~15~~	Out & Fit 3150 BS
DENNIS GROSS		In & Fit 07:00	Out & Fit 15:05
PETER JENKINS GRAVITY		In & Fit 0700 PJ	Out & Fit 1505 PJ
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hosp

Date: 10/02/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment and Porewater Sampling at Genello Bros

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Gym Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hosp	David Hosp	Date 10/02/19 Time 1730

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hoke / AECOM	David R. Hoke	In & Fit 0830 DH	Out & Fit 1700 DH
Maggie McKeon Gravity		In & Fit 0830 MAM	Out & Fit 1700 DH
Chris Smith CMA		In & Fit 0830 CS	Out & Fit 1700 DH
J Weatherman CWI	J Weatherman	In & Fit 0730 JW	Out & Fit 1700 DH
BRIAN STROBEL CWI		In & Fit 0730 BLS	Out & Fit 1700 DH
STEVE BRUCHMAN CWI		In & Fit 0730 SB	Out & Fit 1700 DH
Paul Hamidi	Paul Hamidi	In & Fit 0830 PH	Out & Fit 1700 DH
CLIFF PEARSON AECOM		In & Fit 0830 CP	Out & Fit 1700 DH
Mark Bixler	CMA	In & Fit 0830	Out & Fit 1700 DH
Eric Weatherman	E. Weatherman	In & Fit 0800	Out & Fit 1700 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicole Badon/Jacobs		In & Fit 0830 NB	Out & Fit 1700 NB
Shawn Roark/Jacobs		In & Fit 0830 SRK	Out & Fit 1700 SRK
Chad Furvie Gravity		In & Fit 0830 CF	Out & Fit 1700 CF
John Schaefer Gravity		In & Fit 0830 JS	Out & Fit 1700 JS
MARK HALE AECOM		In & Fit 0830 MH	Out & Fit 1700 MH
Mike Duffield Gravity		In & Fit 0830 MD	Out & Fit 1700 MD
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hose

Date: 10/01/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment and Porewater Sampling in Gentle Area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] **Check [☑] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David R. Hose	David Hose	Date 10/02/19 Time 1800

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hose/AECOM	David R. Hose	In & Fit 0900 DH	Out & Fit 1800 DH
STEVE BRUCHMAN / CNI		In & Fit 0800 SB	Out & Fit 1800 DH
Eric Weatherman	E. Weatherman	In & Fit 0800 E.W.	Out & Fit 1800 DH
BRIAN STROBEL/CNI		In & Fit 0800 B.S.	Out & Fit 1800 DH
J. Weatherman CWI	J Weatherman	In & Fit 0800 JW	Out & Fit 1800 DH
Nicole Badon/Jacobs		In & Fit 0900 NB	Out & Fit 1800 DH
Chris Smith		In & Fit 0930 CS	Out & Fit 1800 DH
Mark Bisset		In & Fit 0830 MB	Out & Fit 1800 DH
Shawn Roark		In & Fit 0830 SR	Out & Fit 1800 DH
CLIFFORD J. PEARSON AECOM		In & Fit 0830 CP	Out & Fit 1800 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Chad Furuta Gravity		In & Fit 0830 CF	Out & Fit 1800
John Schafer Gravity		In & Fit 0830 JS	Out & Fit 1800
Maggie McKeon Gravity		In & Fit 0830 MAM	Out & Fit 1800
Paul Hamidi		In & Fit 0830 PH	Out & Fit 1800
Mike Duffield Gravity		In & Fit 0830	Out & Fit 1800
MARK HALE / AECOM		In & Fit 0830	Out & Fit 1800
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 10-2-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Data management, sample processing, plu samples in Canada, Prep samples for shipment to lab ~~Prep Sample~~ CMS

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Josie Smith	Josie Smith	Date 10-2-19 Time 2015

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM	Josie Smith	In & Fit 0800 JAS	Out & Fit 0815 JAS
DAVE LEWIS aecom	Dave Lewis	In & Fit 0800 DZ	Out & Fit 0815 DZ
Mason Struna AECOM	M. Struna	In & Fit 0800 MS	Out & Fit 0815 MS
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Nicky Moody

Date: 10/1/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Yeti – PW in Evans AOI

Ingalls – Sed in Evans AOI

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

None

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody	Nicky Moody	10/1/2019 1700

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

	Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
I	George Sorenson		In & Fit 0700	Out & Fit 1700
I	DENNIS GROSS		In & Fit 0700	Out & Fit 1700
Y	JENNIFER KLAM		In & Fit 0730 JK	Out & Fit 1630 JK
Y	Jason Klokke		In & Fit 0600	Out & Fit 1632 JK
I	PETER JENKINS GRAVITY		In & Fit 0700 PJ	Out & Fit 1630 PJ
Y	Josh Moore CMA		In & Fit 0730 JM	Out & Fit 1630 JM
	JOEL GUERRERO CMA		In & Fit 0738 JMG	Out & Fit 1630 JG
Y	Doug Hadley		In & Fit 0600 DH	Out & Fit 1630 DH
Y	Ryan McElree Gravity		In & Fit 0730 RM	Out & Fit 1630 RM
I	Nicky Moody		In & Fit 0730 NM	Out & Fit 1700 NM

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

	Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
I	Steve Cox	Steve Cox	In & Fit SC 7:30	Out & Fit SC 16:30
I	Andy Cledfelter AECOM	Andy Cledfelter	In & Fit 0745 ac	Out & Fit ac 1800
I	Brad Sapp Ecology/Risk	Brad Sapp	In & Fit 07:45 BEJ	Out & Fit 1620
I	Anisa Sheppherd-Becker	Anisa Sheppherd-Becker	In & Fit 07:45 AQSB	Out & Fit AS 1620
Y	Renee Trudeau Gravity		In & Fit 0615 RT	Out & Fit 1630 RT
I	Jeff Schut Gravity		In & Fit 0630 JS	Out & Fit 1630 JS
			In & Fit	Out & Fit
			In & Fit	Out & Fit
			In & Fit	Out & Fit
			In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets. _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 10-1-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Process Samples, Data Entry, Transport supplies to ~~Frait~~ canada crew, Transport samples from Reference area in Canada

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	■	Biological/ Chemical / Electrical Hazards
☑	☐	Ergonomics - Lifting, Body Position
☐	☐	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
☐	☐	Simultaneous/ Neighbouring Operations
☑	☐	Slip/ Trip/ Fall Hazards
☐	☐	Specialized PPE Needs
☐	☐	Traffic Control
☑	☐	Waste Management/ Decontamination
■	☐	Weather Hazards / Heat Stress / Cold Stress
☑	☐	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	☐	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	☐	Other Topics (describe/attach):
☑	☐	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

I

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Josie Smith	Josie Smith	Date 10-1-19 Time 1940

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM	Josie A Smith	In & Fit 0800 JAS	Out & Fit 1940 JAS
DAVE LEWIS aecom	DL	In & Fit 0800 DL	Out & Fit 1930 DL
Mason Struna AECOM	M. Struna	In & Fit 0800 MS	Out & Fit 1940 MS
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 9-30-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Dave Lewis driving to Sparks to drop off PW Samples, then to Moses Lake to p/u nitrogen. Mason & Josie p/u supplies & deliver to Evans CG. Josie drive to Trail to p/u samples & Drop off Supplies

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Large piece of metal plate Knocked off of loading dock @ Oxarc, fell near vehicle Rental

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Josie Smith	Josie Smith	9-30-19 / 2040

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Dave Lewis AECOM	DL	In & Fit 0745	Out & Fit 1815
Josie Smith AECOM		In & Fit 0745 JS	Out & Fit 2040 JS
Mason Struna AECOM		In & Fit 0745 MS	Out & Fit 2040 MS
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hose

Date: 9/30/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
collect Sediment and Porewater in the Gunnell area

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	☐	Biological/ Chemical / Electrical Hazards
☑	☐	Ergonomics - Lifting, Body Position
☐	☐	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
☐	☐	Simultaneous/ Neighbouring Operations
☑	☐	Slip/ Trip/ Fall Hazards
☐	☐	Specialized PPE Needs
☐	☐	Traffic Control
☑	☐	Waste Management/ Decontamination
■	☐	Weather Hazards / Heat Stress / Cold Stress
☑	☐	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	☐	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	☐	Other Topics (describe/attach):
☑	☐	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David R. Hose	David R. Hose	Date 9-30-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hosek / AECOM	David R. Hosek	In & Fit 0815 DH	Out & Fit 1630 DH
MARK HALE / AECOM	MRH	In & Fit 0815 MH	Out & Fit 1630 MH
Mike Duffell / Gravity		In & Fit 0815 MD	Out & Fit 1630 MH
CLIFFORD J. PEARSON / AECOM	Clifford J. Pearson	In & Fit 0815 CP	Out & Fit 1830 MH
MAGGIE McLEOD Gravity		In & Fit 0815 MM	Out & Fit 1630 MH
John Schaefer Gravity		In & Fit 0815 JS	Out & Fit 1830 MH
Chris Smith CMA		In & Fit 0815 CS	Out & Fit 1830 MH
Mark Bisca CMA		In & Fit 0815 MB	Out & Fit 1830 MH
Neal Fonvie Gravity		In & Fit 0815 CF	Out & Fit 1830 MH
BRIAN T. STROBEL CNI		In & Fit 0815 BS.	Out & Fit 1830 MH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
STEVE BRUCHMAN		In & Fit 0815 SB	Out & Fit 1830 DA
Eric Weatherman	E. Weatherman	In & Fit 0815 E.W.	Out & Fit 1630 DA
J. Weatherman	J Weatherman	In & Fit 0815 JW	Out & Fit 1830 DA
Nicole Badon		In & Fit 0815 NB	Out & Fit 1630 DA
Shaun Roark		In & Fit 0723 SR	Out & Fit 1820 DA
Paul Hamidi		In & Fit 0925 DA	Out & Fit 1630 DA
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: N. Moody

Date: 9/30/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Porewater on Yeti.
SS on Ingalls.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] Check [x] as reviewed or mark [■] as not applicable
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody	[signature]	Date 9/30/19 Time 1700

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

	Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
I	Nicky Moody AECOM		In & Fit 0800 NM	Out & Fit 5:30pm NM
I	George Salamitalis ENGEL		In & Fit 0700 ES	Out & Fit
I	PETER JENKINS GRAVITY		In & Fit 0700 PJ	Out & Fit 1630 PJ
I	DENNIS GROSS CNI		In & Fit 0700	Out & Fit
Y	JOSS MUSMI CMA		In & Fit 0300 JM	Out & Fit 164 JM
Y	JOEL GUERRERO CMA		In & Fit 0800 CMA	Out & Fit 1620 JMG
Y	JENNIFER RAM AECOM		In & Fit 0800 JR	Out & Fit 1620 JR
I	Anisa Sheppherd-Becker AECOM	Anisa QS Becker	In & Fit 0800 AQSB	Out & Fit 1730 AQSB
I	Andy Clutterham AECOM		In & Fit 0800 ac	Out & Fit 1730 ac
I	Brandy E Sigler Ecological Risk Inc.		In & Fit 0800 BES	Out & Fit 1620 BES

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
F Jeff Schut / Gravity		In & Fit $ 0700 10m.	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Josie Smith

Date: 9-29-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Warehouse, process samples, data entry

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Snow on Hilltops, possible snow driving hazards

Describe Lessons Learned/ Improvement Areas from today:
Water came in under roll-up door, slip hazard.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Josie Smith	Josie Smith	Date 9-29-19 Time 1630

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM	Josie Smith	In & Fit JAS 0920	Out & Fit JAS 1630
Mason Strunk AECOM	M. Strunk	In & Fit 0920 MS	Out & Fit 1630 MS
DAVE LEWIS aecom	DL	In & Fit 0920 DL	Out & Fit 1630 DL
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: DAVE LEWIS

Date: 9/28/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Warehouse, process samples, data entry.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

- [x] [■] **Check [☑] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
DAVE LEWIS	Dave Lewis	Date 9-28-19 Time 1925

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Josie Smith AECOM	Josie Smith	In & Fit 0815 JMS	1925 Out & Fit
Mason Struna AECOM		In & Fit 0815 MS	Out & Fit 1925 MS
DAVE LEWIS aecom	Dave Lewis	In & Fit 0815 DL	Out & Fit 1900 DL
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hose

Date: 9/28/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sample Sediment and Porewater at Locations REF001, 002, 003 + 004

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Gyro Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David R. Hose	David R. Hose	Date 9/28/19 Time 1430

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hose / AECOM		In & Fit 0730 DH	Out & Fit 1430 DH
GLEN MEJIA / AECOM		In & Fit 0730 GM	Out & Fit 1430 DH
MARK HALE - AECOM		In & Fit 0730 MH	Out & Fit 1430 DH
MAGGIE MCKEON Gravity		In & Fit 0730 MAM	Out & Fit 1430 DH
Mike Duffield Gravity		In & Fit 0730 MD	Out & Fit 1430 DH
John Schaefer Gravity		In & Fit 0730 JS	Out & Fit 1700 GM
Chad Fuhrlie Gravity		In & Fit 0730 CF	Out & Fit 1700 GM
John Gondek Jacobs		In & Fit 0730 JG	Out & Fit 1430 DH
Alan Sims CMA		In & Fit 0730 AS	Out & Fit 1700 GM
Anders Utter AECOM		In & Fit 0730 AU	Out & Fit 1700 GM

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Mark Bisca CMA	Mark Bisca	In & Fit 0730 MB	Out & Fit 1700 MB
Chris Smith	Chris Smith	In & Fit 0730 CS	Out & Fit 1700 CS
Rachel Tyjac-Fay EPA(Jacobs)	Rachel Tyjac-Fay	In & Fit 0730 RTF	Out & Fit 1700 RTF
STEVE BRUCHMAN	Steve Bruchman	In & Fit 0700 SB	Out & Fit 1430 SB
J. Weatherman CWI	J. Weatherman	In & Fit 0700 JW	Out & Fit 1700 JW
Dan Smith	Dan Smith CWI	In & Fit 07.00	Out & Fit 1700 DS
Eric Weatherman	E Weatherman	In & Fit 0700 E.W.	Out & Fit 1430 DT
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 9-28-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Evans Dock
Ingalls: Sediment sampling w/ freeze
Yeti: Porewater

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [■] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [x] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [■] Specialized PPE Needs
- [ ] [■] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [x] [ ] Other Topics (describe/attach):
  Fishing tournament
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
None

Describe Lessons Learned/ Improvement Areas from today:
Block rain from getting in freeze grab gasket.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stu Holmes	Date 9-28-19 Time 1545

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM		In & Fit 0730 SH	Out & Fit 1545 SH
Courtney Schrader		In & Fit 0700	Out & Fit
DENNIS GROSS		In & Fit 0700	Out & Fit
Doug Hudley		In & Fit 0600 DH	Out & Fit
Brent Holburn Gravity		In & Fit 0600 BH	Out & Fit
Ryne Tuttle Gravity		In & Fit 0600 RT	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0615 PJ	Out & Fit
Michelle Stoner AECOM		In & Fit 700 MS	Out & Fit 1545 MS
CLIFFORD J. PEARSON AECOM		In & Fit 0700 CP	Out & Fit 1545 CP
Jordan Klapp		In & Fit 0600	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 9.28.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: porewater sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher	Jennifer Pretare for Al T.	Date 9.28.19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Jeff Schl Gravity		In & Fit 0700 JS	Out & Fit
Marlyn Guinto		In & Fit 0745 MG	Out & Fit
JOEL GUERRERO CMS		In & Fit 0730 JG	Out & Fit
Al Thatcher AECOM		In & Fit 0730 ats	Out & Fit 1630 ats
Bart Chadwick CMS		In & Fit 0730 BC	Out & Fit
D. Moore		In & Fit 0730 DM	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hoske

Date: 9/27/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment and Porewater Sampling in Columbia River Between Trail and Castlegar

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hoske	David R. Hoske	9/27/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hosk / AECOM	David R. Hosk	In & Fit 0730 DH	Out & Fit
Mike Duffield Gravity	Mike D	In & Fit 0730 MD	Out & Fit
John Gondek Jacobs		In & Fit 0730 JG	Out & Fit 1540 JG
MARK HALE AECOM		In & Fit 0730 MH	Out & Fit 1540 MH
MAGGIE Mellecon Gravity		In & Fit 0730 MM	Out & Fit
Chad Fuhrke Gravity		In & Fit 0730CF	Out & Fit
John Schaefer Gravity		In & Fit 0730 JS	Out & Fit
STEVE BRUCHMAN		In & Fit 0730 SB	Out & Fit
Eric Weatherman	E. Weatherman	In & Fit 0730 E.W	Out & Fit
Alan SMS CMA		In & Fit 0730 ASS	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
~~Andrea Utter~~	~~AECOM~~	~~0730~~		~~Andrea Utter~~

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Chris Smith CNEA		In & Fit 0730 CS	Out & Fit
Rachel Tajac Fay Jacobs/ EDA		In & Fit 0730 RTF	Out & Fit 1530 RTF
J Weatherman CNI		In & Fit 0700 JW	Out & Fit
Dan Smith		In & Fit 07:00 CNI	Out & Fit 1530 AM
Anders Utter AECOM		In & Fit 0700 AM	Out & Fit
GLEN METZ AECOM		In & Fit 0730 AM	Out & Fit 1540 AM
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 9-27-19	**Project Name/Location:** Phase 3 Sediment Sampling	**Project Number:** 60612698

Today's Scope of Work: Evans
RV Ingalls: Sediment w/ freeze grab.
RV Yeti: Porewater sample

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
Evans Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[■]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
None

Describe Lessons Learned/ Improvement Areas from today:
None.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature**	**Date** 9.27.19 **Time** (at end of day / shift)
Stu Holmes	Stu	

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM		In & Fit 0730 SH	Out & Fit
René Trudeau Gravity		In & Fit 0600R	Out & Fit
D. Moore		In & Fit 0730	Out & Fit
Bart Chadwick CMA		In & Fit 0730	Out & Fit
DENNIS GROSS		In & Fit 0700	Out & Fit
JOEL GUERRERO CMA		In & Fit 0700 JMG	Out & Fit
Jordan Hess		In & Fit 0600	Out & Fit
Bret Walburn Gravity		In & Fit 0600	Out & Fit
AJ Thatcher AECOM		In & Fit 0700	Out & Fit
Doug Hadley CMI		In & Fit 0600	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Michelle Stegner	AECOM	730 am		
Deloris J. Allen	AECOM	730 AM		

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
[illegible]	[illegible]	In & Fit 0730 MG	Out & Fit
[illegible]	[illegible]	In & Fit 07 D	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Dave Lewis

Date: 9-26-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Data Entry, prep supplies in warehouse, drive to Canada for samples

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

- [x] [■] **Check [✓] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
Wildlife on road.

Describe Lessons Learned/ Improvement Areas from today:
2 people load full buckets into van

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day/ shift)
Dave Lewis	DAVE LEWIS	9/26/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
DAVE LEWIS aecom	Dave Lewis	In & Fit 1000 DL	Out & Fit JAP
DENISE YEE AECOM		In & Fit 1000 DY	Out & Fit
Sarah Kintner	Sarah Kintner	In & Fit 1000 SKK	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Mark Hale

Date: 9/26/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment Sampling in Lower Arrow Lake
Ref 014 and 015

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
X Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David R. Hale	David R. Hale	Date 9/26/19 Time 1500

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hose AECOM	David R. Hose	In & Fit 0800 DH	Out & Fit 1500 DH
Maggie Mullen Gravity		In & Fit 0700 MM	Out & Fit 1500 DH
GLEN MEDIA AECOM		In & Fit 0800	Out & Fit 1500 DH
STEVE BRUCKMAN CNI		In & Fit 0710	Out & Fit 1500 DH
J Weatherman CNI	J Weatherman	In & Fit 5700 JW	Out & Fit 1500 DH
Chad Furlie Gravity		In & Fit 0700 CF	Out & Fit 1500 DH
Ryan Bertram CNI		In & Fit 0700 RB	Out & Fit 1500 DH
[illegible]		In & Fit 0700	Out & Fit 1500 DH
John Schaf Gravity		In & Fit 0800 JS	Out & Fit 1500 DH
Anders Utter AECOM		In & Fit 0800 AU	Out & Fit 1500 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Mark Hale

Date: 9/26/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment + Porewater Sampling in Lower Arrow Lake

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
2 Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] Simultaneous/ Neighbouring Operations
- [x] Slip/ Trip/ Fall Hazards
- [ ] Specialized PPE Needs
- [ ] Traffic Control
- [x] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] Other Topics (describe/attach):
- [x] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hose	David R Hose	Date 9.26.19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Mike Duffield/Country		In & Fit 0800 MD	Out & Fit 1500 KM
MARK HAIG AECOM		In & Fit 0800 MH	Out & Fit 1500 KM
Eric Weatherman	E. Weatherman	In & Fit 0730	Out & Fit 1500 KM
Rachel Zajac-Fay EPA/Jacobs	R Zajac-Fay	In & Fit 0700 1537	Out & Fit 1500 KM
John Gondek Jacobs		In & Fit 0900 JG	Out & Fit 1500 KM
Chris Smith AECOM		In & Fit 0800 CS	Out & Fit 1500 KM
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

page 177

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 9-26-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Evans
RV Yeti: Porewater sampling
RV Tagalis: Sediment sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Evans Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [■] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [■] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [■] Specialized PPE Needs
- [ ] [■] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [x] [ ] Other Topics (describe/attach):
  Aggressive boaters – beware.
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

None

Describe Lessons Learned/ Improvement Areas from today:

Wipe off gunnels and treacherous surfaces when raining.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stuart Holmes	9-26-19 / 1355

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM	Stu Holmes	In & Fit 0730 SH	Out & Fit JTP
Al Thatcher AECOM	Al Thatcher	In & Fit 0730 AT	Out & Fit
DENNIS GROSS	Dennis Gross	In & Fit 0700	Out & Fit
Doug Nadler	Doug Nadler	In & Fit 0600 DN	Out & Fit
JOEL GUERRERO CMA		In & Fit 0730 JMG	Out & Fit
Bart Walburn Gravity		In & Fit 0600 BW	Out & Fit
Bart Chadwick CMA		In & Fit 0730 BC	Out & Fit
Marilyn Guethlein		In & Fit 0730 MG	Out & Fit
D Moore Jacobs		In & Fit 0730 DM	Out & Fit
P JENKINS GRAVITY		In & Fit 0730 PJ	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

page 2 | 2

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 1/24/19	**Project Name/Location:** Phase 3 Sediment Sampling	**Project Number:** 60612698

Today's Scope of Work:

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

[✓]	Biological/ Chemical / Electrical Hazards
[✓]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[✓]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[✓]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[✓]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[✓]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[✓]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature**	**Date** 9.26.19
Michelle Stegner	Jenny aPrice for Michelle S.	**Time** (at end of day / shift)

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Jeff Schut Gravity		In & Fit 0730 SJ	Out & Fit JAP
Rene Trudeau Gravity		In & Fit 0600 R	Out & Fit
George Schernitzki		In & Fit 0600	Out & Fit
Justin Klasse CMT		In & Fit 0600	Out & Fit
Michelle Stegner		In & Fit 730 MS	Out & Fit
COCHRAN J. PEARSON AECOM		In & Fit 0730 CP	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 9-25-19	**Project Name/Location:** Phase 3 Sediment Sampling	**Project Number:** 60612698

Today's Scope of Work: Evans
RV Yeti: Porewater sampling
RV Ingalls: Sediment sampling

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
Evans Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
None reported	None reported

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature**	**Date** 9-25-19
Stu Holmes	Stu Holmes	**Time** (at end of day / shift) 1600

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM	Stuart Thatcher	In & Fit 0715 SH	Out & Fit JAP
Justin Klotz CNI		In & Fit 0600	Out & Fit
DENNIS GROSS		In & Fit 0700	Out & Fit
George Schenkel		In & Fit 0720	Out & Fit
Doug Hadley		In & Fit 0600 PM2	Out & Fit
Al Thatcher		In & Fit 0720 AT	Out & Fit
Bart Chadwick CMA		In & Fit 0700 BC	Out & Fit
JOEL GUERRERO CMA		In & Fit 0700 JMG	Out & Fit
Jeff Schut Gravity		In & Fit 0700 JS	Out & Fit
Brent Walburn Gravity		In & Fit 0600	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
René Tremblay GRAVITY		In & Fit 0555 R	Out & Fit
Marky Guthrie		In & Fit 0715 MG	Out & Fit
D. Moore Sr		In & Fit 0715	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0730 PJ	Out & Fit
Brendan Dowling Ecology		In & Fit 730 BD	Out & Fit
Michelle Stegner		In & Fit 730 MS	Out & Fit
CLIFFORD J. VEARTON AECOM		In & Fit 0730 CV	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hosie

Date: 9/25/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sediment and Porewater Sampling on Lower Arrow Lake

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

[✓]	Biological/ Chemical / Electrical Hazards
[✓]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[✓]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[✓]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[✓]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[✓]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[✓]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hosie	David R. Hosie	Date 9/25/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hose / AECOM		In & Fit 0700 DRH	Out & Fit 1630 DH
Chris Smith		In & Fit 0700 CS	Out & Fit 1630 DH
Rachel Zajac-Fay		In & Fit 0700 RZF	Out & Fit 1630 DH
Alan Sims CMA		In & Fit 0700 AS	Out & Fit 1630 DH
Ryan Butorac CVI		In & Fit 0700 RB	Out & Fit 1630 D.A
STEVE BRUCHMAN		In & Fit 0700 CN=1	Out & Fit 1630 DH
MARK HALE		In & Fit 0700 MH	Out & Fit 1630 DH
MAGGIE McLEON		In & Fit 0700 MM	Out & Fit 1630 DH
John Sheets Grunt		In & Fit 0700 JS	Out & Fit 1630 DH
GLEN MEJIA AECOM		In & Fit 0700 GM	Out & Fit 163 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Anders Ulfsor	AECOM	0700		

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (Including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
John Gondek Jacobs		In & Fit 0700 JG	Out & Fit 1630 JG
J. Weatherman CWI	J Weatherman	In & Fit 0700 JW	Out & Fit 1630 JW
Chad Fowlie Gravity		In & Fit 0700 CF	Out & Fit 1630 CF
Mike Driffield Gravity		In & Fit 0700 MD	Out & Fit 1630 MD
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hose

Date: 9/24/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Begin Sampling Sediment and Porewater Samples in Lower Arrow Lake

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hose	David Hose	9/24/19 1700

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hosa AECOM	David A. Hosa	In & Fit 0800 - DH	Out & Fit 1700 DH
John Gondek Jacobs		In & Fit 0800 JG	Out & Fit 1700 DH
MARK HALE AECOM		In & Fit 0800 MH	Out & Fit 1700 DH
Rachel Zajac-Fay EPA/ JACOBS CWI		In & Fit 0800 RZF	Out & Fit 1700 DH
J Weatherman	J Weatherman	In & Fit 0800 JW	Out & Fit 1700 DH
Ryan Butorac CWI		In & Fit 0800 RB	Out & Fit 1700 DH
Anders Utter AECOM		In & Fit 0800 AU	Out & Fit 1700 DH
GLEN METH AECOM		In & Fit 0800 GM	Out & Fit 1700 DH
Chris Smith CMA		In & Fit 0800 CS	Out & Fit 1700 DH
Alan Sims CMA		In & Fit 0800 AS	Out & Fit 1700 DH

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Maggie McKeon Grouty	Maggie McKeon	In & Fit MAM 0800	Out & Fit 1700 2/18
Chad Funkie Grouty		In & Fit CF 0800	Out & Fit 1700 2/18
Mike Duffield / Grouty		In & Fit 0800 MD	Out & Fit 1700 2/18
John Schaefer / Grouty		In & Fit 0800 JS	Out & Fit 1700 2/18
STEVE BRUCHMAN		In & Fit 0730	Out & Fit 1700 2/18
Eric Weatherman	E. Weatherman	In & Fit 0730	Out & Fit 1700 2/18
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stuart Holmes

Date: 9/24/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Evans
Ingalls: sed. sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Evans Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

n/a

Describe Lessons Learned/ Improvement Areas from today:

Be aware of trip hazards while unloading.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stuart Holmes	9/24/2019 1600

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM	Stuart Holmes	In & Fit 0725 SH	Out & Fit JAP
Clifford J. Pearson AECOM	Clifford J Pearson	In & Fit 0725 CP	Out & Fit
Michelle Stegner	[illegible]	In & Fit 725 MS	Out & Fit
DENNIS GROSS	[illegible]	In & Fit 0700	Out & Fit
George Schernitzki	[illegible]	In & Fit 0700	Out & Fit
PETER JENKINS	[illegible]	In & Fit 0700 PJ	Out & Fit
Bart Chadwick CMA	[illegible]	In & Fit 0730 BC	Out & Fit
JOEL GUERRERO CMA	[illegible]	In & Fit 0730 JMG	Out & Fit
Jeff Johnson/Jacobs	[illegible]	In & Fit 0730 JRE	Out & Fit
Marilyn Gauthier/Jacobs	[illegible]	In & Fit 7:30 MG	Out & Fit
Jeff Schl/Granite	[illegible]	0730 JS	

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Al Thatcher / AECOM		In & Fit 0800	Out & Fit JAP
Doug Hadley		In & Fit 06.30	Out & Fit
Rene Tardeau		In & Fit 0600 R	Out & Fit
Justin Klupa		In & Fit 0630	Out & Fit
Bart Walborn Gravity		In & Fit 0600	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

p. 1

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Denise Lee

Date: 9-24-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sample handling, driving to canada, Data entry, sample receiving, Supply acquisition, Check refrigeration truck - operate liftgate Driving - hazardous wat., open range + wildlife, small roads in darkness. Be aware of fatigue. Take breaks

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):
  - ☒ Hornets
  - ☒ Ethanol

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today: Fill ethanol canister inside contained area

Describe Lessons Learned/ Improvement Areas from today: Dept Denise as buddy.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Dave Lewis	DAVE LEWIS	9-24-19 / 1430

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

pg. 2

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
DAVE LEWIS Aecom	DLewis	In & Fit 1430 DL	Out & Fit JAP
DENISE YEE AECOM	DYee	In & Fit 1430 DY	Out & Fit
SARAH KINTNER	Sarah Kintner	In & Fit 1430 SEKK	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: David Hosle

Date: 9/23/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Meet at Warehouse for Safety and CR Briefing and Mobe To Canada

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss If Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	Ergonomics - Lifting, Body Position
☐	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	Simultaneous/ Neighbouring Operations
☑	Slip/ Trip/ Fall Hazards
☐	Specialized PPE Needs
☐	Traffic Control
☑	Waste Management/ Decontamination
■	Weather Hazards / Heat Stress / Cold Stress
☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	Other Topics (describe/attach):
☑	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hosle	David R. Hosle	Date 9/23/19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
David Hosk / AECOM	David R. Hosk	In & Fit 0700 DH	Out & Fit 1800 DH
DAVE LEWIS aecom	Dave Lewis	In & Fit 0700 DL	Out & Fit 0800 DH
CLIFFORD J. PERSON / AECOM	[illegible]	In & Fit 0700 CJP	Out & Fit 0800 DH
Mike Duffield / Gravity	[illegible]	In & Fit 0700 MD	Out & Fit 1800 DH
Jeff Schut / Gravity	[illegible]	In & Fit 0700 JS	Out & Fit 0800 DH
GLEN MEJIA / AECOM	[illegible]	In & Fit 0700 GM	Out & Fit 1800 DH
Anders Utter / AECOM	[illegible]	In & Fit 07 oc AM	Out & Fit 1800 DH
MARK HALE / AECOM	[illegible]	In & Fit 7:00 AM	Out & Fit 1800 DH
Michelle Stegner AECOM	[illegible]	In & Fit 700 AM	Out & Fit 0800 DH
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Sty Holmes

Date: 9-23-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: RV Yeti: Porewater sampling (Evans)
RV Ingalls: Sediment sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Evans Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

n/a

Describe Lessons Learned/ Improvement Areas from today:

Ensure spouts on ethanol containers are snug-fitting.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher		9/23/19 1730

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM	Stuart Holmes	In & Fit 0800 SH	Out & Fit JAP
PETER JENKINS GRAVITY	Peter Jenkins	In & Fit 0800 PJ	Out & Fit
George Scherniski	George Scherniski	In & Fit 0800 GS	Out & Fit
Bart Chadwick CMA		In & Fit 0800 BC	Out & Fit
JOEL GUERRERO CMA		In & Fit 0800 JMG	Out & Fit
Jeff Johnson Jacobs		In & Fit 0800 JJ	Out & Fit
Marilyn Guthrie Jacobs		In & Fit 0400 MG	Out & Fit
Jeff Schut GRAVITY		In & Fit 0800 JS	Out & Fit
Michelle Stegner AECOM		In & Fit 0800 MS	Out & Fit
Al Thatcher AECOM		In & Fit 0800 AT	Out & Fit 1801 AT

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: 1

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

pg 2

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
CLIFFORD J. PEARSON AECOM		In & Fit 0800 CP	Out & Fit JAP
DENNIS GROSS CWI		In & Fit 0700	Out & Fit
René Tardeau		In & Fit 0600R	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Nicky Moody

Date: 9/21/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody	Nicky Moody	9/21/19 1630

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Chris Smith CMA		In & Fit 0730 CS	Out & Fit 1600 CS
Alan Sims CMA		In & Fit 0730 AS	Out & Fit 1600 AS
Michelle Steigner AECOM		In & Fit 730 MS	Out & Fit
Nicky Moody AECOM		In & Fit 0730 NM	Out & Fit
Marilyn Santucci Jacobs		In & Fit 0730 MS NF	Out & Fit
Brian Fletcher, AECOM		In & Fit 0730 BF	Out & Fit
Michaela McCoog AECOM		In & Fit 0730 MM	Out & Fit
Jeff Johnson Jacobs		In & Fit 0730 JJ	Out & Fit 1600
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Doug Hadley CNI	Doug Hadley	In & Fit 6:15	Out & Fit 18:15
Dan Smith CNI	Dan Smith	In & Fit 6:15	Out & Fit
Bart Walburn Gravity		In & Fit 8:09	Out & Fit 18:15
Rene Trudeau		In & Fit 0615	Out & Fit 1815
Ed Sloan		In & Fit 0615 ES	Out & Fit
Shaun Hunt		In & Fit 0615	Out & Fit
STEVE BRUCHMAN		In & Fit 0615	Out & Fit 1630
Marlyn Gauna		In & Fit 730	Out & Fit
Eric Weatherman	E. Weatherman	In & Fit 0730	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 21 Sept 19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Sample Kits prep, supplies gather + distribute to vessel teams, samples processing/receiving/moving to + from refrig. truck, communications w/field + supervision project members,
Data Mgt. including forms processing, communication, dissemination, coordination with whse staff

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):
  - [x] Hornets
  - [x] Ethanol

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[ ]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[ ]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[ ]	Specialized PPE Needs
[ ]	[ ]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher	Al Thatcher	21 Sept. 2019

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Al Thatcher AECOM	Al Thatcher	In & Fit AT 0755	Out & Fit JAP
DENISE YEE AECOM		In & Fit DY 0800	Out & Fit
SARAH KIMMER		In & Fit SKK 0800	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Al Thatcher

Date: 20 Sept. 19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Warehouse Crew – Sample Kit prep, Sample receiving, supplies, data entry, supply runs to vessels, possible ethanol dispensing, communications, data mgmt processes and scanning.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Al Thatcher	Al Thatcher	Date 20 Sept 19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
A I Thatcher	Al Thatcher	In & Fit AT 5/0830	Out & Fit JAD
DENISE YEE		In & Fit SKY/830	Out & Fit ↓
Sarah Kintner	Sarah Kintner	In & Fit SKK 830	Out & Fit ↓
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 9-21-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Northport Boat Launch / Deadman's Eddy Cayuse: Sed. sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] Biological/ Chemical / Electrical Hazards
- [x] Ergonomics - Lifting, Body Position
- [ ] ■ Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [x] Simultaneous/ Neighbouring Operations lots of fishermen today
- [x] Slip/ Trip/ Fall Hazards
- [ ] ■ Specialized PPE Needs
- [ ] ■ Traffic Control
- [x] Waste Management/ Decontamination
- [■] Weather Hazards / Heat Stress / Cold Stress
- [x] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [x] Other Topics (describe/attach): Be aware of increased boat traffic
- [x] Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

—

Describe Lessons Learned/ Improvement Areas from today:

We need to have a good plan and storage situation for ethanol drums going forward.

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stuart Holmes	9-21-19 / 1600

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Sky Holmes AECOM	Sky Holmes	In & Fit 0700 SH	Out & Fit 1600 SH
Linda Howard AECOM	Linda M. Howard	In & Fit LH 0700	Out & Fit LH 1541
Kelly Mitchell AECOM	Kelly Mitchell	In & Fit KM 0700	Out & Fit
John Gowen (Jacobs)		In & Fit JG 0700	Out & Fit 1540 JG
Maggie McKeon Gravity		In & Fit MMM 0700	Out & Fit
Peter Jenkins Gravity		In & Fit 0700 PJ	Out & Fit
Joss Moore CH2		In & Fit JM 0700	Out & Fit JM 1540
Paul Hamidi AECOM	Paul Hamidi	In & Fit PH 0700	Out & Fit PH 1545
Dennis Gross	Dennis Gross	In & Fit 0700	Out & Fit 1600
George Schwartz	George Schwartz	In & Fit 0700	Out & Fit 1600 GS

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Chad Fruhe Gravity		In & Fit CF 0700	Out & Fit CF 1540
John Schaefer Gravity		In & Fit JS 0700	Out & Fit JS 1540
Chris Naff		In & Fit 0700	Out & Fit CN 1600
J Weatherman AECOM		In & Fit 0700	Out & Fit 1600
Bart Chadwick SMA		In & Fit 0700 BC	Out & Fit 1540 BC
Rachel Zajac-Fay EPA Inc.		In & Fit 0700 RZF	Out & Fit 1540 RZF
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 9-20-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Deadman's Eddy AOI
Cayuse: sediment sampling w/ Van Veen sampler
Tieton: Porewater sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):
  Cayuse noted that it is a best practice to beach/dock boat when any potential issue is noted to troubleshoot it safely.

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] ☐ Biological/ Chemical / Electrical Hazards
- [x] ☐ Ergonomics - Lifting, Body Position
- [ ] ■ Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] ■ Simultaneous/ Neighbouring Operations
- [x] ☐ Slip/ Trip/ Fall Hazards
- [ ] ■ Specialized PPE Needs
- [ ] ■ Traffic Control
- [x] ☐ Waste Management/ Decontamination
- [■] ☐ Weather Hazards / Heat Stress / Cold Stress
- [x] ☐ Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] ☐ Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] ☐ Other Topics (describe/attach):
- [x] ☐ Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:
N/a

Describe Lessons Learned/ Improvement Areas from today:
A beacon hub lid was lost off the boat today while on-step. Will take extra precautions while preparing boat for go fast

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Stu Holmes	Stu Holmes	9-20-19 1600

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM		In & Fit 0700 SH	Out & Fit 1600 SH
Joss Moore CMA		In & Fit JM 0700	Out & Fit JM 1600
Maggie McKeon Gravity		In & Fit MM 0700	Out & Fit MM 1600
Peter Jenkins Gravity		In & Fit PJ 0700	Out & Fit PJ 1600
DENNIS GROSS		In & Fit 0700	Out & Fit 16:00
George Schrantz		In & Fit 0700	Out & Fit 1600
Chad Forbis Gravity		In & Fit CF 0700	Out & Fit CF 1600
John Shafer Gravity		In & Fit JS 0700	Out & Fit JS 1600
Chris Naff		In & Fit 0720	Out & Fit 1600
J. Weatherman CIVIL		In & Fit 0700	Out & Fit 1600

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

Cont'd 9/20/19

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard AECOM	Linda M. Howard	In & Fit 0715 LH	Out & Fit
Bart Chadwick		In & Fit 0715	Out & Fit 1600
Rachel Tayler-Fay EPA Solutions	R Tayler-Fay	In & Fit 0715 RTF	Out & Fit 1600 RTF
John Gardeck - Jacobs		In & Fit 0715 JG	Out & Fit 1600 JG
Paul Hamidi AECOM		In & Fit 0715 PH	Out & Fit 1600 PH
Kelly Mitchell AECOM	Kelly Mitchell	In & Fit 0715 KM	Out & Fit 1600 KM
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Nicky Moody

Date: 9/20/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Porewater on Yet
Sediment on Ingalls

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [✓] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
[signature]	Nicky Moody	Date 9/20/2019 Time 1630

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicky Moody AECOM	Nicky Moody	In & Fit 0730 NM	Out & Fit 0430 NM
Dan Smith CWI	Dan Smith	In & Fit 7:30	Out & Fit
Eric Weatherman	E. Weatherman	In & Fit 0730	Out & Fit
Allan Sims		In & Fit 0730 AS	Out & Fit
Chris Smith		In & Fit 0730 CS	Out & Fit
Jeffrey Johnson		In & Fit 0730 JJ	Out & Fit
Brian Fletcher, AECOM		In & Fit 0730 BF	Out & Fit
Marilyn Gauthier		In & Fit 0730 MG	Out & Fit
Michelle Stegner		In & Fit 0730 MS	Out & Fit
Michaela McCoog		In & Fit 0730 MM	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Ed Slon Gravity	Ed	In & Fit 0730 ES	Out & Fit MM 0430
Shawn Hardbarger		In & Fit 0730	Out & Fit
René Thibeault		In & Fit 0600 TK	Out & Fit
Emma Rigby	Emma Rigby	In & Fit 0600 ER	Out & Fit
Brent Walburn		In & Fit 0730 BW	Out & Fit
Doug Hadley		In & Fit 0615 DH	Out & Fit
STEVE BRUCKMAN		In & Fit 0615	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Stu Holmes

Date: 9-19-19	**Project Name/Location:** Phase 3 Sediment Sampling	**Project Number:** 60612698

Today's Scope of Work: Sediment sampling, equse

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):
  keep dock as tidy as possible when table / sampling equip are set up.

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	[ ]	Biological/ Chemical / Electrical Hazards
[x]	[ ]	Ergonomics - Lifting, Body Position
[ ]	[■]	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	[■]	Simultaneous/ Neighbouring Operations
[x]	[ ]	Slip/ Trip/ Fall Hazards
[ ]	[■]	Specialized PPE Needs
[ ]	[■]	Traffic Control
[x]	[ ]	Waste Management/ Decontamination
[■]	[ ]	Weather Hazards / Heat Stress / Cold Stress
[x]	[ ]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	[ ]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	[ ]	Other Topics (describe/attach):
[x]	[ ]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today: (observation)
SH noticed slack in umbilical, coiled it and put in bin to avoid slip/trip hazard on deck

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature**	**Date** 9-19-19
Stu Holmes	Stu Holmes	**Time** (at end of day / shift)

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Stu Holmes AECOM		In & Fit 0730 SH	Out & Fit 1600 SH
Paul Hamidi AECOM		In & Fit 0730 PH	Out & Fit
DENNIS GROSS		In & Fit 0700	Out & Fit 1600
George Schernitz		In & Fit 0700	Out & Fit
Kelly Mitchell AECOM		In & Fit 0730 KM	Out & Fit KM 1600
John Gonder Jacobs		In & Fit 0730 JG	Out & Fit
MAGGIE MCKEON Gravity		In & Fit 0730 MAM	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0730 PJ	Out & Fit
[illegible]		In & Fit 1600	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting – Warehouse

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: A I Thatcher

Date: 19 Sept. 19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Prep for Ethanol drum/dispenser grounding
Wkse/Support tasks, e.g. Sample Kit prep, sample receiving (acid, contaminated media) – Wear Gloves
Lifting, STF

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
A I Thatcher	A I Thatcher	19 Sept. 19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

Continued 9/19/19 Warehouse

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Al Thatcher / AECOM		In & Fit 0900	Out & Fit
Saran Kinther		In & Fit NKK 0900	Out & Fit
Michaela McCoog AECOM		In & Fit MM 900	Out & Fit
Michelle Stegner		In & Fit 900 MS	Out & Fit
Brian Fletcher, AECOM		In & Fit BF 0900	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Jenny Pretare

Date: 9-19-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW sampling, Driving, transfer gear + people boat to boat.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today: unguarded RR crossing at entrance to camp-gravel where we park.

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Jenny Pretare		Date 9-19-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

Sign In

Name	Company	In + Fit	out
Chris Smith	CMA	0730 CS	1433 CS
Marilyn Gartner	Jacobs	0730 MG	←
Jeff Johnson	Jacobs	0730 JJ	1430 JJ
Alan Sims	CMA	0730 AS	1430 AS
Nicky Moody	AECOM	0730 NM	1430 NM
Emma Rigby	Gravity	0730 ER	NM — 1430
Ed Slon	Gravity	0730 ES	NM — 1430
Jack McCotter	CNI	7:30 JMC	—
René Trudeau	GRAVITY	0615R	NM — 1430
Doug Hadley	CNI	06:15 DH	14:55 DH
Jenny Pritzare	AECOM	~~0730~~	
STEVE BRUCHMAN	CNI	1120	NM 1430

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard / Josh Weatherman

Date: 9/19/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach): boat traffic, darker earlier in morning - traffic, wildlife
- [x] [ ] Client specific requirements (describe): * Road kits with first aid kit
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda McHoward	Linda McHoward	Date 9-19-19 Time 15:30

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Bart Chadwick CMA		In & Fit 0700 BC	Out & Fit 1530 BC
Rachel Zajac-Fay EPA/ JACOBS		In & Fit 0700 RZF	Out & Fit 1530 RZF
John Schafer		In & Fit 0700 JS	Out & Fit 1530 JS
Chad Forslie		In & Fit 0730 CF	Out & Fit 1530 CF
J. Weatherman		In & Fit 0700 JW	Out & Fit 1530 JW
Linda Howard		In & Fit 0715 LH	Out & Fit L.H. 1515
Jess Moore CMA		In & Fit In 0700	Out & Fit 1530 JM
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Jenny Pretare

Date: 9/18/2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW + Sediment Sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Jennifer Pretare		9-18-19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Chad Forslie Gravity		In & Fit CF 0700	Out & Fit
Ed Sloan Gravity		In & Fit ES 0700	Out & Fit
Shawn Anz Gravity		In & Fit 0700	Out & Fit
Kevin Lindmark ERM		In & Fit KL 0700	Out & Fit
Linda Howard AECOM		In & Fit LH. 0700	Out & Fit
Jennifer Pretare AECOM		In & Fit JP 0700	Out & Fit
Maggie McKeon GRAVITY		In & Fit MMM 0700	Out & Fit
Emma Rigby GRAVITY		In & Fit ER 0700	Out & Fit
Al Thatcher AECOM		In & Fit AT. 0700	Out & Fit
Jennifer Lam AECOM		In & Fit JL 0700	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Whitney Fraser	Lodestar En. Servs.	0700		
Michelle Stegner	AECOM	0700		

9/18/19 continued

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicky Moody AECOM		In & Fit NM	Out & Fit
Paul Hamidi. AECOM		In & Fit PH 0700	Out & Fit
Stu Holmes AECOM		In & Fit 0700 SH	Out & Fit
Eric Weatherman CNI		In & Fit 0700	Out & Fit
Bart Chadwick CMA		In & Fit 0700 BC	Out & Fit
Jess Moore CMA		In & Fit JM 0700	Out & Fit
Michaela McCoog AECOM		In & Fit 0700 MM	Out & Fit
DENISE YEE AECOM		In & Fit 700 DY	Out & Fit
Michelle Stegner AECOM		In & Fit 700 MS	Out & Fit
Kelly Mitchell AECOM		In & Fit 700 KM	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard / J. Heatherman

Date: 9/18/2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Porewater and Sediment sampling on boats.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [x] [ ] Other Topics (describe/attach):
  water level up 2 ft., wood debris
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Michelle Stegner		9/18/2019

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Linda Howard	Linda Howard	In & Fit 0930 LH 9/18/19	Out & Fit LH 1642
Stu Holmes AECOM	Stu Holmes	In & Fit 0930 SH 9/18/19	Out & Fit 1650 SH
Paul Hamidi AECOM	Paul Hamidi	In & Fit PH 0930	Out & Fit PH 1642
DENNIS GROSS CNI	Dennis Gross	In & Fit 0700	Out & Fit 1650
George Schernitzki	George Schernitzki	In & Fit 700	Out & Fit 1650
Chris Huff CNI	Chris Huff	In & Fit 0700	Out & Fit 1650
Bart Chadwick CMA	Bart Chadwick	In & Fit 0930 BC	Out & Fit 1645 BC
Rachel Zajac-Fay Jacobs	Rachel Zajac-Fay	In & Fit 0930 RZF	Out & Fit 1645 RZF
John Gonder Jacobs	John Gonder	In & Fit 0930 JG	Out & Fit 1645 JG
Jess Mosine CMA	Jess Mosine	In & Fit JM 0930	Out & Fit 1645 JM

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: ____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Brian Fletcher	AECOM	0930	1650	Brian Fletcher

Michaela McCoog AECOM 0930 1650 Michaela McCoog

9/18/19 continued

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Brian Fletcher, AECOM		In & Fit 0700	Out & Fit
Alan Sims CMA		In & Fit 0700	Out & Fit
Chris Smith CMA		In & Fit 0700	Out & Fit
Jeff Johnson Jacobs		In & Fit 0700	Out & Fit
Rachel Tajic-Fay Jacobs		In & Fit 0700	Out & Fit
DAN LAYOIE JACOBS		In & Fit 0700	Out & Fit
JOHN GONDEK - JACOBS		In & Fit 0700	Out & Fit
PETER JENKINS GRAVITY		In & Fit 0700 RJ	Out & Fit
John Schaefer Gravity		In & Fit 0700 JS	Out & Fit
René Trudeau GRAVITY		0700 In & Fit	Out & Fit
Jeff Wilson Gravity		0700	

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Nicky Moody

Date: 9/7/2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Boat Safety

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody	Jennifer Pretare for Nicky M	9/07/2019

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicky Moody AECOM		0830 In & Fit NM	Out & Fit
Linda Howard AECOM		0830 In & Fit LH	Out & Fit
Stu Holmes AECOM		0830 In & Fit SH	Out & Fit
Michelle Stegner AECOM		8-30 In & Fit MS	900 Out & Fit MS
Al Thatcher AECOM		830 In & Fit	Out & Fit
Alan Sims CMA		830 In & Fit	Out & Fit
Joss Moore CMA		Jm 0830 In & Fit	Out & Fit
Dan Lavoie - Jacobs		0850 In & Fit	Out & Fit
Jeff Johnson - Jacobs		0830 In & Fit	1420 Out & Fit
John Culley; JACOBS		0830 In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
Raquel Trijal-Fong	Jacobs	0830		
Whitney Fraser	Lodestone Env. Cons.	0830		
John Gordek	Jacobs	0830		
Kevin Lundmark	ERM	0830		

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
[illegible] CMA		In & Fit 0830 CM	Out & Fit
Bart Chadwick CMA		In & Fit 0830 BC	Out & Fit
Brian Fletcher AECOM		In & Fit 0830 BF	Out & Fit
JENNIFER RAY AECOM		In & Fit 0830 JR	Out & Fit 0830 2030 JR
Michaela McCoog		In & Fit 0830 MM	Out & Fit
Kelly Mitchell AECOM	Kelly Mitchell	In & Fit 0830 KM	Out & Fit
Paul Hamidi AECOM		In & Fit 0830	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard | Josh Leathe

Date: 9-17-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Deadman's Eddy → porewater sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel Tieton	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[x]	Other Topics (describe/attach): Low water in UCR
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Linda M. Howard	9-17-19 1811

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
John Schade		In & Fit 1330 JS	Out & Fit 1820 J
Rachel Zayer-Fay / EDAI Jacobs	R Zayer-Fay	In & Fit 1330 RZF	Out & Fit
Bart Chadwick CMA		In & Fit 1330 BC	Out & Fit 1820 BC
Joss Mocé CMA		In & Fit JM 1330	Out & Fit 1820 JM
Chad Furuloe Gravity		In & Fit CF 1330	Out & Fit CF 1820
Lindsay Howard	Lindsay Howard	In & Fit 1330 LH	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: J. Pretare

Date: 9/17/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: PW Sampling - Evans AOI, USVG Vibraframe

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel Yeti	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] **Check [✓] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Jennifer Pretare		9-17-19 1800

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Jenny Prestare AECOM		In & Fit 1315	Out & Fit 1800
Josh Cuvelier		In & Fit 1315 1315	Out & Fit
Ed Scott		In & Fit 1315 ES	Out & Fit
Dan Lavoie		In & Fit 1315	Out & Fit
Chris Smith		In & Fit 1315 CS	Out & Fit
Alan Sims		In & Fit 1315	Out & Fit
René Trudeau		In & Fit 1315	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Linda Howard, John Schaffer

Date: 9.16.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	Biological/ Chemical / Electrical Hazards
☑	☑ Ergonomics - Lifting, Body Position
☐	☐ Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
☐	☐ Simultaneous/ Neighbouring Operations
☑	☑ Slip/ Trip/ Fall Hazards
☑	☑ Specialized PPE Needs hardhat if on dock
☐	☐ Traffic Control
☑	☐ Waste Management/ Decontamination
■	☑ Weather Hazards / Heat Stress / Cold Stress
☑	☑ Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☑	☑ Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	☑ Other Topics (describe/attach): Pinch points – Overhead line
☑	☑ Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Linda Howard	Jennifer Pretare for Linda H.	Date 9.16.19

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Bart Chadwick CMA		In & Fit 1515 BC	Out & Fit 1643 BC
Jon Moore CMA		In & Fit JM 1515	Out & Fit JM 1643
Chad Furlie Gravity		In & Fit CF 1515	Out & Fit CF 1635
Josh Schaefer Civil		In & Fit JS 1515	Out & Fit JS 1635
Linda Howard	Linda M Howard	In & Fit LH 9/15/15	Out & Fit LH 1642
Rachel Zayac-Fay EPA/ Jacobs	RZayac Fay	In & Fit 1515 RZF	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: N Moody

Date: 9/16/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:
Cayuse set up for sediment. - will attempt 1 harvest location.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
D. M. Eddy Boat Launch	Vessel Cayuse	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Nicky Moody		9/16/19 1800

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicky Moody AECOM		In & Fit NM 14/15	Out & Fit 1821 NM
Stu Holmes, AECOM		In & Fit SH 1415	Out & Fit
MAGGIE MILLER GRAVITY		In & Fit MAM 1415	Out & Fit
JEFF WILSON GRAVITY		In & Fit 1415	Out & Fit
PETER JENKINS GRAVITY		In & Fit 1500 RT	Out & Fit
Paul Hamidi AECOM		In & Fit 1500	Out & Fit
Kelly Mitchell AECOM		In & Fit 1500 KM	Out & Fit
JOHN GONDEK JACOBS		In & Fit JG 1500	Out & Fit 1821
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Palmieri

Date: 9/14/19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment sampling w/ freeze grab

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

Setup for sand sieving

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Anthony Palmieri		9-14-19 / 1800

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anthony Palmieri AECOM		In & Fit AP 0715	Out & Fit 1815 AP
Denyne McDonald AECOM	Denyne McDonald	In & Fit 0700	Out & Fit 1800
JENNIFER RAY AECOM		In & Fit 0700	Out & Fit 1800
Michelle Stegner		In & Fit 700	Out & Fit 1800
Jennifer Pretare		In & Fit 0700	Out & Fit 1800
Jeff Wilson Gravity		In & Fit 0730	Out & Fit
Eric Weatherman	Eweatherman	In & Fit 0700	Out & Fit
Douglas Hadley	Douglas Hadley	In & Fit 0700	Out & Fit
Dan Lando		In & Fit 0700	Out & Fit 0715
Shawn Hunz		In & Fit 0700	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

Rene Trudeau R 0700

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader:

Date: 9/14/19	**Project Name/Location:** Phase 3 Sediment Sampling	**Project Number:** 60612698

Today's Scope of Work: LOADING EQUIPMENT MATERIALS ON PW BOATS

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature** Jennifer Pretare	**Date** March 12, 2020 **Time** (at end of day / shift)

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Brent Chadwick CMA		In & Fit BC 0800	Out & Fit
Chris Smith CMA		In & Fit CS 0800	Out & Fit
Shane Hume Boundy		In & Fit 0800	Out & Fit
Joss Moore CMA		In & Fit 0800 JM	Out & Fit
Alan Sims CMA		In & Fit 0800 455	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Jenny Pretare

Date: 9-13-19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Unpack PW gear at warehouse; begin to set up.

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Jenny Pretare		9-13-19 / 1730

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Alan Sims CMA		In & Fit ADS 530	Out & Fit JHP
Jess Moore CMA		In & Fit JM 0830	Out & Fit
Chris Smith CMA		In & Fit CS 830	Out & Fit
Bart Chadwick CMA		In & Fit BC 0830	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Palmieri

Date: 9.13.19 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment Sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

Will change way we rinse with ~~ethyte~~ sp ethyl Alcohol,

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Anthony Palmieri		9.13.19 / 1730

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anthony Palmieri AECOM		In & Fit 0700 AP	Out & Fit
Nicky Moody AECOM		In & Fit 0700 NM	Out & Fit
J. Weatherman CWI		In & Fit 0700	Out & Fit
Dan Lavoie		In & Fit 0700	Out & Fit 1520
FRANK DILLON JACOBS		In & Fit 0700	Out & Fit 1520
Doug Hadley		In & Fit 0700	Out & Fit
George Scherniski		In & Fit 0707	Out & Fit
DENNIS GROSS		In & Fit 0700	Out & Fit
JEFF WILSON GRAVITY		In & Fit 0700	Out & Fit
Anders Utter AECOM	~~AU UU~~	In & Fit 0700 AU	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE Sign In/Out Out/Out

Name	Company Name	Arrival Time	Departure Time	Signature
Michelle Stegner	AECOM	700 M		
Eric Weatherman	E. Weatherman	0700		
Jenny Pretzer	AECOM	0700		

1730

↳ JENNIFER RAU AECOM 0700
RENÉ TRUDEAU GRAVITY 0700R
DENYNE MCDONALD AECOM 0700 1730

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: A. Palmieri

Date: 9.10.2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work: Sediment Sampling

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] **Check [x] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
  Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):
  No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Anthony Palmieri		Date 9.10.19 Time 1830

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anthony Palmieri AECOM		In & Fit 0700 AP	Out & Fit 1630 1830
Anders Utter AECOM		In & Fit 0700 AU	Out & Fit /
Eric Weatherman	Eric Weatherman	In & Fit	Out & Fit
Michelle Stegner		In & Fit 700 am	Out & Fit 17:30
Nicky Mealy		In & Fit 700 AM NM	Out & Fit 1810 NM
Doug Hadley		In & Fit 7:00 AM	Out & Fit
DENNIS GROSS		In & Fit 7:00 DG	Out & Fit
J Weatherman	J Weatherman	In & Fit 0700	Out & Fit
T. Prefare		In & Fit 0700	Out & Fit
R Trudeau		In & Fit 0700 R NM	Out & Fit 1810 R

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Palmieri

Date: 9.12.19	**Project Name/Location:** Phase 3 Sediment Sampling	**Project Number:** 60612698

Today's Scope of Work:

Sediment sampling

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

- [x] [■] **Check [x] as reviewed or mark [■] as not applicable**
- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [ ] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [ ] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [ ] Specialized PPE Needs
- [ ] [ ] Traffic Control
- [x] [ ] Waste Management/ Decontamination
- [■] [ ] Weather Hazards / Heat Stress / Cold Stress
- [x] [ ] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [x] [ ] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [ ] Other Topics (describe/attach):
- [x] [ ] Client specific requirements (describe):

No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature**	**Date** 9.12.19
Anthony Palmieri	Jennifer Pretare for Anthony P.	**Time** (at end of day / shift)

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anthony Palmieri		In & Fit 0700 AP	Out & Fit 1945
DENNIS GROSS		In & Fit 0700	Out & Fit 1900 DC
Denyne McDonald	Denyne McDonald	In & Fit 0700	Out & Fit 1900
JENNIFER RAM		In & Fit 0700	Out & Fit 1900
Josh Weatherman		In & Fit 0700	Out & Fit
FRANK DILLON		In & Fit 0700	Out & Fit 1715
DAN LAVOIE		In & Fit 0700	Out & Fit 1715
Jeff Wilson		In & Fit 0700	Out & Fit 1945
Rene Trudeau		In & Fit 0700R	Out & Fit ~~1945~~ R 1915
Michelle Stagner		In & Fit 0700 AM	Out & Fit 1945

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

~~SITE VISITOR / SITE REPRESENTATIVE~~

Name	Company Name	Arrival Time	Departure Time	Signature
Jennifer Pretare	AECOM	0700		
Nicky Moody	AECOM	0700	1945	
Doug Hadley	CNI	0700	1606	
Eric Weatherman	CNI	0700		
Anders Utter	AECOM	0930	1900	

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Jennifer Pretare
Phone Number: 510-681-6401

AECOM SH&E Rep. Name: Shannon Couch
Phone Number: 510-277-5369

Meeting Leader: Palmieri

Date: 9/11/2019 | **Project Name/Location:** Phase 3 Sediment Sampling | **Project Number:** 60612698

Today's Scope of Work:

Sediment sampling → one boat

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Boat Launch	Vessel	Vessel	Vessel

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [ ] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe):
- [x] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check [x] as reviewed or mark [■] as not applicable

[x]	Biological/ Chemical / Electrical Hazards
[x]	Ergonomics - Lifting, Body Position
[ ]	Lock Out/ Tag Out
	Short Service Employees - visual identifier and mentor/ oversight assignment
[ ]	Simultaneous/ Neighbouring Operations
[x]	Slip/ Trip/ Fall Hazards
[ ]	Specialized PPE Needs
[ ]	Traffic Control
[x]	Waste Management/ Decontamination
[■]	Weather Hazards / Heat Stress / Cold Stress
[x]	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
[x]	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
[ ]	Other Topics (describe/attach):
[x]	Client specific requirements (describe): No cell phone use while driving

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
Anthony Palmieri		9/11/2019 1800

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Rene Trudeau		In & Fit 0700R	Out & Fit 1800 AP
Anthony Palmieri		In & Fit 0700 AP	Out & Fit
Michelle Stegner		In & Fit 0700 MS	Out & Fit
Eric Weatherman		In & Fit 0700	Out & Fit
Jennifer Pretare AECOM		In & Fit 0700	Out & Fit
JEFF WILSON Fracinity		In & Fit 0700	Out & Fit
J Weatherman CWI	J Weatherman	In & Fit 0700	Out & Fit
Doug Hadley		In & Fit 0700	Out & Fit
FRANK DILLON JACOBS		In & Fit 0700	Out & Fit
DENNIS GROSS		In & Fit 0700	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature
James Kathly	ERM	7am		
Nicky Moody	AECOM	0700 NM		
Anders Utter	AECOM	0700 AU		

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation.** Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: David Hose
Phone Number:

AECOM SH&E Rep. Name: Mark Tauscher
Phone Number:

Meeting Leader: Anders Utter

Date: 8/29/19	Project Name/Location: UCR Phase 3 Sampling	Project Number:

Today's Scope of Work:

Warehouse Setup

Muster Point Location:	First Aid Kit Location:	Fire Extinguisher Location:	Spill Kit Location:
Rental Vans	Warehouse	Warehouse	warehouse

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [x] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [x] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [x] Required checklists/records available, understood (describe): upon request
- [x] Lessons Learned / SH&E improvements (describe): N/A

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

- [x] [ ] Biological/ Chemical / Electrical Hazards
- [x] [ ] Ergonomics - Lifting, Body Position
- [ ] [■] Lock Out/ Tag Out
- Short Service Employees - visual identifier and mentor/ oversight assignment
- [x] [ ] Simultaneous/ Neighbouring Operations
- [x] [ ] Slip/ Trip/ Fall Hazards
- [ ] [■] Specialized PPE Needs
- [ ] [■] Traffic Control
- [ ] [■] Waste Management/ Decontamination
- [x] [ ] Weather Hazards / Heat Stress / Cold Stress
- [ ] [■] Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
- [ ] [■] Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
- [ ] [■] Other Topics (describe/attach):
- [ ] [■] Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:

N/A

Describe Lessons Learned/ Improvement Areas from today:

N/A

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	Signature	Date / Time (at end of day / shift)
David Hose	David R Hose	8/29/2019 1330

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

AECOM

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Anders Utter AECOM	Anders Utter	In & Fit 1100 AU	Out & Fit 1315 AU
Nicky Moody AECOM	Nicky Moody	In & Fit 1100 AM NM	Out & Fit 1315 NM
Michaela McCoog AECOM	Michaela McCoog	In & Fit 1000 MM	Out & Fit 1315 MM
David Hosie AECOM	David Hosie	In & Fit 0900 DH	Out & Fit 1315 DH
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

AECOM

Americas

Daily Tailgate Meeting

S3AM-209-FM5

Instructions: Conduct meeting prior to sending crews to individual tasks. Require attendance of all AECOM employees and subcontractors. Invite personnel from simultaneous operations for coordination purposes. Review scope of work and briefly discuss required and applicable topics. **This meeting is a daily refresher, not a full orientation**. Task-specific discussions associated with Task Hazard Assessment (THA) follow this meeting at the task location immediately before individual task is started.

AECOM Supervisor Name: Dave Hose
Phone Number:

AECOM SH&E Rep. Name: Mark Tauscher
Phone Number:

Meeting Leader: Michaela McCoog

Date: 8-28-19	**Project Name/Location:**	**Project Number:**

Today's Scope of Work:

unpacking vans & reorganizing warehouse

Muster Point Location:	**First Aid Kit Location:**	**Fire Extinguisher Location:**	**Spill Kit Location:**
parking	on trucks	in warehous	

1. Required Topics

- [x] Fitness for Duty requirements, all sign in / sign out
- [x] Required training (incl. task specific) completed and current
- [x] SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)
- [x] Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting
- [x] STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA
- [ ] Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition
- [x] Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location
- [x] Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all
- [x] Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified
- [x] Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public
- [ ] Required checklists/records available, understood (describe):
- [ ] Lessons Learned / SH&E improvements (describe):

2. Discuss if Applicable to Today's Work

Check ☑ as reviewed or mark ■ as not applicable

☑	■	Check ☑ as reviewed or mark ■ as not applicable
☐	☐	Biological/ Chemical / Electrical Hazards
☑	☐	Ergonomics - Lifting, Body Position
☑	☐	Lock Out/ Tag Out
		Short Service Employees - visual identifier and mentor/ oversight assignment
☑	☐	Simultaneous/ Neighbouring Operations
☑	☐	Slip/ Trip/ Fall Hazards
☑	☐	Specialized PPE Needs
☑	☑	Traffic Control
☑	☐	Waste Management/ Decontamination
☑	☐	Weather Hazards / Heat Stress / Cold Stress
☑	☑	Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)
☐	☑	Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):
☐	☐	Other Topics (describe/attach):
☐	☐	Client specific requirements (describe):

3. Daily Check Out by Site Supervisor

Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:

The site is being left in a safe condition and work crew checked out as fit unless otherwise specified as above.

Site Supervisor Name	**Signature**	**Date** / **Time** (at end of day / shift)
Dave Hose	Dave Hose	8/28/2019 1800

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

All employees:

- **STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.**
- **Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.**
- **Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.**

SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
* The hazards & control measures associated with each task you are about to perform.
* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* That no tasks or work is to be performed without a hazard assessment.
* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
Nicky Moody AECOM		In & Fit 0800 NM	Out & Fit 6.00pm NM
David Hose AECOM		In & Fit 0900 DH	Out & Fit 1800 DH
Anders Utter AECOM		In & Fit 0800 AU	Out & Fit 1800 AU
Michaela McCoog AECOM		In & Fit 0800 am	Out & Fit 6.00 pm
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets: _____

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Kris McCaig	Kris McCaig	Teck	10/14/19
Rob Orr		Teck	10/14/19
Lisa Raterink		Jacobs	10/14/19
Tamara Knudson	Tamara Knudson	Spokane Tribe	10/14/19
Shiva Reeves		AECOM	10/14/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Kaila Savage	K Savage	Jacobs	10/9/2019

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Elle Anzinger		JACOBS / ERM	10/7/19
Ragan Driver		WCE, Inc.	10/7/19
Larry LeSueur		GRAVITY MARINE	10/7/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Tamara Knudson	Tamara Knudson	Spokane Tribe	10/8/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Chelsey Cook		AECOM	10-9-19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Nicole Badon		Jacobs/CH2M	9/30/19
Shawn Roark		Jacobs/CH2M	9/30/19
BRIAN STRONEL		CNI	9/30/2019

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Bret Walburn		Gravity	9-19-19
DENISE YEE		AECOM	9-19-19
SARAH KIMMER		AECOM	9/19/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
KEVIN LUNDMARK		ERM	9/16/19
Paul Hamidi		AECOM	9-16-19
Michelle Stegner		AECOM	9-16-19
JUSTIN EICHABERGER		NPS-LMRD	9/16/2019
PETER JENKINS		GRAVITY	9/16/19
Al Thatcher		AECOM	9/16/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Linda Howard	Linda Howard	AECOM	9/16/19
Joss Moore		CMA	9/16/19
Bart Chadwick		CMA	9/16/19
Chris Smith		CMA	9/16/19
Alan Sims		CMA	9/16/19
Brian Fletcher		AECOM	9/16/19
Kelly Mitchell	Kelly Mitchell	AECOM	9/16/19
René Trudeau		GRAVITY	9/16/19
Chad Forslof		Gravity	9/16/19
Shawn Hunt		Gravity	9/16/19
Maggie McKeon		Grav.	9/16/19
Emma Rigby	Emma Rigby	Gravity	9/16/19
Michaela McCoy		AECOM	9/16/19
Sarah McBain		AECOM	9/16/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Denise Mills		Tech-American	09/09/19
Eric Weatherman		CNI	9/10/19
Doug Hadley		CNI	9-9-19
DENNIS GROSS		CNI	9/9/19
FRANK DILLON		JACOBS	9/10/19
James Cathey		GRM	9/10/19
JOSH WEATHERMAN		CNI	9/10/19
Anders Utter		AECOM	9/10/19
René Trudeau		Gravity	9.10.19
Nicky Moody		AECOM	9.10.19
Jeff Wilson		Gravity	9.10.19
George Schernitzki		CNI	9/13/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the 2019 Phase 3 Sediment Study site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date
Denyne McDonald	Denyne McDonald	AECOM	9/12/19
JENNIFER RAY		AECOM	9/12/19
DAN LAVOIE		Jacobs	9/12/19

13.1 Disclaimer:

This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

© AECOM Restricted

Appendix B

Project Permits and Permissions

CCT

Pretare, Jennifer

From: Mills Denise SPOK <Denise.Mills@teck.com>
Sent: Tuesday, September 3, 2019 3:28 PM
To: Pretare, Jennifer
Cc: McDaniel, Sarah; McCaig Kris SPOK; Kessel Cristy SPOK; 'Kevin Lundmark (Kevin.Lundmark@erm.com)'; Jennifer Holder
Subject: RE: UCR - P3SS - Cultural resource monitoring during sediment sampling

Hi Jenny,

CCT confirmed today that they only need to be present during sampling at the south end of the bar at China Bend, although the monitor can stay the full work day if logistically convenient. We've also heard from the DOI that they do not require their monitors to be present at the China Bend or Evans AOIs so long as AECOM and CCT monitors are present.

CCT's contact for coordinating the monitor support is Elizabeth ("Liz") Armstrong. Here is her contact information:

Elizabeth Armstrong
CCT History/Archaeology
Archaeologist II
Elizabeth.Armstrong.HSY@colvilletribes.com
Work phone: 509-634-2887
Cell phone: 509-978-9351

Elizabeth said in an email this morning that they will need precise start dates and times no later than September 20th. Is this possible, given that you are planning to go to China Bend after the reference sites in Canada?

Thanks,

Denise

Denise Mills, RG, LHG
Program Manager, Upper Columbia River
Teck American Incorporated
+1.509.623.4515, direct
+1 509.904.9375, mobile
www.teck.com

From: Pretare, Jennifer <jennifer.pretare@aecom.com>
Sent: Tuesday, September 3, 2019 9:33 AM
To: Mills Denise SPOK <Denise.Mills@teck.com>
Cc: McDaniel, Sarah <sarah.mcdaniel@aecom.com>; McCaig Kris SPOK <Kris.McCaig@teck.com>; Kessel Cristy SPOK <Cristy.Kessel@teck.com>; 'Kevin Lundmark (Kevin.Lundmark@erm.com)' <Kevin.Lundmark@erm.com>; Jennifer Holder <Jennifer.Holder@erm.com>
Subject: RE: UCR - P3SS - Cultural resource monitoring during sediment sampling

[External email]

Thank you Denise,

My only questions would be who to contact and with how many days notice would they like to have for precise start dates/times? Since China Bend is towards the end of the schedule, there will undoubtedly be adjustments to the schedule between now and then.

Thanks
Jenny

Jennifer (Jenny) Pretare, Ph.D.
Biologist & Project Manager
Environment, Pacific Northwest Region
D +1-206-438-2175
M +1-510-681-6401
Jennifer.Pretare@aecom.com

AECOM
1111 3rd Ave, Suite 1600
Seattle, WA 98101, USA
T +206-438-2700
aecom.com

Built to deliver a better world

LinkedIn Twitter Facebook Instagram

From: Mills Denise SPOK <Denise.Mills@teck.com>
Sent: Tuesday, September 3, 2019 9:21 AM
To: Pretare, Jennifer <jennifer.pretare@aecom.com>
Cc: McDaniel, Sarah <sarah.mcdaniel@aecom.com>; McCaig Kris SPOK <Kris.McCaig@teck.com>; Kessel Cristy SPOK <Cristy.Kessel@teck.com>; 'Kevin Lundmark (Kevin.Lundmark@erm.com)' <Kevin.Lundmark@erm.com>; Jennifer Holder <Jennifer.Holder@erm.com>
Subject: UCR - P3SS - Cultural resource monitoring during sediment sampling

Hi Jenny,

We received confirmation that CCT would like to have a Tribal representative present during sediment sampling in the China Bend AOI, and that a representative does not need to be present during sediment sampling at the Deadman's Eddy or Evans AOIs. Although a Tribal representative does not need to be present during sampling at DME or Evans, CCT has offered to provide on if this would result in scheduling efficiencies during the field program.

Also, CCT has also confirmed that the Tribal representatives are able to work 6 days per week and may be available on Saturdays, if needed.

We are awaiting a response from the Department of Interior and whether they would like to have a DOI monitor present during sampling at the China Bend and Evans AOIs, and, if so, whether there are any schedule limitations that we should be aware of for scheduling and planning purposes. We will let you know when we have more information on this.

Please let us know if you have questions.

Thanks,

Denise

Denise Mills, RG, LHG
Program Manager, Upper Columbia River
Teck American Incorporated
+1.509.623.4515, direct
+1 509.904.9375, mobile
www.teck.com

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3123

SUPERFUND &
EMERGENCY
MANAGEMENT DIVISION

August 22, 2019

Kris McCaig
Teck American Incorporated
501 North Riverpoint Boulevard, Suite 300
Spokane, Washington 99202

VIA ELECTRONIC MAIL ONLY

Subject: EPA Approval to Finalize Phase 3 Sediment Study QAPP

Dear Kris,

EPA has reviewed the following Phase 3 Sediment Study-related documents submitted by Teck American Incorporated (TAI) on August 20, 2019:

- A table with TAI responses to EPA comments received August 15, 2019
- An Excel Workbook containing:
    - A detailed table of specific elements in the draft final QAPP that have been revised based on 1) EPA comments, and 2) addition of judgmental sampling locations at China Bend Area of Interest (AOI)
    - A copy of revised QAPP Table B4-3 (both clean and RLSO) showing how the EPA comment on bioassay test acceptance criteria was addressed
- A revised proposed sampling locations map for China Bend AOI, which now includes the primary and alternate judgmental sampling locations

The changes made in the response to comments, the revised workbook, and the revised China Bend sample location map are acceptable to EPA. However, for accuracy, please change the first 2 sentences in Footnote j in Tables B3-1 and A2 to:

> "EPA split samples will be collected for sediment chemistry locations (5 percent), bioassay locations (4 L at 15 ~~randomly~~ selected locations), and porewater locations (15 percent). Locations for sediment, bioassay, and porewater splits for metal analysis are identified in Table B1-1."

Please proceed with finalizing the Phase 3 Sediment Study QAPP and associated planning documents to reflect these changes. To be clear, the changes are to be made to the draft final version of the Phase 3 Sediment Study QAPP that was submitted for EPA review on August 2, 2019 (i.e., the version that incorporates the EPA's July 18, 2019 data quality objectives).

Sincerely,

Kathryn S. Cerise

Kathryn Cerise
EPA Remedial Project Manager

cc: Dan Audet, U.S. Department of Interior
Cindy Marchand, Confederated Tribes of the Colville Reservation
Tamara Knudson, Spokane Tribe of Indians
John Roland, Washington Department of Ecology

DNR

Pretare, Jennifer

From: JOHNSON, ARNE (DNR) <ARNE.JOHNSON@dnr.wa.gov>
Sent: Friday, August 30, 2019 12:13 PM
To: Mills Denise SPOK
Cc: McCaig Kris SPOK; Kessel Cristy SPOK; Pretare, Jennifer; 'Kevin Lundmark (Kevin.Lundmark@erm.com)'; Jennifer Holder; McDaniel, Sarah; Cerise, Kathy; Tan, Robert
Subject: RE: UCR RI/FS Phase 3 Sediment Study - 2019 Field Sampling Program

Follow Up Flag: Follow up
Flag Status: Flagged

Denise

Thank you for the notification of your upcoming sampling activities and the attached information.

Arne Johnson
East Uplands District Manager
Northeast Region
Department of Natural Resources
225 S. Silke Rd
Colville, WA 99114
(509) 684-7474

From: Mills Denise SPOK <Denise.Mills@teck.com>
Sent: Friday, August 30, 2019 11:11 AM
To: JOHNSON, ARNE (DNR) <ARNE.JOHNSON@dnr.wa.gov>
Cc: McCaig Kris SPOK <Kris.McCaig@teck.com>; Kessel Cristy SPOK <Cristy.Kessel@teck.com>; Pretare, Jennifer <jennifer.pretare@aecom.com>; 'Kevin Lundmark (Kevin.Lundmark@erm.com)' <Kevin.Lundmark@erm.com>; Jennifer Holder <Jennifer.Holder@erm.com>; McDaniel, Sarah <sarah.mcdaniel@aecom.com>; Cerise, Kathy <Cerise.Kathryn@epa.gov>; Tan, Robert <Tan.Robert@epa.gov>
Subject: UCR RI/FS Phase 3 Sediment Study - 2019 Field Sampling Program

Hello Arne,

Thank you for working with us on past sampling programs that Teck American Incorporated (TAI) has conducted on the Upper Columbia River (UCR) for the remedial investigation and feasibility study. I am writing to notify the Washington State Department of Natural Resources of our upcoming field sampling activities that will take place in the river from September 9 through the end of October 2019.

TAI, under the oversight of the U.S. Environmental Protection Agency (EPA), will be collecting sediment, porewater, and macroinvertebrate samples from the riverbed in three areas of the river between Marcus Flats at river mile (RM) 708 to the U.S.-Canada border north of RM 744. For the purpose the Phase 3 Sediment Study, the three areas are referred to as the Evans, China Bend, and Deadman's Eddy Areas of Interest (AOIs) (see first attachment with maps). The field sampling activities to be completed for this program are outlined in the EPA-approved final quality assurance project plan (QAPP), which is available online at https://ucr-rifs.com/assets/Docs/08-27-19-Final-Phase-3-Sed-QAPP.pdf. The sampling areas will be reached via boat. Attached for your information is the draft field schedule showing when we will be on the river, sampling within the three AOIs (i.e., Evans, Deadman's Eddy [shown as "DME" on the schedule], and China Bend).

If you have any questions, please don't hesitate to give me call. We respectfully request you confirm your receipt of this notification.

Thank you,

Denise

Denise Mills, RG, LHG
Program Manager, Upper Columbia River
Teck American Incorporated
+1.509.623.4515, direct
+1 509.904.9375, mobile
www.teck.com

National Park Service

National Park Service
U.S. Department of the Interior

Lake Roosevelt National
Recreation Area

1008 Crest Drive
Coulee Dam, WA 99116

509-754-7800 phone
509-633-9332 fax

LAKE ROOSEVELT NATIONAL RECREATION AREA MEMORANDUM

September 10, 2019

Memorandum

To: File

From: Superintendent Acting Superintendent Craig Brower 9/10/2019

Subject: Safety Concerns with Condition #25 of Permit #PWR LARO TCAI-013

On September 9, 2019 Kris McCaig of Teck American Incorporated (TCAI) called Jon Edwards to convey concerns with implementing condition #25 of Permit PWR LARO TCAI-013. Ms. McCaig reported that condition #25 as written would cause sampling teams to retain a large quantity of excess sediment (IDW) on their vessels due to the distance between sampling locations and offload points.

After further discussion with Jon Edwards and reviewing past decisions regarding IDW retention during sediment sampling, it is my decision to modify condition #25. From this date forward until completion of work authorized under this permit, TCAI and/or its contractor's shall return excess sample materials to the vicinity from which it was collected. The National Park Service requires all excess materials be placed back in a manner that minimizes the distribution of potential contamination in these materials. Whenever possible excess materials will be returned to the location from which it was collected using the same sampler or comparable mechanism. Please attach this memo to the permit and distribute it to all appropriate field staff.

Form 10-114
Rev. DEC. 99

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service

Special Use Permit

Name of Use: Sample Collection for the 2019 Phase 3 Sediment Study

Date Permit Reviewed: August 27, 2019
Expires: November 5, 2019
Permit #PWR LARO TCAI-013
Region Park Type No. #

Long Term _

Short Term X

Name of Area: Lake Roosevelt National Recreation Area

Name or Permittee: Teck America Inc.
Phone: (509) 623-4501

Service Address: 501 N Riverpoint Blvd., Suite 300
Spokane, WA 99202

Teck America is hereby authorized during the period from (9 day 9 Month 2019), through (5 Day 11 Month 2019), to use the following described land or facilities in the permit conditions:

Those areas within Lake Roosevelt National Recreation Area described within the *Upper Columbia River - Final Quality Assurance Project Plan for the Phase 3 Sediment Study* dated August 2019 and as approved by the U.S. Environmental Protection Agency on August, 2019 in consultation with the Cultural Resource Coordination Group.

For the purpose(s) of: Collecting Samples [Research (2500)]
Contact: Jon Edwards Phone: (509) 754-7876

Authorizing legislation or other authority (RE - DO-53): 16 U.S.C. §§1a-1; 42 U.S.C. §§9601 *et seq.*

NEPA Compliance: CATEGORICALLY EXCLUDED ___ EA/FONSI __ EIS _X_ OTHER APPROVED PLANS

DO-12 CE 3.3 (P)

PERFORMANCE BOND: Required ____ Not Required __X__ Amount $0

LIABILITY INSURANCE: Required __X___ Not Required ____ Amount $1,000,000

ISSUANCE of this permit is subject to the conditions on the reverse hereof and appended pages and when appropriate to the payment to the U.S. Dept. of the Interior, National Park Service.

The undersigned hereby accepts this permit subject to the terms, conditions, covenants, obligations, and reservations, expressed or implied herein.

Permittee:

Kris R. McCaig — Kris McCaig Manager Environment + Public Affairs — 9/9/19
Signature — **Print Name and Title** — **Date**

Authorizing Official:

[signature] — ACTING SUPERINTENDENT — 09/09/2019
Signature — **Park Superintendent** — **Date**

CONDITIONS OF THIS PERMIT

1. The Permittee shall exercise this privilege subject to the supervision of the Park Superintendent and shall comply with all applicable laws, regulations, codes, standards and policies, including but not limited to 29 CFR 1910 and 16 U.S.C. Section 1 *et seq*.

   Based on previously cited and/or documented violations at Lake Roosevelt National Recreation Area (LARO), the following firm and/or individual is not granted access and shall not perform any field activities under this Permit.

   Mr. Greg Diefenbach, Consulting Geologist

2. The Permittee shall pay the United States for any damage resulting from the activities contemplated by this Permit, which would not reasonably be inherent in the use that the Permittee is authorized to make of the Site. For purposes of this Permit, the Site is that portion of the Upper Columbia River (UCR) Site as defined within the June 2, 2006 Settlement Agreement between the U.S. Environmental Protection Agency (EPA) and Teck Cominco that lies within the boundaries of LARO.

3. No Member of or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this Permit or to any benefit that may arise there from, but this provision shall not be construed to extend to this grant if made with a corporation for its general benefit.

4. During the performance of this Permit, the Permittee agrees that it will not discriminate against any person because of race, color, religion, sex, or national origin. The Permittee will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex, or national origin.

5. ANTI-DEFICIENCY ACT. No provision of this Permit shall be interpreted as or constitute a commitment or requirement that the United States obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. §§1341-1344 and 1511-1519, or any other applicable provision of law.

6. This Permit may not be transferred or assigned to parties not described within the permit application without the prior written consent of the Park Superintendent.

7. The National Park Service (NPS) reserves the right to stop any work being performed on the Site pursuant to this Permit should NPS determine that such work has or will negatively impact any NPS resources, which would not reasonably be inherent in the use that the Permittee is entitled to make of the Site pursuant to this Permit.

8. The Permittee is prohibited from giving false information; to do so will be considered a breach of conditions and be grounds for revocation [Re: 36 CFR 2.32(a)(4)].

9. This Permit is granted upon the express condition that the United States, its agents and employees, shall be free from all liabilities and claims for damages and/or suits for or by any reason, arising from or related to activities conducted pursuant to this Permit, including any releases of Waste Materials (as defined in Paragraph 33 of this Permit), injury, or death to any person or property of the Permittee, its contractors, subcontractors, agents or employees, or third parties, from any cause or causes whatsoever while in or upon the Site or any part thereof during the term of this Permit or occasioned by any use of the Site or any activity

carried on by the Permittee or its contractors or subcontractors in connection herewith, and the Permittee hereby covenants and agrees to indemnify, defend, save and hold harmless the United States, its agents and employees, from all liabilities, charges, expenses and costs on account of or by reason of any such injuries, deaths, liabilities, claims, suits or losses however occurring, or damages arising from any acts related to this Permit.

10. This Permit is issued only for the use of the portion of the Site within LARO identified in the EPA approved *Upper Columbia River - Final Quality Assurance Project Plan for the 2019 Phase 3 Sediment Study* dated August 2019 (QAPP), and only for the dates and times specified.

11. At no time will Permittee's activities at the Site interfere with a visitor's enjoyment of the Park, except as necessary to conduct the activities contemplated by this Permit. Visitor access to all park facilities, exhibits, resources, etc. will be maintained at all times and the Permittee will not block or obstruct any park walkway, dock, boat launch, trail, or road, except to the extent necessary to conduct the activities authorized by this Permit.

12. The Permittee will comply with any and all instructions from official representatives of the NPS (e.g., Rangers, Point(s) of Contact, and Cultural Resource Representatives), including but not limited to orders to cease and desist work.

13. This Permit does not authorize any use, activity, or purpose other than those expressly described herein.

14. NPS reserves the right to immediately rescind this Permit at any time should any of the Permit conditions be violated, or should the activity in any way interfere with any program of the Park, except as expressly authorized by this Permit, or at the discretion of the Park Superintendent.

15. If the Permittee fails to comply with the requirements of the Permit or uses the Permit for an unauthorized use, activity, or purpose, the Permittee shall pay the Department $25,000 for each failure to comply or unauthorized use, activity or purpose, unless excused by the Park Superintendent.

16. The issuance of this Permit will grant the Permittee access to the Site to conduct only those activities necessary to perform the work in the EPA approved QAPP and described in the Permit conditions. To the extent practicable, all work performed subject to this Permit shall comply with the EPA guidance, *Green Remediation: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites*, EPA 542-R-08-002 (April 2008).

17. Future access to NPS property or any modifications to this Permit will require a written amendment issued by the NPS.

18. The Permittee shall coordinate the performance of work with the appropriate representative of the NPS. The primary local NPS point of contact for all aspects of this Permit will be Jon Edwards (Office: 509/754-7876, Cell: 509/879-5981, and Email: jon_edwards@nps.gov). In the event of emergency, accident, injury or death, call 911. For any other environmental accidents, spill or release, NPS law enforcement must be contacted via the local county

Sherriff's office, Stevens County (509/684-2555) or Lincoln County (509/725-3501). Additionally, Jon Edwards must be contacted within one-hour of any incident.

19. REGULATORY REQUIREMENTS: All Site work will be conducted and implemented in accordance with all federal, state, and local laws, regulations and requirements as directed by the NPS, and will be consistent with the NPS mission (*see, e.g.*, 16 U.S.C. Section 1 *et seq.*) and Permit conditions.

20. The Permittee is responsible for complying with any federal, state, or local requirement(s) to obtain any licenses and/or permits for the activities conducted pursuant to this Permit, and for obtaining any utility clearances required before the permitted work is commenced.

21. All work and investigations on NPS property requires a minimum 48-hour advance notice (business days, Monday-Friday except federal holidays) to the NPS points of contact identified above. The Permittee will provide before activities commence the NPS a written list of names with email addresses, phone and fax numbers of its points of contact, including the Permittee's contractors and subcontractors for activities conducted on the Site pursuant to this Permit.

22. The Permittee and its representatives, agents, contractors, and subcontractors must be apprised of, be familiar with, and comply with the contents of this Permit. A copy of this Permit will be available and producible upon request by any NPS representative to the Permittee and/or its contractors and subcontractors during all phases of the permitted work.

23. Any and/or all sample collection activities on NPS or Bureau of Reclamation (BOR) property, or those activities that are or may be impacting NPS or BOR property and resources shall be approved by NPS cultural resource representative(s) or previously agreed upon cultural resource professional(s) meeting the Secretary of Interior's standards (36 CFR part 61). The daily work hours for NPS cultural resource representatives are 7:00 am to 5:00 pm PDT. Travel and meetings (e.g., safety) necessary for the activities allowed by this Permit will occur during work hours.

24. This Permit does not grant any property rights, easements, right-of-ways, or any other interest in real property, including ownership of samples collected.

25. Permittee shall dispose of samples collected but not selected for analysis or collected in excess of the volume required in the EPA approved QAPP as Investigation Derived Waste (IDW) prior to expiration of the Permit, unless amended. Permittee shall submit to the NPS point of contact a copy of the complete chain of custody form, manifest, and receipt of disposal for each sample collected within 30-days of permit expiration.

26. The Permittee and its contractors and subcontractors are responsible for the proper handling and off-Site disposal of all generated wastes, including but not limited to samples, in accordance with state and federal regulations. This includes all IDW, which will be handled in accordance with all legal requirements and will be containerized, characterized for disposal purposes only, and properly disposed of at an off-Site facility at the Permittee's expense. All IDW shall be placed in appropriate containers and removed from NPS property at the end of each work day. IDW shall not be staged or stored for more than 24 hours on NPS property. IDW shall not be disposed on NPS property. IDW shall not be used for any other purposes and/or characterized/analyzed, except as needed for disposal.

27. Appropriate Occupational Safety and Health Administration personal protective equipment must be used by field crews and other on-Site personnel.

28. A copy of all data (*e.g.*, sample results, laboratory results, coordinates, wildlife inventories), documentation (*e.g.*, manifests, field notes, maps, photographs, monitoring results), and reports prepared relating to work performed pursuant to this Permit will be made available to the NPS points of contact when submitted to the EPA.

29. The Permittee assumes liability for all activities, releases, incidents and events caused by or associated with any permitted activity, including any and all releases of Waste Materials into the environment resulting from permitted activities. The Permittee assumes responsibility for costs, repairs, and/or restoration to any areas damaged by such releases and/or discharges, whether those areas are within the permitted area or not.

30. In the event of a spill or other release or threatened release of a Waste Material into the environment that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, the Permittee shall immediately take all appropriate action to prevent, abate, or minimize such release or threat of release, and shall immediately make proper notification in accordance with all applicable legal and regulatory requirements. Notification of any release of a Waste Material shall be made to the Washington Emergency Management Division at 1-800-258-5990 and NPS law enforcement at (509) 754-7813. Notice also shall be made to the NPS points of contact identified in Paragraph 19 above. Contingency measures will be implemented as noted in the following paragraph, and the Permittee shall be responsible for cleanup of all spills or other releases.

31. Contingency measures:

    a. Permittee and its contractors will immediately stop operations;

    b. All crew members will don appropriate personal protective equipment and take appropriate steps to abate and remediate the release; and

    c. Authorized activities will be suspended until conditions are determined to be stable according to NPS determination.

32. Nothing in the preceding paragraphs shall be deemed to limit any authority of the United States, (a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Materials on, at, or from the Site, or (b) to direct or order such action, or seek an order from the requisite Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Materials on, at, or from the Site.

33. "Waste Material" shall mean, for purposes of this Permit, (a) any "hazardous substance" under CERCLA Section 101(14), 42 U.S.C. § 9601(14); (b) any "pollutant or contaminant" under CERCLA Section 101(33), 42 U.S.C. § 9601(33); (c) any "solid waste" under RCRA Section 1004(27); (d) any hazardous waste under RCRA Section 1004(5), 42 U.S.C. § 6903(5); (e) any petroleum product or waste, including crude oil or any fraction thereof or waste; and (f) natural gas, liquefied natural gas, or synthetic gas or any mixtures thereof.

34. The Permittee shall ensure its liability insurance remains in full force during the entirety of the period covered by this Permit. The Permittee agrees to be fully responsible for the

management, performance, use and safety of the Site under this Permit and hereby accepts responsibility and assumes liability for any and all claims arising from the intentional, reckless or negligent actions or omissions of its representatives, employees, agents, contractors or subcontractors directly or indirectly connected with the work performed, or the maintenance or use of the Site, to the extent permitted by law. The Permittee shall, and shall require all of its contractors and subcontractors to:

a. Procure a general liability insurance policy from responsible companies for $1,000,000 (one million dollars), or the minimum required by law, if any, whichever amount is greater. The United States of America shall be named as an additional insured on all policies. The Permit number will be included on said policy. All such policies shall specify that the insured shall have no right of subrogation against the United States for payments of any premiums or deductibles thereunder, and such insurance policies shall be obtained by, be for the account of, and be at the insured's sole risk. A copy of the Certificate of Insurance evidencing proper insurance coverage and referencing the Permit number shall be returned to NPS with the executed Permit to the Park Superintendent. No work shall be allowed to proceed under this Permit until the copy of said Certificate of Insurance is provided to the Park Superintendent.

b. Pay the United States the full value for all damages to the lands or other property of the United States caused by the Permittee or by the Permittee's employees, agents, contractors, subcontractors, or employees of the contractors or subcontractors.

c. Indemnify, save and hold harmless and defend the United States against all fines, claims, damages, losses, judgments, and expenses to the extent permitted by law rising out of, or from any omission or activity in connection with activities conducted under this Permit.

35. The Permittee and its contractors and subcontractors shall take adequate measures as directed and approved by NPS to prevent, minimize, and mitigate damage to Park resources during all activities conducted pursuant to this Permit. The Permittee shall restore any injury to NPS property resulting from activities conducted pursuant to this Permit in accordance with NPS, other federal and state requirements, and at the direction of NPS.

36. No IDW or waste materials shall be allowed to enter natural or manmade water or sewer systems in or on NPS property by either direct or indirect action of the Permittee. Any waste material entering onto NPS property shall be removed and the affected property cleaned, stabilized, or restored the day that this condition is discovered, at the direction, and to the satisfaction, of NPS. The Permittee shall take all necessary measures to prevent air, noise, and water pollution by any material and/or equipment used during this permitted activity.

37. Construction equipment, materials, and all other supplies shall be staged in such a way as to allow for the safe use of the area by park visitors, to the extent possible.

38. The Permittee is responsible for the safety of all Site visitors and shall provide the necessary direction, barricades, detours, and other safety measures to ensure visitor safety. All access restrictions to the work area will be coordinated with the NPS points of contact listed above.

39. Other than the immediate work area and the clearly defined safety zone, all sidewalks, walkways, roadways, docks, boat launches, and trails must remain unobstructed to allow for the reasonable use of these areas by pedestrians, vehicles, and other park users.

40. Any injuries to any persons from the activities authorized under this Permit shall be reported immediately to the NPS points of contact. At least one operable cell phone is required to be with each field crew at all times.

41. The United States shall have no liability for any claims or causes of action in any forum regarding any activities conducted pursuant to this Permit, including but not limited to liability for claims or causes of action for property damage, bodily injury, or death caused by Permittee's use of NPS property in connection with this Permit.

42. The Permittee agrees to comply with and be bound by the terms of this Permit and to undertake all actions set forth in this Permit. In any action by the NPS to enforce the terms of this Permit, the Permittee consents to and agrees not to contest the authority or jurisdiction of NPS to issue or enforce this Permit, and agrees not to contest the validity of the Permit or its terms.

43. All promotional and informational material related to Site activities, including signage, relating to activities undertaken pursuant to this Permit shall be reviewed and approved by the Park Superintendent prior to its release or use.

44. Good order and proper decorum shall be maintained by those persons conducting and participating in Site activities and public safety and general welfare will not be endangered.

AQUATIC INVASIVE SPECIES PREVENTION REQUIREMENTS:

45. Local boats are exempt from inspections of aquatic invasive species but, are requested to fill out the Lake Roosevelt voluntary AIS Self-certification form. Local boats are boats that are from Stevens, Ferry, Spokane, Lincoln, and Grant Counties that have not been in waters outside this area of Washington State in the last 30 days. If a boat has been in waters outside this area within the last 30 days, it will need an inspection.

46. Mandatory AIS vessel inspection is required prior to launching in Lake Roosevelt for all boats that have been out of the State of Washington in the last 30 days. Inspections must be performed by either a qualified Washington State inspector or a NPS provided inspector. (Permittee is to schedule a period of NPS provided vessel inspection times with the Permits Coordinator at a minimum of one month in advance.)

47. To help prevent the spread of aquatic invasive species, it is the permitee's responsibility adhere to the following instructions:

    a. All boats, trailers, and equipment that contact water must be cleaned prior to launching on park waters and are subject to inspection by NPS personnel. If boats or trailers have visible plants, mud, mussels, standing water or other signs of contamination, they will not be allowed to enter the water and are subject to enforcement of all applicable state and federal laws.

    b. Upon take out, while still in the immediate area of the lakeshore, the following tasks must be completed:
        - ✓ Drain the water from motor, live wells and bilges on land;
        - ✓ Completely inspect vessels and trailers for any grit or debris;
        - ✓ If feasible, air-dry boats and other equipment for at least five (5) days before launching on any other waterway;
        - ✓ Allow all accessory equipment to dry completely before reuse.

UPON THE ACCEPTANCE OF THE CONDITIONS CONTAINED IN THIS PERMIT, INDICATED BY THE APPROVAL OF THE PERMITTEE IN THE SPACE PROVIDED ON THIS PERMIT, AND THE RETURN OF A PROPERLY EXECUTED ORIGINAL TO THIS OFFICE WITHIN NOT MORE THAN 30 DAYS OF ISSUANCE, THIS PERMIT BECOMES VALID FOR THE ACTIVITIES DESCRIBED.

RETURN ONE SIGNED ORIGINAL TO:

Attention: Superintendent
Dan Foster
1008 Crest Drive
Coulee Dam, WA
99116

NATIONAL PARK SERVICE
Department of the Interior

USDA Soil Import

United States Department of Agriculture

Animal and Plant Health Inspection Service

Plant Protection & Qurantine

4700 River Road Riverdale, Maryland 20737-1236

June 25, 2019

Re: P525-190621-002

Jennifer Pretare

1111 3rd Ave, Suite 1600

Seattle, Washington 98101

Dear Dr. Jennifer Pretare:

The application text indicates that this soil is from the Columbia River system. It does not appear this would functionally include any quarantined areas of British Columbia, however I will point out that the Spruce Grove BC locale as listed in the USDA Soil Circular may be in the system drainage. Nonetheless, I assume the soil will not come from the farm(s) in that specific area given that the focus is on Columbia River itself and the state of Washington per - see https://www.epa.gov/columbiariver/upper-columbia-river-remedial-investigation-feasibility-study.

Your application to move soil or soil-like materials from a non-regulated area in Canada for non-biological analysis does not require a permit. The Code of Federal Regulations (CFR), Title 7 Section 330.300a, exempts the requirements of a permit if the soil comes from such areas of Canada. However, all soil from Canada is subject to inspection at the port of U.S entry. In accordance with the Plant Protection Act, the inspector may refused entry if the inspection finds plant pests that are actionable to the United States.

Please keep in mind that you are also responsible for ensuring compliance with any applicable regulations of other State and Federal agencies (e.g., State Departments of Agriculture, U.S. Fish and Wildlife Service, etc.).

Thank you for your cooperation. If you have any questions regarding APHIS-PPQ permits, please contact the PPQ Permit Unit at 1-866-524-5421.

Sincerely,

Clinton L. Campbell, Ph.D.

State Operations Coordinator

Alaska and Washington

APHIS Plant Health Programs

Plant Protection and Quarantine

An Equal Opportunity Provider and Employer

Government of Canada

Natural Resources Canada
Ressources naturelles Canada

CANMET Mining and Mineral Sciences Laboratories
Laboratoires des mines et des sciences minérales de CANMET

555 Booth Street
Ottawa, Canada K1A 0G1

555, rue Booth
Ottawa, Canada K1A 0G1

Ottawa, 5th September, 2019

Denise Mills
Program Manager, Upper Columbia River
Teck American Incorporated
Suite 300 – 501 North Riverpoint Boulevard
Spokane, WA 99202

Subject: 2019 sediment sampling for the Phase 3 sediment study

Ms Mills,

This is to confirm that permission is granted to collect sediment samples in Canada as part of the Upper Columbia River Remedial Investigation and Feasibility Study (UCR RI/FS). It is clear that the sampling is directly related to the UCR RI/FS and is scientifically relevant. We concluded that the proposed sampling does not require a permit. Global Affairs Canada have also been advised of the sediment sampling work plan and are in agreement.

Please note, however, that we request that the consultant keeps us informed as to any changes in the scheduling or location of sampling in Canada.

Best regards

Carrie Rickwood
Ecosystem Risk Program
CANMET Mining
Natural Resources Cnaada
555 Booth St, Ottawa
ON, K1A 0G1

cc. Felicia Minotti (Global Affairs Canada) Kathy Cerise (US EPA)

Canada

Immigration, Réfugiés et Citoyenneté Canada

Immigration, Refugees and Citizenship Canada

Date: 26/08/2019

LMIA Exemption Code:	R186(a)
Prospective Temporary Foreign Worker:	PRETARE, JENNIFER ANNE
Client ID:	67204981
Prospective Employer:	AECOM CANADA LTD.
Prospective Position:	FIELD SUPERVISOR

We have reviewed your request for an opinion that the above-noted temporary foreign worker is exempt from the requirement of a Work Permit. It appears that the temporary foreign worker **may be exempt** from the requirement to obtain a work permit under:

R186(a) Business visitors

The temporary foreign worker to whom you have offered the above-noted position may request entry under the above-noted exemption at a port of entry upon arrival in Canada. He/she will be examined to determine that all other requirements of the *Immigration and Refugee Protection Act* and *Regulations* are met. These requirements may include medical, security and background checks for the client and if applicable, any accompanying family members. Please note that this letter constitutes **an opinion only** based on the information you have provided for review. The final decision will be made when the prospective temporary foreign worker makes an application at a Canadian Port of Entry.

Please ensure that you provide the temporary foreign worker with a copy of this letter as **the letter should be presented to an officer at the port of entry upon arrival in Canada.** The prospective temporary foreign worker **should also have copies of supporting documentation** supplied with this request as he or she may be requested to provide supporting evidence again at the port of entry.

For LMIA exemptions please note that the employer is still required to enrol in the Employer Portal and submit the Offer of Employment to IRCC through the Employer Portal before a work permit can be issued to the foreign national. The employer must give the Offer of Employment number (i.e. A00#####) to the foreign national to include on their work permit application.

If supporting documentation presented to the CBSA officer does not match what you provided in this request, this opinion is null and void.

Sincerely,

Rosa Ragusa
International Mobility Workers Unit – Dedicated Service Channel
Immigration, Refugees and Citizenship Canada / Government of Canada
IRCC.DNIMWU-UMITRN.IRCC@CIC.GC.CA

Canada

Immigration, Réfugiés et Citoyenneté Canada

Immigration, Refugees and Citizenship Canada

Date: 26/08/2019

LMIA Exemption Code:	R186(a)
Prospective Temporary Foreign Worker:	HALE, MARK RONALD
Client ID:	1122605246
Prospective Employer:	AECOM CANADA LTD.
Prospective Position:	FIELD SUPERVISOR

We have reviewed your request for an opinion that the above-noted temporary foreign worker is exempt from the requirement of a Work Permit. It appears that the temporary foreign worker **may be exempt** from the requirement to obtain a work permit under:

R186(a) Business visitors

The temporary foreign worker to whom you have offered the above-noted position may request entry under the above-noted exemption at a port of entry upon arrival in Canada. He/she will be examined to determine that all other requirements of the *Immigration and Refugee Protection Act* and *Regulations* are met. These requirements may include medical, security and background checks for the client and if applicable, any accompanying family members. Please note that this letter constitutes **an opinion only** based on the information you have provided for review. The final decision will be made when the prospective temporary foreign worker makes an application at a Canadian Port of Entry.

Please ensure that you provide the temporary foreign worker with a copy of this letter as **the letter should be presented to an officer at the port of entry upon arrival in Canada.** The prospective temporary foreign worker **should also have copies of supporting documentation** supplied with this request as he or she may be requested to provide supporting evidence again at the port of entry.

For LMIA exemptions please note that the employer is still required to enrol in the Employer Portal and submit the Offer of Employment to IRCC through the Employer Portal before a work permit can be issued to the foreign national. The employer must give the Offer of Employment number (i.e. A00#####) to the foreign national to include on their work permit application.

If supporting documentation presented to the CBSA officer does not match what you provided in this request, this opinion is null and void.

Sincerely,

Rosa Ragusa
International Mobility Workers Unit – Dedicated Service Channel
Immigration, Refugees and Citizenship Canada / Government of Canada
IRCC.DNIMWU-UMITRN.IRCC@CIC.GC.CA

Canada

Immigration, Réfugiés et Citoyenneté Canada

Immigration, Refugees and Citizenship Canada

Date: 26/08/2019

LMIA Exemption Code:	R186(a)
Prospective Temporary Foreign Worker:	HOSE, DAVID RICHARD
Client ID:	66163093
Prospective Employer:	AECOM CANADA LTD.
Prospective Position:	FIELD SUPERVISOR

We have reviewed your request for an opinion that the above-noted temporary foreign worker is exempt from the requirement of a Work Permit. It appears that the temporary foreign worker **may be exempt** from the requirement to obtain a work permit under:

R186(a) Business visitors

The temporary foreign worker to whom you have offered the above-noted position may request entry under the above-noted exemption at a port of entry upon arrival in Canada. He/she will be examined to determine that all other requirements of the *Immigration and Refugee Protection Act* and *Regulations* are met. These requirements may include medical, security and background checks for the client and if applicable, any accompanying family members. Please note that this letter constitutes **an opinion only** based on the information you have provided for review. The final decision will be made when the prospective temporary foreign worker makes an application at a Canadian Port of Entry.

Please ensure that you provide the temporary foreign worker with a copy of this letter as **the letter should be presented to an officer at the port of entry upon arrival in Canada.** The prospective temporary foreign worker **should also have copies of supporting documentation** supplied with this request as he or she may be requested to provide supporting evidence again at the port of entry.

For LMIA exemptions please note that the employer is still required to enrol in the Employer Portal and submit the Offer of Employment to IRCC through the Employer Portal before a work permit can be issued to the foreign national. The employer must give the Offer of Employment number (i.e. A00#####) to the foreign national to include on their work permit application.

If supporting documentation presented to the CBSA officer does not match what you provided in this request, this opinion is null and void.

Sincerely,

Rosa Ragusa
International Mobility Workers Unit – Dedicated Service Channel
Immigration, Refugees and Citizenship Canada / Government of Canada
IRCC.DNIMWU-UMITRN.IRCC@CIC.GC.CA

Canada

Immigration, Réfugiés et Citoyenneté Canada

Immigration, Refugees and Citizenship Canada

Date: 26/08/2019

LMIA Exemption Code:	R186(a)
Prospective Temporary Foreign Worker:	MOODY, NICOLA JANE DRURY
Client ID:	1122604892
Prospective Employer:	AECOM CANADA LTD.
Prospective Position:	FIELD SUPERVISOR

We have reviewed your request for an opinion that the above-noted temporary foreign worker is exempt from the requirement of a Work Permit. It appears that the temporary foreign worker **may be exempt** from the requirement to obtain a work permit under:

R186(a) Business visitors

The temporary foreign worker to whom you have offered the above-noted position may request entry under the above-noted exemption at a port of entry upon arrival in Canada. He/she will be examined to determine that all other requirements of the *Immigration and Refugee Protection Act* and *Regulations* are met. These requirements may include medical, security and background checks for the client and if applicable, any accompanying family members. Please note that this letter constitutes **an opinion only** based on the information you have provided for review. The final decision will be made when the prospective temporary foreign worker makes an application at a Canadian Port of Entry.

Please ensure that you provide the temporary foreign worker with a copy of this letter as **the letter should be presented to an officer at the port of entry upon arrival in Canada.** The prospective temporary foreign worker **should also have copies of supporting documentation** supplied with this request as he or she may be requested to provide supporting evidence again at the port of entry.

For LMIA exemptions please note that the employer is still required to enrol in the Employer Portal and submit the Offer of Employment to IRCC through the Employer Portal before a work permit can be issued to the foreign national. The employer must give the Offer of Employment number (i.e. A00#####) to the foreign national to include on their work permit application.

If supporting documentation presented to the CBSA officer does not match what you provided in this request, this opinion is null and void.

Sincerely,

Rosa Ragusa
International Mobility Workers Unit – Dedicated Service Channel
Immigration, Refugees and Citizenship Canada / Government of Canada
IRCC.DNIMWU-UMITRN.IRCC@CIC.GC.CA

Canada

Immigration, Réfugiés et Citoyenneté Canada

Immigration, Refugees and Citizenship Canada

Date: 26/08/2019

LMIA Exemption Code:	R186(a)
Prospective Temporary Foreign Worker:	PALMIERI, ANTHONY D
Client ID:	1122604670
Prospective Employer:	AECOM CANADA LTD.
Prospective Position:	FIELD SUPERVISOR

We have reviewed your request for an opinion that the above-noted temporary foreign worker is exempt from the requirement of a Work Permit. It appears that the temporary foreign worker **may be exempt** from the requirement to obtain a work permit under:

R186(a) Business visitors

The temporary foreign worker to whom you have offered the above-noted position may request entry under the above-noted exemption at a port of entry upon arrival in Canada. He/she will be examined to determine that all other requirements of the *Immigration and Refugee Protection Act* and *Regulations* are met. These requirements may include medical, security and background checks for the client and if applicable, any accompanying family members. Please note that this letter constitutes **an opinion only** based on the information you have provided for review. The final decision will be made when the prospective temporary foreign worker makes an application at a Canadian Port of Entry.

Please ensure that you provide the temporary foreign worker with a copy of this letter as **the letter should be presented to an officer at the port of entry upon arrival in Canada.** The prospective temporary foreign worker **should also have copies of supporting documentation** supplied with this request as he or she may be requested to provide supporting evidence again at the port of entry.

For LMIA exemptions please note that the employer is still required to enrol in the Employer Portal and submit the Offer of Employment to IRCC through the Employer Portal before a work permit can be issued to the foreign national. The employer must give the Offer of Employment number (i.e. A00#####) to the foreign national to include on their work permit application.

If supporting documentation presented to the CBSA officer does not match what you provided in this request, this opinion is null and void.

Sincerely,

Rosa Ragusa
International Mobility Workers Unit – Dedicated Service Channel
Immigration, Refugees and Citizenship Canada / Government of Canada
IRCC.DNIMWU-UMITRN.IRCC@CIC.GC.CA

Canada

Appendix C

Signed Change Request Forms

Change Request Form
Upper Columbia River Phase 3 Sediment Study

Page 1 of 1 Change No.: 1

CHANGE REQUEST:	**Collect sample volume for potential bioassay testing at judgmental sampleable sand sampling locations at China Bend**
Applicable Reference:	QAPP Table B1-1 QAPP Appendix A (Field Sampling Plan) Table A1 QAPP Appendix E (Cultural Resources Coordination Plan) Table E3-1
Description of Change:	Add sample type "TX" for "potential toxicity testing" to the primacy (JS001 and JS002) and alternate (JS003 and JS004) proposed judgmental sampling locations at the China Bend Area of Interest.
Reason for Change:	Potential toxicity testing is being specified as a sample type for these locations in order to make them consistent with other proposed samples from the "sampleable sand" target stratum.
Impact on Present and Completed Work:	None

Requested By: _____ (Scientist) Date: 8/29/2019

Acknowledged By: _____ (Task Leader) Date: 8/29/2019

APPROVAL

AECOM Project Manager: Jenny A. Price Date: 8-29-19

TAI Project Manager: Kirk McCaig Date: 8/29/2019

EPA Project Manager: Katherine Conise Date: 8/30/2019

Change Request Form
Upper Columbia River Phase 3 Sediment Study

Page 1 of 1 Change No. : 2

CHANGE REQUEST:

Applicable Reference:

QAPP Appendix A (Field Sampling Plan), Section 2.2.5
QAPP Appendix A (Field Sampling Plan), Table A2
QAPP Appendix A, Attachment A1 (Health and Safety Plan Addendum)
QAPP Appendix A (Field Sampling Plan), Attachment 2, SOP-8

Description of Change:

Add to Step 17 in the "Procedure for BMI samples" (on page A-2-12), "Once the sample container is sealed, gently roll the sample container to ensure distribution of the ethanol to the entire sample. As an alternative preservative, formalin may be used in place of ethanol. If formalin is used, add 10% buffered formalin until the volume of formalin is equal to the volume of the sediment. Safety glasses or goggles, as well as disposable nitrile or latex gloves, must be worn when preserving samples in formalin. As with ethanol, once the sample container is sealed, gently roll the sample container to ensure distribution of the ethanol to the entire sample."

In SOP-8, add to Step 9, "An alternative preservative, formalin, may be used in place of ethanol. Add 10% buffered formalin until the volume of formalin is equal to the volume of the sediment. Safety glasses or goggles and disposable nitrile or latex gloves, must be worn when preserving samples in formalin."

in SOP-8, add to Step 12, "Once the sample container is sealed, gently roll the sample container to ensure distribution of the ethanol or formalin, if used, to the entire sample."

Reason for Change:

After the sediment and preservative have been added to the BMI sample container, the container should be closed, sealed, and then gently rolled to ensure the preservative is fully mixed in with the sediment and in contact with the BMI. This will maximize preservation quality and specimin quality.

The flexibility to use the 10% buffered formalin as an alternative to ethanol may be necessary in the event that acquisition of the required volume of ethanol is delayed. The taxonomic laboratory has recommended the use of 10% buffered formalin as an alternative sample preservative for the BMI samples.

Impact on Present and Completed Work: None

Requested By: _____ (Scientist) Date: 9/10/2019

Acknowledged By: _____ (Task Leader) Date: 9/10/2019

APPROVAL

AECOM Project Manager: _____ Date: 9-11-19

TAI Project Manager: _____ Date: 9/11/2019

EPA Project Manager: _____ Date: 9/11/19

Change Request Form
Upper Columbia River Phase 3 Sediment Study

Page 1 **of** 2 **Change No. :** 3

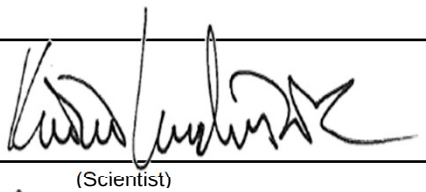
CHANGE REQUEST:

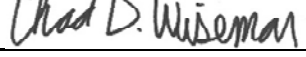
Applicable Reference: QAPP Appendix A (Field Sampling Plan), Section 2.2.5
QAPP Appendix A (Field Sampling Plan), Attachment 2, SOP-8

Description of Change: Add to step 13 in the "Procedure for BMI Samples" (on page A-2-12), and step 2 in SOP-8, "Subsample all Van Veen grab samples using a core sampler - a transparent lexan (polycarbonate) or PVC tube with a 4-inch inside diameter and a marked depth of 6 inches. Collect five subsamples systematically with at least one subsample in each quadrant of the sediment collected with sampler, or where the sediment appears to be the most intact and undisturbed. At each of the five subsample locations, the core sampler will be pushed into the sample to a 6-inch depth (or the total sample depth if less than 6 inches). If five subsamples cannot be collected from the sample, another grab will be collected. Sediment will be excavated around the tube, to the extent that technician can slide their gloved hand or a flat piece of material underneath the bottom of the core sampler, thereby holding in the sediment in the core sampler. The sediment inside the core sampler will be transferred to the BMI sample container. These five subsamples will result in an area of 0.44 square feet. Overlying water will be syphoned off the subsamples and passed through a 250 micron seive. Organisms collected on the sieve will be included in the sample."

Reason for Change: Preliminary BMI samples collected in the Phase 3 Sediment Study using a Van Veen power grab (XL) have averaged 3.2 square feet and 6 gallons of sediment per sample. The large volume of the samples collected to date is much more than expected and is requiring more sample containers, more preservative materials, and more storage space than is currently available in the field. Also, the large volume of sediment and preservative will require unanticipated hazardous materials transportation requirements. Finally, the taxonomic laboratory estimates that it will take one week to process each of the large samples. Collecting subsamples from the power Van Veen sampler will be representative of the total sample and will allow for the sampling and laboratory program to stay on schedule.

Impact on Present and Completed Work: See "Reason for Change", above. The first two samples already collected will have a larger sampled area. Density will be normalized to a square meter basis.

Requested By:  (Scientist) Date: 9/16/2019

Acknowledged By:  (Task Leader) Date: 9/17/2019

#3

APPROVAL

AECOM Project Manager:	Jenny A. Powers	Date:	9-18-19
TAI Project Manager:	Kris R. McCaig	Date:	9-18-2019
EPA Project Manager:	Tabitha Lenze	Date:	9/23/19

Change Request Form
Upper Columbia River Phase 3 Sediment Study

Page 1 of 1 Change No. : 3, Revision 1

CHANGE REQUEST:

Applicable Reference:	QAPP Appendix A (Field Sampling Plan), Section 2.2.5 QAPP Appendix A (Field Sampling Plan), Attachment 2, SOP-8
Description of Change:	Add to step 13 in the "Procedure for BMI Samples" (on page A-2-12), and step 2 in SOP-8, "Collect half of the XL Van Veen power grab sediment sample to a 6-inch depth and place it into the BMI sample container. Half of the XL Power Van Veen sediment sample will be delineated by dividing the inside dimensions of the XL Power Van Veen in half. The BMI sample material will be collected from one contiguous area. Overlying water will be syphoned off the entire sample and passed through a 250 micron seive. Organisms collected on the sieve will be included in the sample. Care will be taken to entrain as little sediment as possible during removal of the water."
Reason for Change:	Preliminary BMI samples collected in the Phase 3 Sediment Study using a Van Veen power grab (XL) have averaged 3.2 square feet and 6 gallons of sediment per sample. The large volume of the samples collected to date using the Van Veen power grab sampler is much more than expected and is requiring more sample containers, more preservative materials, and more storage spece than is currently available in the field. Also, the large volume of sediment and preservative will require unanticipated hazardous materials transportation requirements. Finally, the taxonomic laboratory estimates that it will take one week to process each of the large samples. Collecting half of the Van Veen power grab (XL) sample will alleviate these field and laboratory issues, while still sampling approximately 1.6 square feet of benthic area.
Impact on Present and Completed Work:	See "Reason for Change", above. The first two samples already collected will have a larger sampled area. Density will be normalized to a square meter basis.

Requested By: _____ (Scientist) Date: 9/20/2019

Acknowledged By: Chad D. Wiseman (Task Leader) Date: 9/20/2019

APPROVAL

AECOM Project Manager: _____ Date: 9-20-19

TAI Project Manager: Kirk McCaig Date: 9/20/2019

EPA Project Manager: _____ Date: 9/23/19

Change Request Form
Upper Columbia River Phase 3 Sediment Study

Page 1 **of** 2 **Change No. :** 4

CHANGE REQUEST:

Applicable Reference:	QAPP Section B4.4.1, BMI Community Sample Sorting QAPP Appendix D (QA Information for EcoAnalysts), Laboratory Analysis SOP
Description of Change:	Add to QAPP Section A7.3.1, Needed Information, BMI survey data at each sampling location, "Residual AFDM, BMI biomass". Add to QAPP Table A7-3, QAPP Table B3.1, QAPP Appendix A, FSP Table A2 (Part B), "Residual AFDM, BMI biomass". Add to QAPP Section B4.4.1, BMI Community Sample Sorting and QAPP Appendix D, EcoAnalysts Laboratory Analysis: Benthic Macroinvertebrates Laboratory Sample Receipt and Handling Teck 2019 Standard Operating Procedure, SOP, page 4, "The material remaining on all the grids where BMIs were sorted will be analyzed for ash free dry mass (AFDM) to determine the organic content. Each sample is assessed by obtaining an initial dry weight by heating this material for 24 hours at 100°C. The dried samples are then heated to 550 °C for 2 hours, and a final weight is recorded. AFDM is the final weight of the sample following oxidation of the organic content. Organic content can then be assessed by subtracting AFDM from the sample's initial dry weight. The AFDM measurement will be proportionally extrapolated for the entire sample based on sorted grids divided by total grids in the tray." Add to QAPP Section B4.4.1, BMI Community Sample Sorting and QAPP Appendix D, EcoAnalysts Laboratory SOP, page 4, "Sorted and identified BMI will be will be measured for wet weight biomass. The BMI will be blotted dry and and weighed by major taxonomic group. The biomass measurement will be proportionally extrapolated for the entire sample based on sorted grids divided by total grids in the tray." Add to QAPP Table B5-3, "Residual AFDM Accuracy = ±0.01mg; Residual AFDM Precision = NA; Residual AFDM Completeness = all samples; Biomass Accuracy = 0.01 mg; BMI Biomass Precision = NA; BMI Biomass Completeness = all samples".
Reason for Change:	Residual AFDM in the BMI sample represents the particulate organic matter that many of the BMI are likely to use as a food source. Knowing the magnitude and availability of food resources may be useful for evaluating variation in BMI density and composition. BMI biomass will provide additional information pertaining to the magnitude of the BMI community present in the sample (similar to density).
Impact on Present and	None

Page 2 of 2	Change No. : 4

CHANGE REQUEST:

Requested By: Chad D. Wiseman (Scientist) Date: 9/17/2019

Acknowledged By: Chad D. Wiseman (Task Leader) Date: 9/17/2019

APPROVAL

AECOM Project Manager: Jenny A. Price Date: 9-17-19

TAI Project Manager: Kris R. McCaig Date: 9-18-2019

EPA Project Manager: Kathy Peirce Date: 9-23-19

Change Request Form
Upper Columbia River Phase 3 Sediment Study

Page 1 of 1 Change No. : 6

CHANGE REQUEST:

Applicable Reference:	QAPP Appendix A (Field Sampling Plan), Sections 2.2.1 and 2.2.5 QAPP Appendix A (Field Sampling Plan), Attachment 2, SOP-1 QAPP Appendix A (Field Sampling Plan), Attachment 2, SOP-3 QAPP Appendix A (Field Sampling Plan), Attachment 2, SOP-4 QAPP Appendix A (Field Sampling Plan), Attachment 2, SOP-5
Description of Change:	Add or revise the following text to locations in Appendix A of the Phase 3 sediment study QAPP specified below. FSP Section 2.2.2 and SOP-1, add the following: "If during sediment sampling a suitable location where the sediment bed matches the target stratum is not identified using video, at least one representative image of the sediment bed will be collected to document the actual sediment bed conditions." FSP Section 2.2.5 ,Sediment and BMI Sample Collection, General steps for sediment and BMI sample collection, Step 1, add the following: "Collect an image of the sediment bed." SOP-3, Procedures for Sediment Sample Collection, Step 12 and SOP-5, Procedures for Sediment Sample Collection, Step 13, add the following: "After any disturbed sediment has cleared, collect an image of the sediment bed by recording 1 to 2 seconds of video from the underwater camera." SOP-4, Procedures for Sediment Sample Collection, SOP-5, Step 11, revise as follows: "Allow the grab sampler to contact the bottom gently. After any disturbed sediment has cleared, collect an image of the sediment bed by recording 1 to 2 seconds of video from the underwater camera, then activate the pneumatic mechanism to push the scoop through the sediment and close the device."
Reason for Change:	Section A7.5.4 of the Phase 3 QAPP states the following: "Refusals, imagery, and grain size data from the Phase 3 sediment study, as well as similar results from historical events, will be used as appropriate to verify and refine the results of the preliminary sediment composition maps developed to support the Phase 3 sampling design." This change provides for the consistent collection of imagery at sediment sampling locations.
Impact on Present and Completed Work:	Underwater imagery has not ben collected at sediment sampling locations completed to-date. These locations will be re-visitied opportunistically during the program, time allowing, for image collection.

Requested By: _____ (Scientist) Date: 9/20/2019

Acknowledged By: _____ (Task Leader) Date: 9/20/19

APPROVAL

AECOM Project Manager: _____ Date: 9-20-19

TAI Project Manager: _____ Date: 9-20-2019

EPA Project Manager: _____ Date: 9/23/19

FIELD CHANGE REQUEST

UCR Phase 3 Sediment Study | Field Change No.: 1

CHANGE REQUEST

Applicable Reference:

QAPP Section A7.7.7, QAPP Appendix A (Field Sampling Plan) Section 2.1.1

Description of Change:

At Evans AOI, additional samples will be attempted using mechanical sampling method(s) at alternate sampleable sand (SS) locations in the historical river channel (below 1,220 feet) instead of attempting to collect SS from areas outside the historical channel (above 1,220 feet) using the freeze grab method. As a result, at Evans AOI, samples for the SS stratum will be limited to the historical river channel. The Phase 3 Sediment Study QAPP identified 3 primary and 1 alternate SS location outside the historical river channel at Evans AOI.

Reason for Change:

As of 9/25/2019, all 21 primary SS locations and 5 alternate SS locations at Evans have been visited by the sediment sampling personnel. This includes the 3 primary and 1 alternate SS locations above 1,220 ft, where sampling using mechanical means (modified Hamon grab) has not been successful. A total of 18 SS samples have been collected, so an additional 3 SS samples are required to achieve the target of 21. Sampling will be attempted at up to 5 more alternate locations using mechanical samplers (Hamon, Van Veen) before sampling would be attempted using a freeze grab, per the procedure shown in QAPP Figure A7-2. Thus, it is may be possible to obtain 21 SS sediment samples at Evans using mechanical methods if 3 more samples are collected from remaining alternate locations below 1,220 feet. This approach would prioritize collecting sediment for the full triad suite (sediment chemistry, bioassay testing, and BMI survey) over obtaining SS samples from outside the historical river channel, which would require use of a freeze grab method that does not support sediment collection for bioassay testing.

Impact on Present and Completed Work:

This request impacts work being completed currently at Evans AOI; it does impact completed work.

Requested by: Jenny A. Price _____ Date: 9-26-19

(Field Supervisor)

Acknowledged by: Marilyn Goldman _____ Date: 9/27/19

(EPA Field Representative)

APPROVAL

TAI Project Coordinator: Kris R. McCaig _____ Date: 9-27-19

EPA Project Manager: Kathryn Levine _____ Date: 9/27/19

FIELD CHANGE REQUEST

UCR Phase 3 Sediment Study	Field Change No.: 2

CHANGE REQUEST

Applicable Reference:

QAPP Section A7.7.5, QAPP Appendix A (Field Sampling Plan) Sections 2.1.1 and 2.2.7

Description of Change:

When collecting sediment samples from the mixed coarse strata using the freeze grab method, a reasonable effort to obtain a representative sediment volume will be expended at each location. Reasonable effort is defined as follows:

> After completing the freeze grab(s) required to fill sample containers for sediment chemical/physical analysis, a maximum target volume of one gallon will be collected for benthic macroinvertebrate (BMI) analysis, OR freeze grab attempts will be continued for a total collection time of four hours at the location.

The sampling team will record the total volume of all composite samples for BMI analysis, and the sample will be submitted to the laboratory for BMI analysis, even if the volume is less than one gallon. If refusal is encountered using the freeze grab method per FSP Attachment A2, SOP-5, then no BMI sample will be collected.

Reason for Change:

Collection of sediment samples using the freeze grab method from the mixed-coarse stratum at Evans AOI has proven to be difficult and time consuming. The mixed-coarse stratum is either not present at the proposed primary and alternate sample locations, or, if the stratum is present, it has been very difficult to obtain sufficient sediment volume for both sediment chemical/physical analysis and BMI analysis. Samples from the mixed-coarse stratum are not required to answer the primary study questions identified in the Phase 3 Sediment Study QAPP, which require collection of statistically-based samples from the sampleable sand stratum. It is therefore appropriate to define a reasonable effort for sampling attempts from the mixed-coarse stratum to help ensure that resources are available for collecting the required samples from the sampleable sand stratum.

The rationale for the above definition of reasonable effort is as follows:

- The freeze grab BMI samples are not intended to be compared to the Van Veen or Hamon grab BMI samples. Therefore, the target sample area and volume do not need to be comparable to those BMI samples.
- The feasibility of a one-gallon volume for all samples is not known. Therefore, a post hoc analysis of actual sediment volumes will be done to determine which samples are outliers, in terms of sediment volume. The mean BMI sample volume could be less than one gallon.
- Since the freeze grab sampling method does not readily allow for consistent benthic areas sampled, this method should be considered qualitative or semi-quantitative. Furthermore, these samples are not going to be compared to a reference condition and there will not be enough replicates for inference testing between or among groups. They are intended to characterize the BMI community composition in the mixed-coarse facies, and for limited comparisons to gradients of physical and chemical variables.

Impact on Present and Completed Work:

None. This request is consistent with the procedures that were employed while sampling sediment from the mixed-coarse stratum at Evans AOI.

Date: 10-3-19

Requested by: Jenny A. Price

(AECOM Field Supervisor)

Acknowledged by: Marilyn Jackson

(EPA Field Representative)

Date: 10/3/19

FIELD CHANGE REQUEST	
UCR Phase 3 Sediment Study	Field Change No.: 2
APPROVAL	

TAI Project Coordinator: Denise Mills for Kris McCaig — Date: 10-03-2019

EPA Project Manager: [signature] — Date: 10-3-19

FIELD CHANGE REQUEST

UCR Phase 3 Sediment Study	Field Change No.: 3

CHANGE REQUEST

Applicable Reference:

QAPP Map A7-6, QAPP Appendix A (Field Sampling Plan) Section 2.2.2 and Map A-6

Description of Change:

Field Sampling Plan Section 2.2.2 (Sampling Location Positioning) states that "[r]eference area sampling locations should be moved no more than 50 m if possible; however, locations can be adjusted within the river reach, if necessary, based on field conditions." Three reference sampling locations at Genelle Eddy, BC required adjustment by greater than 50 meters. These locations and the approximate distance and direction of adjustment are as follow:

REF006 – Samples collected approximately 110 meters northwest of target location shown in QAPP
REF009 – Samples collected approximately 71 meters northwest of target location shown in QAPP
REF010 – Samples collected approximately 490 meters west of target location shown in QAPP

The target reference locations shown in the QAPP and the revised locations for these reference samples are shown in the attached figures. These location adjustments were discussed with EPA oversight personnel, who concurred with the revised locations.

Reason for Change:

The adjustments described above were necessary either based low water levels in the Columbia River (REF006 and REF010) or to provide a suitable area of the target sediment type (sand) for the collection of the required sediment volume and porewater. The specific reasons for adjusting each location are provided below.

REF006 – A 0.5 meter drop in water level on September 28-29 resulted in the proposed target REF006 location being too shallow to approach from the sheltered backwater area of the eddy, and the fast river current prevented a safe approach from the thalweg. The modified location was selected because the river bed consists of a sand / mixed sediment and allowed for safe working conditions such that the porewater boat could anchor.

REF009 – The proposed target REF009 location was found to not contain a sufficient area sand / mixed sediment for completion of the required sediment sampling. The river bottom at the revised location consists of a large enough area of sand to facilitate sediment sampling of the target sediment type with a water depth that was sufficient for the porewater boat to successfully obtain a sample.

REF010 – The target REF010 location was estimated visually to be approximately 1 meter out of the water, rendering it not appropriate for sampling porewater or benthic macroinvertebrates. The revised location was identified by performing a camera survey to find the closest down-stream location where the target sediment type was present and that could be accessed/sampled for sediment and porewater. The predominant sediment type between the proposed target and revised locations was cobble/boulder with limited sand.

Impact on Present and Completed Work:

Sediment and porewater sampling was successfully completed at the revised locations.

Requested by: _____ (AECOM Field Supervisor) Date: 10-16-19

Acknowledged by: _____ (EPA Field Representative) Date: 10/16/19

APPROVAL

TAI Project Coordinator: _____ Date: 10-16-19

FIELD CHANGE REQUEST	
UCR Phase 3 Sediment Study	Field Change No.: 3
EPA Project Manager: [signature]	Date: 10-16-19

N

AECOM

0 30 60 90
Scale In Meters

0 125 250
Scale In Feet

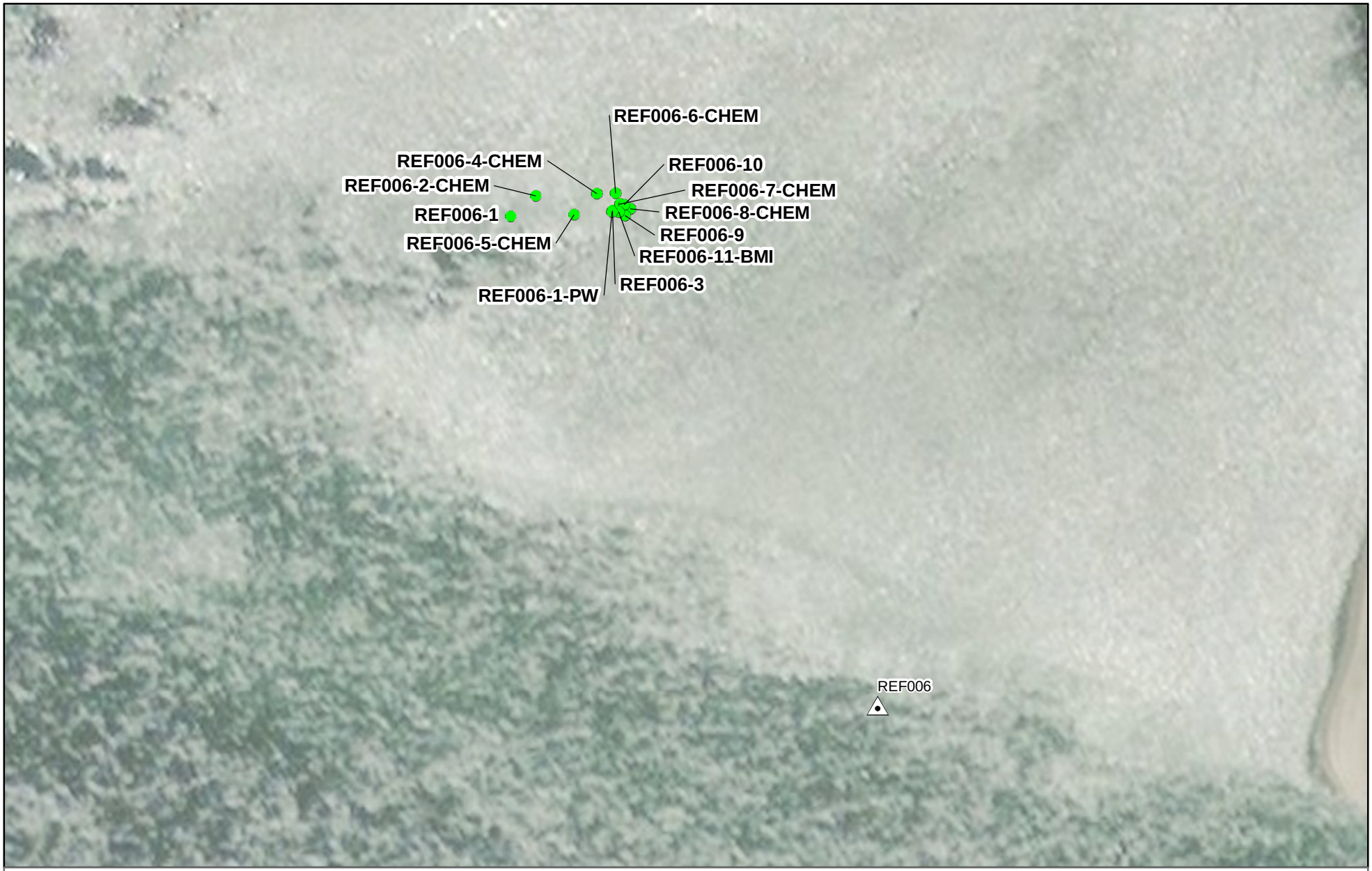
Revised Sampling Location

Target Reference Sampling Location

Field Change Request # 3
Modified Sampling Locations
for REF006, REF009 and REF010
Genelle Reference Area

Columbia River, BC

Document Path: J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\01_Data\04_GPS\GPS_Processing\MXD\Field Change Request 3 overview.mxd



N

AECOM

0 10 20 40
Scale In Meters

0 37.5 75 150
Scale In Feet

Revised Sampling Location

Target Reference Sampling Location

Field Change Request # 3
Modified Sampling Locations for REF006
Genelle Reference Area

Columbia River, BC

Document Path: J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\01_Data\04_GPS\GPS_Processing\MXD\Change Request REF006.mxd

Document Path: J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\01_Data\04_GPS\GPS_Processing\MXD\Change Request REF009.mxd

N

AECOM

0 2.5 5 10 15 20
Scale In Meters

0 10 20 40 60 80
Scale In Feet

Revised Sampling Location

Target Reference Sampling Location

Field Change Request # 3
Modified Sampling Locations for REF009
Genelle Reference Area

Columbia River, BC

Document Path: J:\DCS\Projects\ENV\60600843_TeckP3SS\900_CAD_GIS\920_929_GIS_Graphics\01_Data\04_GPS\GPS_Processing\MXD\Change Request REF010.mxd

N

AECOM

0 15 30 60 90 120
Scale In Meters

0 50 100 200 300 400
Scale In Feet

Revised Sampling Location

Target Reference Sampling Location

Field Change Request # 3
Modified Sampling Locations for REF010
Genelle Reference Area

Columbia River, BC

Appendix D

Chain-of-Custody Forms

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY**	**BMI COC** SDG: BMI01	China Bend ☐ Evans ☒ Deadmans Eddy ☐ Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date: 9-11-19**	COC No: EV1
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Jay Word**	**Carrier: James Keithly, ERM**	_____ of _____ COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____			
Project Name: UCR 2019 Phase 3 Sediment Study	☐			
	☐ Other _____			
Lab Quote #:				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Sample Specific Notes:
EV 063-BMI -1- 091019	9/10/2019	0:00	Benthic Macroinvertebrate	AP	2	x	
EV 064-BMI -1- 091019	9/10/2019	0:00	Benthic Macroinvertebrate	AP	2	x	
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				
			Benthic Macroinvertebrate				

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal

☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by: Jennifer Pretare	Company: AECOM	Date/Time: 9-11-19 1452	Received by: James Keithly	Company: ERM	Date/Time: 9-11-19 1452
Relinquished by:	Company: ERM	Date/Time: 9/11/19 1815	Received by: Megan Payne	Company: EcoAnalysts	Date/Time: 9-11-19 1815
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc.		BMI COC	China Bend ☐
1420 S. Blaine St. Suite 14			Evans X
Moscow, ID 83843	**CHAIN OF CUSTODY** SDG: BMI02		Deadmans Eddy X
Ph: (208) 882-2588			Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 6
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Jay Word**	**Carrier:**	Page 1 of 1 COC

Cristy Kessel 509.496.1160
Cristy.Kessel@teck.com

Analysis Turnaround Time
Calendar (C) or Work Days (W) _____

☐

☐ Other _____

Project Name: UCR 2019 Phase 3 Sediment Study

Lab Quote #:

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass										Sample Specific Notes:
EV 005-BMI -1- 091219	9/12/2019	1440	Benthic Macroinvertebrate	AP	1	X	X	X										
EV 010-BMI -1- 091219	9/12/2019	1700	Benthic Macroinvertebrate	AP	1	X	X	X										
EV 075-BMI -1- 091219	9/12/2019	1215	Benthic Macroinvertebrate	AP	1	X	X	X										
EV 012-BMI -1- 091319	9/13/2019	1130	Benthic Macroinvertebrate	AP	1	X	X	X										
EV 013-BMI -1- 091319	9/13/2019	1400	Benthic Macroinvertebrate	AP	2	X	X	X										
EV 036-BMI -1- 091419	9/14/2019	1345	Benthic Macroinvertebrate	AP	1	X	X	X										
DM 045-BMI -1- 091919	9/19/2019	1012	Benthic Macroinvertebrate	SH	1	X	X	X										
EV 026-BMI -1- 092019	9/20/2019	1431	Benthic Macroinvertebrate	MM	1	X	X	X										
EV 003-BMI -1- 092019	9/20/2019	1002	Benthic Macroinvertebrate	MM	2	X	X	X										

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	09/23/19 10:30	ROBERT BOBER	ECOANALYSTS	9/23/19 10:30
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

8097.1 12-27
8097.2 12-27

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY** SDG: BMI03	**BMI COC**	China Bend ☐ Evans X Deadmans Eddy X Reference ☐
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Jay Word** **Date:** **Carrier:**	COC No: 8 1 of 2 COCs
Project Name: UCR 2019 Phase 3 Sediment Study Chelsey.todd@aecom.com Lab Quote #:			

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass											Jar Weight 1 (g)	Jar Weight 2 (g)	Sample Specific Notes:
DM 050-BMI -1- 092019	9/20/2019	1032	Benthic Macroinvertebrate	SH KM	1	x	x	x											58		
DM 046-BMI -1- 092019	9/20/2019	1336	Benthic Macroinvertebrate	SH	1	x	x	x											50		Added ~1L EtOH
DM 022-BMI -1- 092119	9/21/2019	1353	Benthic Macroinvertebrate	SH	1	x	x	x											57.4		
DM 023-BMI -1- 092119	9/21/2019	0908	Benthic Macroinvertebrate	SH	1	x	x	x											57.4		
DM 026-BMI -1- 092119	9/21/2019	1139	Benthic Macroinvertebrate	SH	1	x	x	x											59.4		Slightly low, no Etoh
EV 027-BMI -1- 092119	9/21/2019	925	Benthic Macroinvertebrate	SH MM	2	x	x	x											40	45	2X 5 Gallon buckets
EV 060-BMI -1- 092119	9/21/2019	1255	Benthic Macroinvertebrate	SH MM	2	x	x	x											35	36	ADDED 1L EtOH 2X 5 Gallon buckets
EV 008-BMI -1- 092319	9/23/2019	943	Benthic Macroinvertebrate	SH	2	x	x	x											35	39	ADDED 1L EtOH 2X 5 Gallon buckets
EV 037-BMI -1- 092319	9/23/2019	1228	Benthic Macroinvertebrate	SH CP	1	x	x	x											54		
EV 037-BMI -2- 092319	9/23/2019	1359	Benthic Macroinvertebrate	SH CP	1	x	x	x											48		
EV 002-BMI -1- 092419	9/24/2019	0831	Benthic Macroinvertebrate	CP	1	x	x	x											65		
EV 044-BMI -1- 092419	9/24/2019	1001	Benthic Macroinvertebrate	CP	2	x	x	x											26	27	2X 5 Gallon buckets

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10/8/19 11:26	Max Rios	EcoAnalysts, Inc	10/8/19 11:27
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc.	CHAIN OF CUSTODY	BMI COC	China Bend ☐
1420 S. Blaine St. Suite 14			Evans X
Moscow, ID 83843			Deadmans Eddy ☐
Ph: (208) 882-2588			Reference X

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No: 8
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Jay Word	Carrier:	2 of 2 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W) _____			
Project Name: UCR 2019 Phase 3 Sediment Study	☐			
Lab Quote #:	☐ Other _____			

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass	WEIGHT 1 (LBS)	WEIGHT 2 (LBS)	Sample Specific Notes:
EV 048-BMI -1- 092419	9/24/2019	~~12:14~~ 1137	Benthic Macroinvertebrate	CP	2	X	X	X	40	41	2X 5 Gallon buckets
REF 003-BMI -2- 092719	9/27/2019	0950	Benthic Macroinvertebrate	DH	1	X	X	X	37	—	1 5 GAL
EV 054-BMI -1- 092319	9/23/2019	1551	Benthic Macroinvertebrate	SH CP	1	X	X	X	42	—	1 5-gallon bucket
EV 057-BMI -1- 092319	9/23/2019	15:10	Benthic Macroinvertebrate	SH CP	1	X	X	X	40	—	1 5-gallon bucket

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	10/8/19 11:26	Max Rios [signature]	EcoAnalysts, Inc.	10/8/19 11:27
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

8097.1 28-39
8097.2 28-39

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY** SDG: BMI04	**BMI COC**	China Bend ☐ Evans X Deadmans Eddy ☐ Reference X
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Jay Word**	**Date:** **Carrier:**	COC No: 17 __1__ of __1__ COCs
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #:			

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass								WEIGHT 1 (LBS)	WEIGHT 2 (LBS)	Sample Specific Notes:
EV 051-BMI -1- 092419	9/24/2019	1300	Benthic Macroinvertebrate	CP	2	X	X	X								41	43	2X 5 Gallon buckets
REF 013-BMI -1- 092419	9/24/2019	1301	Benthic Macroinvertebrate	DH	2	X	X	X								37.4	43.8	2X 5 Gallon buckets
REF 015-BMI -1- 092419	9/24/2019	1428	Benthic Macroinvertebrate	DH	2	X	X	X								33.2	33.8	2X 5 Gallon buckets
EV 065-BMI -1- 092519	9/25/2019	0816	Benthic Macroinvertebrate	CP	2	X	X	X								42	27	2X 5 Gallon buckets
EV 066-BMI -1- 092519	9/25/2019	0928	Benthic Macroinvertebrate	CP	2	X	X	X								39	36	2X 5 Gallon buckets
EV 069-BMI -1- 092519	9/25/2019	1049	Benthic Macroinvertebrate	CP	2	X	X	X								44	32	2X 5 Gallon buckets
EV 069-BMI -2- 092519	9/25/2019	1215	Benthic Macroinvertebrate	CP	2	X	X	X								32	35	2X 5 Gallon buckets
EV 071-BMI -1- 092519	9/25/2019	1453	Benthic Macroinvertebrate	CP	2	X	X	X								32	31	2X 5 Gallon buckets
REF 017-BMI -1- 092519	9/25/2019	1505	Benthic Macroinvertebrate	DH	2	X	X	X								33	35.2	2X 5 Gallon buckets
REF 018-BMI -1- 092519	9/25/2019	1100	Benthic Macroinvertebrate	DH	2	X	X	X								35.6	31.8	2X 5 Gallon buckets
REF 016-BMI -1- 092519	9/25/2019	1302	Benthic Macroinvertebrate	DH	2	X	X	X								36.8	38.2	2X 5 Gallon buckets
EV 001-BMI -1- 092619	9/26/2019	1103	Benthic Macroinvertebrate	CP	2	X	X	X								42	30	2X 5 Gallon buckets

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10-10-19 1100		ECOANALYSTS	10-10-19 11:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

duplicate cc 10-10-19

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY** SDG: BMI05	**BMI COC**	· China Bend ☐ Evans X Deadmans Eddy ☐ Reference X
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Jay Word**	**Date:** **Carrier:**
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #:			COC No: 19 P 1 of 2 COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass								Weight 1 (LBS)	Weight 2 (LBS)	Sample Specific Notes:
EV 072-BMI -1- 092619	9/26/2019	1449	Benthic Macroinvertebrate	CP	2	X	X	X								39	35	2 x 5 gallon buckets
EV 052-BMI -1- 092619	9/26/2019	1226	Benthic Macroinvertebrate	CP	1	X	X	X								60	X	1-5 gal bucket
REF 014-BMI -1- 092619	9/26/2019	1340	Benthic Macroinvertebrate	CP DH	2	X	X	X								37.8	38.8	2 x 5 gallon buckets
EV 049-BMI -1- 092719	9/27/2019	1051	Benthic Macroinvertebrate	CP	1	X	X	X								15	X	1-5 gal bucket
REF 003-BMI -1- 092719	9/27/2019	0950	Benthic Macroinvertebrate	DH	2	X	X	X								43.6	38.4	2 x 5 gallon buckets
EV 036-BMI -2- 100119	10/1/2019	1326	Benthic Macroinvertebrate	NM	1	X	X	X								24.5	X	1 5-gallon bucket
REF 004-BMI -1- 092719	9/27/2019	1154	Benthic Macroinvertebrate	DH	2	X	X	X								51.6	47.8	2 x 5 gallon buckets
REF 002-BMI -1- 092819	9/28/2019	0857	Benthic Macroinvertebrate	DH	2	X	X	X								38.6	39.8	2 x 5 gallon buckets
REF 001-BMI -1- 092819	9/28/2009	1014	Benthic Macroinvertebrate	DH	2	X	X	X								37.6	36.2	2 x 5 gallon buckets
EV 022-BMI -1- 093019	9/30/2019	1307	Benthic Macroinvertebrate	NM	1	X	X	X								24	X	1-5 gal bucket
REF 007-BMI -1- 093019	9/30/2019	1301	Benthic Macroinvertebrate	DH	2	X	X	X								38.8	37.4	2 x 5 gallon buckets

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive unitl disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	10-11-19 1109	Max Rios	EcoAnalysts, Inc	10/11/19 1110
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY**	**BMI COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference X
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Jay Word**	**Date:** **Carrier:**
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #:			COC No: 19 P 2 of 2 COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass									Weight 1 (LBS)	Weight 2 (LBS)	Sample Specific Notes:
4-B6-2019-BMI-1- 092619	9/26/2019	0942	Benthic Macroinvertebrate	CP	2	X	X	X									30	27	2 - 5 GAL
4-B1-2019-BMI-1- 092619	9/26/2019	0813	Benthic Macroinvertebrate	CP	2	X	X	X									32	34	2 - 5 GAL
REF 003-BMI -2- 092719	9/27/2019	0950	Benthic Macroinvertebrate	DH	1	X	X	X									422	X	1 - 5 GAL

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10-11-19 1109	Max Rios	EcoAnalysts, Inc	10/11/19 1110
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc.
1420 S. Blaine St. Suite 14
Moscow, ID 83843
Ph: (208) 882-2588
Client Contact
Teck American Incorporated
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com
Project Name: UCR 2019 Phase 3 Sediment Study
Lab Quote #:

SDG: BMI06

CHAIN OF CUSTODY

BMI COC

China Bend	X
Evans	X
Deadmans Eddy	☐
Reference	X

Project Contact: Kevin Lundmark
Tel: + 1 801 204-4313
Analysis Turnaround Time
Calendar (C) or Work Days (W) _____
☐
☐ Other _____

Site Contact: Jennifer Pretare 510-681-6401
Laboratory Contact: Jay Word
Date:
Carrier:

COC No: 20
1 of 2 COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass	Weight 1 (lbs)	Weight 2 (lbs)	Sample Specific Notes:
REF 008-BMI -1- 093019	9/30/2019	1501	Benthic Macroinvertebrate	DH	2	X	X	X	37	35.4	2 5-gallon bucket
REF 009A-BMI -1- 100219	10/2/2019	1212	Benthic Macroinvertebrate	DH	1	X	X	X	50.6	X	1 5-gallon bucket
REF 006-BMI -1- 100219	10/2/2019	1615	Benthic Macroinvertebrate	DH	1	X	X	X	57.2	X	1 5-gallon bucket
CB 035-BMI -1- 100319	10/3/2019	1235	Benthic Macroinvertebrate	NM	1	X	X	X	24	X	1 5-gallon bucket
REF 005-BMI -1- 100319	10/3/2019	1250	Benthic Macroinvertebrate	DH	1	X	X	X	51.6	X	1 5-gallon bucket
REF 010-BMI -1- 100319	10/3/2019	1630	Benthic Macroinvertebrate	DH	1	X	X	X	39.4	X	1 5-gallon bucket
REF 012-BMI -1- 100419	10/4/2019	1115	Benthic Macroinvertebrate	DH	1	X	X	X	50	X	1 5-gallon bucket
EV 011-BMI -1- 100119	10/1/2019	1124	Benthic Macroinvertebrate	NM	1	X	X	X	31.5	X	1 5-gallon bucket
REF 011-BMI -1- 100119	10/1/2019	1250	Benthic Macroinvertebrate	DH	2	X	X	X	35.6	36	2 5-gallon bucket
REF 011-BMI -2- 100119	10/1/2019	1315	Benthic Macroinvertebrate	DH	2	X	X	X	34.6	34.8	2 5-gallon bucket
CB 046-BMI -1- 100819	10/8/2019	1048	Benthic Macroinvertebrate	MM	1	X	X	X	32	X	1 5-gallon bucket
CB 036-BMI -1- 100419	10/4/2019	1254	Benthic Macroinvertebrate	DH NM	1	X	X	X	32.5	X	1 5-gallon bucket

* SLIGHTLY LOW ON EtOH

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Josie Smith	AECOM	10-15-19 1100	Mary Rios	EcoAnalysts, Inc.	10/15/19 11:02
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc.	CHAIN OF CUSTODY	BMI COC	China Bend X Evans X Deadmans Eddy ☐ Reference X
1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588			

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No: 20
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Jay Word	Carrier:	2 of 2 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W) _____			
Project Name: UCR 2019 Phase 3 Sediment Study	☐			
	☐ Other _____			
Lab Quote #:				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass	Weight 1 (lbs)	Weight 2 (lbs)	Sample Specific Notes:
CB 006-BMI -1- 100919	10/9/2019	1012	Benthic Macroinvertebrate	MM	2	X	X	X	41	39	2 - 5 GAL
CB 012-BMI -1- 100919	10/9/2019	1136	Benthic Macroinvertebrate	MM	2	X	X	X	42	51	2 - 5 GAL
CB 007-BMI -1- 100919	10/9/2019	1336	Benthic Macroinvertebrate	MM	1	X	X	X	42	X	1 - 5 GAL
JS 001-BMI -1- 101019	10/10/2019	1022	Benthic Macroinvertebrate	MM	1	X	X	X	52	X	1 - 5 GAL

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal

☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Josie Smith	AECOM	10-15-19 1100	Max Rios	EcoAnalysts, Inc	10/15/19 11:02
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY** SDG: BMI07	**BMI COC**

China Bend X
Evans X
Deadmans Eddy ☐
Reference X

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No: 24
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Jay Word	Carrier:	1 of 2 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W) ____			
Project Name: UCR 2019 Phase 3 Sediment Study	☐			
	☐ Other			
Lab Quote #:				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass								Weight 1 (lbs)	Weight 2 (LBS)	Sample Specific Notes:
DM 018-BMI -1- 100919	10/9/2019	1530	Benthic Macroinvertebrate	DH	1	X	X	X								60.4	X	1 - 5 GAL
DM 002-BMI -1- 100919	10/9/2019	1255	Benthic Macroinvertebrate	DH	1	X	X	X								63.6	X	1 - 5 GAL
JS 002-BMI -1- 101019	10/10/2019	1234	Benthic Macroinvertebrate	MM	1	X	X	X								38	X	1 - 5 GAL
CB 014-BMI -1- 101519	10/15/2019	1358	Benthic Macroinvertebrate	MM	1	X	X	X								49	X	1 - 5 GAL
DM 015-BMI -1- 101019	10/10/2019	1545	Benthic Macroinvertebrate	DH	1	X	X	X								47.4	X	1 - 5 GAL
DM 015-BMI -2- 101019	10/10/2019	~~1400~~ 1611	Benthic Macroinvertebrate	DH	1	X	X	X								49.6	X	1 - 5 GAL
DM 016-BMI -1- 101019	10/10/2019	1400	Benthic Macroinvertebrate	DH	1	X	X	X								59.4	X	1 - 5 GAL
DM 008-BMI -1- 101119	10/11/2019	1520	Benthic Macroinvertebrate	DH	1	X	X	X								39.2	X	1 - 5 GAL
CB 016-BMI -1- 101119	10/11/2019	1422	Benthic Macroinvertebrate	MM	1	X	X	X								28	X	1 - 5 GAL

EDITS BY CC AECOM 10-21-19

Preservation: Sample preserved in 90% ethanol

Sample Disposal

☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	10/18/19 0902	Max Rios [signature]	EcoAnalysts, Inc	10/18/19 0903
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

| EcoAnalysts, Inc. | | |

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY** SDG: BMI08	**BMI COC** China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No 26
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Jay Word	Carrier:	1 of 2 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____			
Project Name: UCR 2019 Phase 3 Sediment Study				
Lab Quote #:				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass								Weight 1 (LBS)	Weight 2 (LBS)	Sample Specific Notes:
DM 027-BMI -1- 101419	10 14 2019	1535	Benthic Macroinvertebrate	SH	2	X	X	X								48	342	2 5-gallon buckets
CB 020-BMI -1- 101419	10 14 2019	1115	Benthic Macroinvertebrate	MM	1	X	X	X								46	X	1 5-gallon bucket
CB 020-BMI -2- 101419	10 14/2019	1144	Benthic Macroinvertebrate	MM	1	X	X	X								61	X	5-gallon bucket
CB 021-BMI -1- 101419	10 14/2019	1328	Benthic Macroinvertebrate	MM	2	X	X	X								46.5	31	2 5-gallon buckets
CB 024-BMI -1- 101419	10/14/2019	1440	Benthic Macroinvertebrate	MM	1	X	X	X								42	X	1 5 gallon bucket
CB 029-BMI -1- 101519	10/15/2019	1024	Benthic Macroinvertebrate	MM	1	X	X	X								49	X	1 5 gallon bucket
CB 029-BMI -2- 101519	10/15/2019	1050	Benthic Macroinvertebrate	MM	1	X	X	X								39	X	1 5-gallon bucket
~~DM 044-BMI -1- 101619~~	~~10/16/2019~~	~~1615~~	Benthic Macroinvertebrate	~~SH~~	~~1~~	X	X	X										~~1 5-gallon bucket~~
15 DMH 10/21/19																		
CB044-BMI-1-101519	10/15/2019	1228	Benthic Macroinvert	MM	1	X	X	X								57	X	1 5-gal Bucket

Preservation: Sample preserved in 90% ethanol	*Sample Disposal* ☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

LAB MADE EDITS UPON RECEIPT VERIFIED BY LC AECOM 10-22-19

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
David McKoon	AECOM	10/21/19 1100	Max Rios via Fedex	EcoAnalysts, Inc	10/21/19 11.02
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY**	**BMI COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** Tel: + 1 801 204-4313 **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Jay Word**	**Date:** **Carrier:**
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #:			COC No: 26 2 of 2 COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass								Weight 1 (LBS)	Weight 2 (LBS)	Sample Specific Notes:
DM 024-BMI -1- 101519	10/15/2019	1105	Benthic Macroinvertebrate	SH	2	X	X	X								56	56.4	2 5-gallon buckets
DM 024-BMI -2- 101519	10/15/2019	1140	Benthic Macroinvertebrate	SH	2	X	X	X								48.6	52.6	2 5-gallon buckets
3-R7-2019-BMI-1-101519	10/15/2019	1515	Benthic Macroinvertebrate	SHMM	1	X	X	X								43.5	X	1 5-gallon bucket
~~3-R8-2019-BMI-1-101619~~	~~10/16/2019~~	~~1116~~	Benthic Macroinvertebrate	MM	1	~~X~~	~~X~~	~~X~~										~~1 5-gallon bucket~~
1-B6-NRT-BMI-1-101619	10/16/2019	0942	Benthic Macroinvertebrate	SH	2	X	X	X								50.2	52.6	2 5-gallon buckets
DM 061-BMI -1- 101619	10/16/2019	1035	Benthic Macroinvertebrate	SH	2	X	X	X								44.4	44	2 5-gallon buckets

DPK 10/21/19

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal

☐ *Return To Client* ☐ *Disposal By Lab* [X] *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	10/21/19 1100	Max Rios	EcoAnalysts, Inc	10/21/19 1102
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 Ph: (208) 882-2588	**CHAIN OF CUSTODY** SDG: BMI09	**BMI COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Jay Word**	**Date:** **Carrier:**
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #:			COC No: 27 1 of 2 COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass								Weight #1	Weight #2	Sample Specific Notes:
DM 044-BMI -1- 101619	10/16/2019	1615	Benthic Macroinvertebrate	SH	1	X	X	X								42.4	X	1-5 Gal
CB 027-BMI -1- 101519	10/15/2019	852	Benthic Macroinvertebrate	MM	2	X	X	X								36	26	2-5 Gal
1-B5-NRT-BMI-1-101519	10/15/2019	1607	Benthic Macroinvertebrate	SH	2	X	X	X								48.2	48	2-5 Gal
DM 007-BMI -1- 101519	10/15/2019	1343	Benthic Macroinvertebrate	SH	2	X	X	X								54.6	55.8	2-5 Gal
CB 056-BMI -1- 101719	10/17/2019	1404	Benthic Macroinvertebrate	MM	1	X	X	X								44	X	1-5 Gal
DM 039-BMI -1- 101719	10/17/2019	1445	Benthic Macroinvertebrate	SH	1	X	X	X								28	X	1-5 Gal
3-R8-2019-BMI-1-101619	10/16/2019	1116	Benthic Macroinvertebrate	MM	1	X	X	X								13	X	1-5 Gal

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal

☐ *Return To Client* ☐ *Disposal By Lab* [X] *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
David A. Hart	AECOM	10/25/19 0930	Max Rios	EcoAnalysts Inc.	10/25/19 0921
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

EcoAnalysts, Inc. 1420 S. Blaine St. Suite 14 Moscow, ID 83843 **Ph: (208) 882-2588**	**CHAIN OF CUSTODY**	**BMI COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Jay Word**	**Date:** **Carrier:**
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #:			COC No: 27 2 of _____ COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Taxonomic enumeration and identification	Residual AFDM	BMI biomass										Weight #1	Sample Specific Notes:
CB 040-BMI -1- 101819	10/18/2019	1415	Benthic Macroinvertebrate	MM	1	X	X	X										20	1 5-gallon
CB 005-BMI -1- 101819	10/18/2019	1037	Benthic Macroinvertebrate	MM	1	X	X	X										16	1 5-gallon
DM 047-BMI -1- 101819	10/18/2019	1434	Benthic Macroinvertebrate	AP	1	X	X	X										53	1 5-gallon
DM 036-BMI -1- 101819	10/18/2019	1236	Benthic Macroinvertebrate	AP/SH	1	X	X	X										6.8	1 5-gallon
DM 038-BMI -1- 101919	10/19/2019	1111	Benthic Macroinvertebrate	AP/SH	1	X	X	X										29.2	1 5-gallon
CB 002-BMI -1- 101619	10/16/2019	14:31	Benthic Macroinvertebrate	MM	1	X	X	X										58	1 5-gallon

Preservation: *Sample preserved in 90% ethanol*

Sample Disposal

☐ *Return To Client* ☐ *Disposal By Lab* [X] *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
David Blevins	AECOM	10/25/19 / 0930	Max Rios	EcoAnalysts, Inc	10/25/19 09:21
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1907463

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

CLIENT: AECOM	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**	
OFFICE: Seattle		Custody Seal Intact?	Yes / No / N/A
PROJECT: LCR P3 Sediment Study	**ALS QUOTE NO.:**	Free Ice / frozen ice bricks present upon receipt?	Yes / No / N/A
ORDER NUMBER:	**COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt:	°C
PROJECT MANAGER: Jennifer Pecare	**CONTACT PH:**	Other comment:	
SAMPLER: Chelsey Cook From vendor	**SAMPLER MOBILE:**		
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		
Email Reports to (will default to PM if no other addresses are listed):			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Chelsey Cook			
DATE/TIME: 8/13/19 1417	DATE/TIME: 8/14/19 1000	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Metals								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	Geotech Filter-FG90139MP	08/13/19 1500	Filter Blank	N/A	1	X								See attached 8/2/19 draft QAPP
														Please login as a sample
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Cooler Receipt and Preservation Form

PC MH

Client AECOM Service Request K19 07463

Received: 8/14/19 Opened: 8/14/19 By: [signature] Unloaded: 8/14/19 By: [signature]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* (*Box*) *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
NM	—	—	—	—	—		7759 7747 9639	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

ALS Environmental

CHAIN OF CUSTODY

SR# K1907808

1317 South 13th Ave., Kelso, WA 98626 | +1 360 577 222 | +1 800 695 7222 | +1 360 636 1068 (fax)

PAGE 1 OF 1 COC#

PROJECT NAME: ~~AECOM~~ UCR P3 Sediment Study
PROJECT NUMBER:
PROJECT MANAGER: Jenny Pretare
COMPANY NAME: AECOM
ADDRESS: 1111 3rd Ave Ste 1600
CITY/STATE/ZIP: Seattle, WA 98101
E-MAIL ADDRESS:
PHONE # FAX#
SAMPLERS SIGNATURE: Ken Mixon from Vendor

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 8270 8270LL SW-PAH	Volatile Organics 624 8260 8021 BTEX	Hydrocarbons (*see below) Gas Diesel Oil	Oil & Grease/ TRPH 1664 HEM 1664 SGT	PCBs Aroclors Congeners	Pesticides/ Herbicides 608 1081 8151	Chlorophenolics - 8151M Tri Tetra PCP	Metals, Total or Dissolved (See list below)	Cyanide	Hex- Chrom	(circle) pH, Cond., Cl, SO_4, PH_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH3-N, COD, TKN, TOC, DOC, NO2+ NO3, T-Phos	TOX 9020 AOX 1650 506	Alkalinity CO_3 HCl	Dioxins / Furans 1613 8290	Dissolved Gases CO2 Methane Ethane Ethene RSK 175	see note metals below			REMARKS
FG 90139MP-2	8/23/19	1500		Filter Blk																		X				
FG 90139MP-3	8/23/19	1500		"																		X				

REPORT REQUIREMENTS

- I. Routine Report: Method Blank, Surrogate, as required
- II. Report Dup., MS, MSD as required
- III. CLP Like Summary (no raw data)
- IV. Data Validation Report
- V. EDD

INVOICE INFORMATION

PO # _____
Bill To: _____

TURNAROUND REQUIREMENTS

- 24 hr.
- 48 hr.
- 5 day
- Standard (15 working days)

Requested Report Date

Circle which metals are to be analyzed: see attached Table A7-1 from 8/2/2019 QAPP

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

* INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/ COMMENTS:

please notify mark Harris before beginning analyses. These are Filter Blanks for UCR P3. Analytical list is in attached Table A7-1.

Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	Signature	Date/Time	Printed Name	Firm
	Ken Mixon	8/24/19 1130	Ken Mixon	AECOM
RELINQUISHED BY:		8/26/19 0940		
	SWOLF		SWOLF	ALS
RELINQUISHED BY:				
RELINQUISHED BY:				

Copyright 2012 by ALS Group

For Filter Blks
F690139 MP-2
F690139 MP-3

Table A7-1. Analyte Detection Limits, Reporting Limits and Criteria

	Porewater						Sediment				
	Ecological Screening Criteria for Water										
Analyte	Chronic EPA AWQC (µg/L)	Ecology Chronic WQS (µg/L)	CCT Aquatic Life Chronic Criteria (µg/L)[a]	STI Aquatic Life Chronic Criteria (µg/L)[f]	MDL (µg/L)[a]	MRL (µg/L)[a]	Toxicity Benchmark Value (mg/kg dw)	Toxicity Benchmark Value Source	MDL (mg/kg dw)[a]	MRL (mg/kg dw)[a]	SEM-AVS MDL (µmol/g dw)
Physical Properties											
Grain Size	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Slag	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Conventional Parameters											
Alkalinity	NA	NA	NA	NA	3,000	15,000	NA	NA	NA	NA	NA
DOC	NA	NA	NA	NA	70	500	NA	NA	NA	NA	NA
TOC	NA	NA	NA	NA	70	500	NA	NA	0.02%	0.05%	NA
Sulfide	NA	NA	NA	NA	20	50	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	800	2,000	NA	NA	NA	NA	NA
Cations/Anions											
Calcium	NA	NA	NA	NA	0.9	20	NA	NA	1	4	NA
Chloride	230,000	230,000	230,000	230,000	7	100	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	0.3	5	NA	NA	0.2	2	NA
Potassium	NA	NA	NA	NA	60	200	NA	NA	10	40	NA
Sodium	NA	NA	NA	NA	20	200	NA	NA	5	40	NA
Sulfate	NA	NA	NA	NA	4	200	NA	NA	NA	NA	NA
Metals/Metalloids[b]											
Aluminum	1200[c]	NA	87	87	0.2	4	NA	NA	0.6	2	NA
Antimony	NA	NA	NA	NA	0.02	0.05	2	EPA BTAG	0.02	0.05	0.0008
Arsenic	150	190	150	150	0.09	0.5	9.79	EPA BTAG	0.06	0.5	0.002
Barium	NA	NA	NA	NA	0.002	0.05	NA	NA	0.02	0.05	NA
Beryllium	NA	NA	NA	NA	0.005	0.02	NA	NA	0.006	0.02	NA
Cadmium	0.53[c]	0.77[c]	0.19[c]	0.77[c]	0.008	0.02	0.99	EPA BTAG	0.007	0.02	0.00007
Chromium	53[c]	128[c]	53[c]	53[c]	0.03	0.2	43.4	EPA BTAG	0.06	0.2	0.0004
Cobalt	NA	NA	NA	NA	0.006	0.02	50	EPA BTAG	0.006	0.02	NA
Copper	6.4[c]	8.1[c]	6.4[c]	6.4[c]	0.05	0.1	31.6	EPA BTAG	0.04	0.1	0.0005
Iron	1,000	NA	1,000	1,000	0.3	1	20000	EPA BTAG	2	8	NA
Lead	1.6[c]	1.6[c]	1.6[c]	1.6[c]	0.006	0.02	35.8	EPA BTAG	0.02	0.05	0.0005
Manganese	NA	NA	NA	NA	0.006	0.2	460	EPA BTAG	0.02	0.05	NA
Mercury	NA	NA	NA	NA	NA	NA	0.18	EPA BTAG	0.002	0.02	NA
Nickel	37[c]	112[c]	37[c]	37[c]	0.04	0.2	22.7	EPA BTAG	0.03	0.2	0.0003
Selenium	1.5-3.1	5	5	5	0.2	1	2	EPA BTAG	0.09	1	NA
Silver	NA	NA	NA	NA	0.009	0.02	1	EPA BTAG	0.004	0.02	NA
Thallium	NA	NA	NA	NA	0.008	0.02	NA	NA	0.004	0.02	NA
Vanadium	NA	NA	NA	NA	0.05	0.2	NA	NA	0.03	0.2	NA
Zinc	84[c]	74[c]	84[c]	74[c]	0.5	2	121	EPA BTAG	0.2	0.5	0.0003

Analyze for these metals

PC MH

Cooler Receipt and Preservation Form

Client AECOM Service Request *K19* 07808

Received: 8/26/19 Opened: 8/26/19 By: [illegible] Unloaded: 8/26/19 By: [illegible]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* (*Box*) *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
NM	—	—	—	—	—		7893 5348 5966	

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Sediment COC

CHAIN OF CUSTODY

China Bend ☐
Evans ☒
Deadmans Eddy ☒
Reference ☐

15

S-Environmental-Kelso 7-S-13th-Ave so, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	Project Contact: Kevin Lundmark Tel: +1 801 204-4313	Site Contact: Jennifer Pretare 510-681-6401 Laboratory Contact: Mark Harris
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W) _____ ☒ 21 days ☐ Other _____	Date: 18 Sept 2019 Carrier:
ject Name: UCR 2019 Phase 3 Sediment dy Quote #: 46976	d to by KM 9/20/19 AECOM	COC No: 1 of _____ COCs

—EV063-SE-1-091019 → 1500

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
EV 004-SE -1- 091019	9/10/2019	1130	Sediment	AP	6	X	X	X	X	X	X		X					
EV 005-SE -1- 091119	9/11/2019	1515	Sediment	AP	6	X	X	X	X	X	X		X					
EV 063-SE -1- 091019	9/10/2019	1500	Sediment	AP	6	X	X	X	X	X	X		X					
EV 064-SE -1- 091119	9/11/2019	1300	Sediment	AP	6	X	X	X	X	X	X		X					
EV 067-SE -1- 091119	9/11/2019	1200	Sediment	AP	6	X	X	X	X	X	X		X					
EV 075-SE -1- 091119	9/11/2019	0940	Sediment	AP	6	X	X	X	X	X	X		X					
EV 010-SE -1- 091219	9/12/2019	1530	Sediment	AP	6	X	X	X	X	X	X		X					
EV 012-SE -1- 091319	9/13/2019	0955	Sediment	AP	6	X	X	X	X	X	X		X					
EV 013-SE -1- 091319	9/13/2019	1215	Sediment	AP	6	X	X	X	X	X	X		X					
EV 036-SE -1- 091419	9/14/2019	1330	Sediment	AP	5	X	X	X	X	X	X		X					
EV 013-SE -1- 091319	9/13/2019	1430	Water	NM	1	X	X	X	X	X	X		X					
M 057-SE -1 091819	09/18/2019	1130	Sediment	BF	6	X	X	X	X	X	X		X					
						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

servation:

L-4 sample ID = EV013-SE-4-091319

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

KM 9/20/19

cial Instructions/QC Requirements & Comments:
al Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
al Metals by EPA 6010: Ca, Fe, Mg, K, Na
M Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

inquished by:	Company: AECOM	Date/Time: 9/18/19 2010	Received by:	Company: AECOM	Date/Time: 9/18/19 2016
inquished by:	Company: AECOM	Date/Time: 9/19/19 1555	Received by:	Company: ALS	Date/Time: 9/19/19 1555
inquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

CHAIN OF CUSTODY

Porewater COC

K Sink 9/18/19

China Bend ☐
Evans ☒
Deadmans Eddy ☒
Reference ☐

~~LS Environmental Kelso~~ ~~117-S-13th-Ave~~ ~~Kelso, WA 98626~~ ~~Ph: 360-577-7222 Fax: 360-636-1068~~	Project Contact: Kevin Lundmark Tel: + 1 801 204-4313 Analysis Turnaround Time Calendar (C) or Work Days (W)	Site Contact: Jennifer Pretare 510-681-6401 Laboratory Contact: Mark Harris	Date: ~~49~~ Sept 2019 Carrier:
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	☒ 21 days ☐ Other _____		COC No. ____ of ____ COCs
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #: 46976			EDITS BY CC AECOM 9-26-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)	Total Metals (EPA 6020A/6010C)				Sample Specific Notes:
~~DM 026-PW -1- 091719~~	9/17/2019	1638	Porewater	LH	4	X	X	X	X		X					
~~EV 064-PW -1- 091719~~	9/17/2019	1650	Porewater	jp	4	X	X	X	X		X					
~~EV 075-PW -1- 091819~~	9/18/2019	1455	Porewater	JP	4	X	X	X	X		X					
~~EV 075-PW -2- 091819~~	9/18/2019	1455	Porewater	JP	1				X							
~~EV 064-PW -1- 091819~~	9/18/2019	1207	Porewater	JP	4	X	X	X	X		X					
~~DM 022-PW -1- 091819~~	9/18/2019	1243	Porewater	LH	4	X	X	X	X		X					
~~DM 022-PW -2- 091819~~	9/18/2019	1243	Porewater	LH	1	X					X					
~~DM 022-PW -4- 091819~~	9/18/2019	1450	Porewater	LH	3	~~X~~		X	X		~~X~~	X				
			Porewater													
			Porewater													
			Porewater													
			Porewater													
Preservation:						HNO3	H2SO4	H2SO4	4±3°C	ZnAc/ NaOH						

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company: AECOM	Date/Time: 9/18/19 2025	Received by:	Company: AECOM	Date/Time: 9/18/19 2025
Relinquished by:	Company: AECOM	Date/Time: 9/19/19 1555	Received by:	Company: ALS	Date/Time: 9/19/19 1555
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS

PC_____

Cooler Receipt and Preservation Form

lient AECOM

Service Request K19

eceived: 9/19/19 Opened: 9/19/19 By: [illegible] Unloaded: 9/19/19 By: [illegible]

Samples were received via? USPS Fed Ex UPS DHL PDX (Courier) Hand Delivered

Samples were received in: (circle) (Cooler) + Box Envelope Other Pensle

Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 F+1 B. + Ion Bag

If present, were custody seals intact? (Y) N If present, were they signed and dated? w/ Samples NA N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number NA	Filed
2.3	2.4	4.5	4.6	+0.1	370	364		
2.0	0.1	—	—	+0.1	360	404		
4.2	4.4	—	—	+0.2	390	404		
2.0	0.2	5.6	5.8	+0.2	385	294		

Packing material: Inserts Baggies (Bubble Wrap) Gel Packs Wet Ice Dry Ice Sleeves Plastic, Wet ice in Coolers

Were custody papers properly filled out (ink, signed, etc.)?	NA	(Y)	N
Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.*	NA	(Y)	N
If applicable, tissue samples were received: *Frozen Partially Thawed Thawed*			
Were all sample labels complete (i.e analysis, preservation, etc.)?	NA	(Y)	N
Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.*	NA	Y	(N)
Were appropriate bottles/containers and volumes received for the tests indicated?	NA	(Y)	N
Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below*	NA	(Y)	N
Were VOA vials received without headspace? *Indicate in the table below.*	(NA)	Y	N
Was C12/Res negative?	(NA)	Y	N

Sample ID on Bottle	Sample ID on COC	Identified by:
~~EV064-SE-1-091019~~ KM		
EV063-SE1-091019	EV064-SE-1-091019	Date + times match; There is already sample EV064-SE1 091019.

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

tes, Discrepancies, & Resolutions:

K1908736

LS-Environmental-Kelso
17-S-13th-Ave
elso, WA 98626
Ph: 360-577-7222 Fax: 360-636-1068

CHAIN OF CUSTODY

Bioassay COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

Client Contact	Project Contact: Kevin Lundmark; ERM	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No: 21
Teck American Incorporated	Tel: +1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:	3 of 4 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Bioassay Project Contact: Karen Tobiason, Windward Tel: +1 206 812-5420			
oject Name: UCR 2019 Phase 3 Sediment udy	Analysis Turnaround Time ☐ Calendar (C) or Work Days (W) _____ ☒ Hold at ALS Until Notified ☐ Other _____			
b Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	42-day *Hyalella azteca* Bioassay	Sample Specific Notes:
CB 027-SE -1- 101419	10/14/2019	1530	Sediment	MM	2	X	1 2-gal and 1 5-gal bucket
CB 014-SE -1- 101519	10/15/2019	1312	Sediment	MM	2	X	1 2-gal and 1 5-gal bucket
CB 029-SE -1- 101519	10/15/2019	0940	Sediment	MM	2	X	1 2-gal and 1 5-gal bucket
CB 044-SE -1- 101519	10/15/2019	1149	Sediment	MM	2	X	1 2-gal and 1 5-gal bucket
R7-2019-SE-1-101519	10/15/2019	1431	Sediment	MM	2	X	1 2-gal and 1 5-gal bucket
CB 014-SE -3- 101519	10/15/2019	1312	Sediment	MM	1	X	1 2-gal bucket
CB 029-SE -3- 101519	10/15/2019	0940	Sediment	MM	1	X	1 2-gal bucket
)M 007-SE -1- 101519	10/15/2019	1252	Sediment	SH	2	X	1 2-gal and 1 5-gal bucket
)M 024-SE -1- 101519	10/15/2019	0950	Sediment	SH	2	X	1 2-gal and 1 5-gal bucket
)M 024-SE -3- 101519	10/15/2019	1528	Sediment	SH	1	X	1 2-gal bucket
B5-NRT-SE-1-101519	10/15/2019	1528	Sediment	SH	2	X	1 2-gal and 1 5-gal bucket
CB 002-SE -1- 101519	~~10/15/2019~~	1353	Sediment	MM	2	X	1 2-gal and 1 5-gal bucket
						4±2°C	

servation: 10·16·2019
(J.A.P. 10·27·20)

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

cial Instructions/QC Requirements & Comments:

lfic EcoRisk Contact and Address:
Jeff Cotsifas
2250 Cordelia Road , Fairfield, CA 94534
+1 707 207-7760

	Company:	Date/Time:	Received by:	Company:	Date/Time:
nquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
nquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

nquished by: Company: AECOM Date/Time: 15:33 10/17/19
Received by: Company: ALS Date/Time: 10/17/19 1532

Porewater COC

CHAIN OF CUSTODY

LS-Environmental-Kelso 317-S-13th-Ave elso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313**	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris**	**Date: 23 September 2019** **Carrier:**
Client Contact Teck American Incorporated Cristy Kessel 509.496 1160 Cristy Kessel@teck.com	**Analysis Turnaround Time** Calendar or Work Days (W) [x] 21 days [ ] Other _____		_____ of _____ COCs
oject Name: UCR 2019 Phase 3 Sediment udy b Quote # 46976			

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Disolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)	Total Metals (EPA 6020A/6010C)				Sample Specific Notes:
EV 063-PW -1- 091919	9/19/2019	1030	Porewater	NM	4	X	X	X	X		X					
EV 057-PW -1- 091919	9 19/2019	1247	Porewater	NM	4	X	X	X	X		X					
DM 023-PW -1- 091919	9/19/2019	0945	Porewater	LH	4	X	X	X	X		X					
DM 008-PW -1- 091919	9/19/2019	1302	Porewater	LH	4	X	X	X	X		X					
DM 015-PW -1- 092019	9/20/2019	0946	Porewater	LH	4	X	X	X	X		X					
DM 015-PW -2- 092019	9/20/2019	0946	Porewater	LH	1				X							
EV 013-PW -2- 092019	9/20/2019	1236	Porewater	NM	1	X					X					
EV 012-PW -1- 092019	9/20/2019	1421	Porewater	NM	4	X	X	X	X		X					
EV 044-PW -1- 092019	9/20/2019	1013	Porewater	NM	4	X	X	X	X		X					
EV 044-PW -4- 092019	9/20/2019	0900	Porewater	NM	3			X	X			X				~~Potential Hold~~
EV 013-PW -1- 092019	9/20/2019	1236	Porewater	NM	4	X	X	X			X					
EV 057-PW -4- 091919	9/19/2019	1405	Porewater	NM	1							X	Analysis cancelled			~~Potential Hold~~ Please archive
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

EDITS BY CC AECOM 9-24-19 & 9-25-19

Sample Disposal

[ ] Return To Client [ ] Disposal By Lab [X] Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:

Dissolved Metals by EPA 6020 Al Sb As, Ba Be Cd, Cr Co Cu Pb Mn N Se Ag Tl V Zn
Dissolved Metals by EPA 6010 Ca Fe Mg, K, Na

Relinquished by:	Company: AECOM	Date/Time: 09/23/19 07:10	Received by:	Company:	Date/Time: 9-23-19 7:10
Relinquished by:	Company:	Date/Time:	Received by:	Company: ALS	Date/Time: 9/23/19 1358
Relinquished by:	Company: SCS	Date/Time: 9/23/19 13:57	Received by:	Company:	Date/Time:

LS-Environmental-Kelso 317-S-13th-Ave elso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**CHAIN OF CUSTODY**	**Porewater COC**

China Bend ☐
Evans X
Deadmans Eddy X
Reference ☐

Client Contact Teck American Incorporated Cristy Kessel 509 496 1160 Cristy Kessel@teck com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W)	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris**	**Date: 23 September 2019** **Carrier:**

COC No: 4, Page 2 of 2
of COCs

oject Name: UCR 2019 Phase 3 Sediment udy

ib Quote #: 46976

☒ 21 days
☐ Other _____

EDITS BY CC AECOM 9-24-19 & 9-25-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Calculated Hardness as CaCO3 (SM 2340C)	Total Metals (EPA 6020A/6010C)				Sample Specific Notes:
DM 008-PW -2- 091919	9/19/2019	1302	Porewater	LH	1			X								~~Potential Hold~~ CC 9-24-19
DM 023-PW -2- 091919	9/19/2019	1302	Porewater	LH	1		X									
DM 018-PW -1- 092019	9/20/2019	1338	Porewater	LH	4	X	X	X	X		X					
DM 050-SE -4- 092019	9/20/2019	1150	Water	SH	6							X				Hold 5 of 6 bottles
EV 010-PW -1- 092119	9/21/2019	1034	Porewater	NM	4	X	X	X	X		X					
EV 005-PW -1- 092119	9/21/2019	1230	Porewater	NM	4	X	X	X	X		X					
EV 002-PW -1- 092119	9/21/2019	1406	Porewater	NM	4	X	X	X	X		X					
EV 002-PW -2- 092119	9/21/2019	1406	Porewater	NM	1		X									
EV 010-PW -4- 092119	9/21/2019	0930	Porewater	NM	3	X		X	X			X				
DM 016-PW -1- 092119	9/21/2019	1308	Porewater	LH	4	X	X	X	X		X					
DM 010-PW -1- 092119	9/21/2019	1030	Porewater	LH	4	X	X	X	X		X					

eservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

cial Instructions/QC Requirements & Comments:
solved Metals by EPA 6020 Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu Pb, Mn, Ni Se, Ag, Tl, V, Zn
solved Metals by EPA 6010 Ca, Fe, Mg, K, Na

nquished by:	Company: AECOM	Date/Time: 09/23/19 07:10	Received by:	Company:	Date/Time: 9-23-19 7:10
inquished by	Company:	Date/Time:	Received by:	Company: ALS	Date/Time: 9/23/19 1358
nquished by:	Company:	Date/Time: 9/23/19 13:57	Received by:	Company:	Date/Time:

PC MH

Cooler Receipt and Preservation Form

Client Teck American Service Request K1908802

Received: 9/23/19 Opened: 9/23/19 By: CG Unloaded: 9/23/19 By: CG

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 Front 1 Back

   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
1.5	1.5	—	—	0.0	381			
-0.3	-0.5	—	—	-0.2	325			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

K1908957

ALS Environmental-Kelso	CHAIN OF CUSTODY	Porewater COC
317-S-13th-Ave		
Kelso, WA 98626		
Ph: 360-577-7222 Fax: 360-636-1068		

China Bend ☐
Evans X
Deadmans Eddy ☐
Reference X

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Preture 510-681-6401	Date:	COC No 9
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:	1 of 2 COCs
Cristy Kessel 509 496 1160 Cristy Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W)			
Project Name UCR 2019 Phase 3 Sediment Study	[x] 21 days ☐ Other			
Lab Quote # 46976				

EDITS BY CC AECOM 9-26-19 & 9-29-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Calculated Hardness as CaCO3 (SM 2340C)	Total Metals (EPA 6020A/6010C)	Sample Specific Notes:
EV 046-PW -1- 092319	9/23/2019	1548	Porewater	AT	4	X	X	X	X		X		
EV 065-PW -1- 092319	9/23/2019	1253	Porewater	AT	4	X	X	X	X		X		
EV 026-PW -1- 092419	9/24/2019	1123	Porewater	AT	4	X	X	X	X		X		
EV 037-PW -1- 092419	9/24/2019	1454	Porewater	AT	4	X	X	X	X		X		
EV 037-PW -4- 092419	9/24/2019	1543	~~Porewater~~ water	AT	4			X	X			X	
REF 014-PW -1- 092419	9/24/2019	1418	Porewater	AT	4	X	X	X	X		X		
REF 014-PW -2- 092419	9/24/2019	1418	Porewater	AT	4	X					X		
REF 015-PW -1- 092419	9/24/2019	1210	Porewater	AT	4	X	X	X	X		X		
EV 051-PW -2- 092519	9/25/2019	0859	Porewater	AT	1	X					X		
EV 051-PW -1- 092519	9/25/2019	0859	Porewater	AT	4	X	X	X	X		X		
EV 059-PW -1- 092519	9/25/2019	1243	Porewater	AT	4	X	X	X	X		X		
REF 016-PW -1- 092519	9/25/2019	1028	Porewater	AT	4	X	X	X	X		X		
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH			

Sample Disposal
☐ Return To Client ☐ Disposal By Lab [X] Archive until disposal permitted b

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020 Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010 Ca, Fe, Mg, K, Na

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
[signature]	AECOM	9/26/19 0635	[signature] Morrison	ALS	9/26/19 1502
Relinquished by	Company	Date/Time	Received by	Company	Date
Relinquished by	Company	Date/Time	Received by	Company	Date/Time

K1908957

U.S. Environmental-Kelso
317-S-13th-Ave
elso, WA 98626
Ph: 360-577-7222 Fax: 360-636-1068

CHAIN OF CUSTODY

Porewater COC

China Bend ☐
Evans
Deadmans Eddy ☐
Reference X

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No 9
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:	2 of 2 COCs

Cristy Kessel 509 496 1160
Cristy Kessel@teck com

Analysis Turnaround Time
Calendar (C) or Work Days (W)

[X] 21 days
[ ] Other

roject Name UCR 2019 Phase 3 Sediment tudy

ab Quote # 46976

EDITS BY CC AECOM 9-26-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (FPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)	Total Metals (EPA 6020A/6010C)				Sample Specific Notes:
REF 017-PW -1- 092619	9/25/2019	1220	Porewater	AU	4	X	X	X	X	X	X					
REF 018-PW -1- 092519	9/25/2019	1442	Porewater	AU	4	X	X	X	X	X	X					

reservation: HNO3 | H2SO4 | H2SO4 | 4±2°C | ZnAc/NaOH

Sample Disposal
[ ] Return To Client [ ] Disposal By Lab [X] Archive until disposal permitted by EPA

pecial Instructions/QC Requirements & Comments:
ssolved Metals by EPA 6020 Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
ssolved Metals by EPA 6010 Ca, Fe, Mg, K, Na

inquished by	Company AECOM	Date/Time 9/26/19 0630	Received by	Company FCS	Date/Time 9/26/19 1530
elinquished by	Company	Date/Time	Received by	Company	Date/Time
elinquished by	Company	Date/Time	Received by	Company	Date/Time

ALS

Cooler Receipt and Preservation Form

PC MH

Client Tech Am Service Request K19 08957

Received: 9/26/19 Opened: 9/26/19 By: [signature] Unloaded: 9/26/19 By: [signature]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? one, front NA
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
1.4	1.5	8.0	8.1	+0.1	308			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

For EV037-PW-4-092419 - recd 3 bottles, not 4.
For RFF014 PW-2-092419 - recd 1 bottle, not 4.

K1908958

S-Environmental-Kelso 17-S-13th Ave lso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**CHAIN OF CUSTODY**	**Sediment COC** China Bend ☐ Evans X Deadmans Eddy X Reference ☐
Client Contact Teck American Incorporated Cristy Kessel 509 496 1160 Cristy Kessel@teck com	**Project Contact: Kevin Lundmark** Tel: + 1 801 204-4313 **Analysis Turnaround Time** Calendar (C) or Work Day (W) ☒ 21 days ☐ Other	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris**
oject Name UCR 2019 Phase 3 Sediment udy b Quote # 46976		**Date:** **Carrier:** COC No 5 1 of 2 COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Vendors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
DM 045-SE -1- 091919	9/19/2019	1012	Sediment	SH	6	X	X	X	X	X	X		X					
EV 026-SE -1- 092019	9/20/2019	1431	Sediment	MM	6	X	X	X	X	X	X		X					
EV 003-SE -1- 092019	9/20/2019	1002	Sediment	MM	6	X	X	X	X	X	X		X					
DM 050-SE -1- 092019	9/20/2019	0908	Sediment	SH	6	X	X	X	X	X	X		X					
DM 046-SE -1- 092019	9/20/2019	1217	Sediment	SH	6	X	X	X	X	X	X		X					
DM 022-SE -1- 092119	9/21/2019	1234	Sediment	KM	6	X	X	X	X	X	X		X					
DM 023-SE -1- 092119	9/21/2019	815	Sediment	SH	6	X	X	X	X	X	X		X					
DM 026-SE -1- 092119	9/21/2019	1008	Sediment	SH	6	X	X	X	X	X	X		X					
DM 026-SE -2- 092119	9/21/2019	1045	Sediment	SH	6	X	X	X	X	X	X		X					
EV 027-SE -1- 092119	9/21/2019	0925	Sediment	MM	6	X	X	X	X	X	X		X					
EV 060-SE -1- 092119	9/21/2019	1255	Sediment	MM	6	X	X	X	X	X	X		X					
EV 008-SE -1- 092319	9/23/2019	0943	Sediment	SH	6	X	X	X	X	X	X		X					
reservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

ecial Instructions/QC Requirements & Comments:
tal Metals by EPA 6020 Al Sb As Ba Be Cd Cr Co Cu Pb Mn Ni Se Ag Tl V Zn
tal Metals by EPA 6010 Ca Fe Mg K Na
M Metals Sb As Cd Cr Cu Pb Ni Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc

linquished by	Company: Aecom	Date/Time: 9/26/19 0630	Received by	Company: RJ Lee	Date/Time: 9/26/19 1502
linquished by	Company	Date/Time	Received by	Company	Date/Time
linquished by	Company	Date/Time	Received by	Company	Date/Time

K1908958

CHAIN OF CUSTODY

Sediment COC

Clana Bend	☐
Evans	X
Deadmans Eddy	
Reference	X

AS-Environmental-Kelso	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:
17-S-13th-Ave	Tel: + 1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:
lso, WA 98626	Analysis Turnaround Time		COC No 5
Ph: 360-577-7222 Fax: 360-636-1068	Calendar (C) or Work Days (W)		2 of 2 COCs
Client Contact	☒ 21 days		
Teck American Incorporated	☐ Other		
Cristy Kessel 509 496 1160			
Cristy Kessel@teck com			
oject Name UCR 2019 Phase 3 Sediment dy			
b Quote # 46976			

EDITS BY CC AECOM 9-26-19 & 9-29-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
EV 037-SE -1- 092319	9/23/2019	1328	Sediment	SH	6	X	X	X	X	X	X		X					
EV 037-SE -2- 092319	9/23/2019	1300	Sediment	SH	6	X	X	X	X	X	X		X					
EV 002-SE -1- 092419	9/24/2019	0831	Sediment	CP	6	X	X	X	X	X	X		X					
EV 044-SE -1- 092419	9/24/2019	1001	Sediment	CP		X	X	X	X	X	X		X					
EV 048-SE -1- 092419	9/24/2019	1001	Sediment	CP		X	X	X	X	X	X		X					
EV 051-SE -1- 092419	9/24/2019	1300	Sediment	CP		X	X	X	X	X	X		X					
EF 013-SE -1- 09242019	9/24/2019	1139	Sediment	DH		X	X	X	X	X	X	X						
EV 065-SE -1- 092519	9/25/2019	0816	Sediment	CP	6	X	X	X	X	X	X		X					
EV 066-SE -2- 092519	9/25/2019	0855	Sediment	CP	6	X	X	X	X	X	X		X					
EV 066-SE -1- 092519	9/25/2019	0938	Sediment	CP		X	X	X	X	X	X		X					
EV 069-SE -1- 092519	9/25/2019	1049	Sediment	CP		X	X	X	X	X	X		X					
EV 071-SE -1- 092519	9/25/2019	1451	Sediment	CP	6	X	X	X	X	X	X		X					
						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

eservation:

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

ecial Instructions/QC Requirements & Comments:

tal Metals by EPA 6020 Al Sb, As Ba Be Cd Cr Co Cu Pb, Mn Ni, Se Ag, Tl, V, Zn
tal Metals by EPA 6010 Ca Fe Mg, K Na
EM Metals Sb As, Cd, Cr, Cu Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group Inc

linquished by	Company AECOM	Date/Time 09/26/19 0650	Received by	Company AES	Date/Time 9/26/19 1500
linquished by	Company	Date/Time	Received by	Company	Date/Time
linquished by	Company	Date/Time	Received by	Company	Date/Time

K1908958

CHAIN OF CUSTODY

Sediment COC

LS Environmental-Kelso	Project Contact: Kevin Lundmark	Site Contact: Jennifer Prestare 510-681-6401	Date:
317-S-13th-Ave	Tel: + 1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:
elso, WA 98626	Analysis Turnaround Time		
Ph: 360-577-7222 Fax: 360-636-1068	Calendar (C) or Work Days (W)		
Client Contact	[x] 21 days		
Teck American Incorporated	[ ] Other		
Cristy Kessel 509 496 1160			
Cristy Kessel@teck.com			
oject Name: UCR 2019 Phase 3 Sediment udy			
ab Quote # 46976			

China Bend ☐
Evans
Deadmans Eddy
Reference: X

COC No: 5
of 5 COCs

EDITS BY CC
AECOM 9-26-19
9-29-19
DY AECOM 9/30/19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Tracers and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)	Total Metals (EPA 6020A/6010C)				Sample Specific Notes:
REF 016-SE -1- 09252019	9/25/2019	1140	Sediment	DH	6	X	X	X	X	X	X	X						
REF 017-SE -1- 09252019	9/25/2019	1405	Sediment	DH	6	X	X	X	X	X	X	X						
REF 018-SE -1- 09252019	9/25/2019	1007	Sediment	DH	6	X	X	X	X	X	X	X						
DUP EVD60-SE-4-092119 9/30/19	9/21/19	1255	Water	mm	1									X				
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal

☐ Return To Client ☐ Disposal By Lab [X] Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020 Al Sb As Ba Be Cd Cr Co Cu Pb Mn Ni Se Ag Tl V Zn
Total Metals by EPA 6010 Ca Fe Mg K Na
SEM Metals Sb As Cd Cr Cu Pb Ni Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group Inc

Relinquished by	Company: AECOM	Date/Time: 9/26/19 0650	Received by	Company: AECOM	Date/Time: 9/26/19 1800
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Relinquished by	Company	Date/Time	Received by	Company	Date/Time

ALS

PC MH

Cooler Receipt and Preservation Form

Client AECOM Service Request *K19* 09958

Received: 9/26/19 Opened: 9/26/19 By: [illegible] Unloaded: 9/26/19 By: [illegible]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (Client) *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 F 1 B
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
0.7	0.7	4.7	4.7	0	396			
1.0	1.0	5.5	5.5	0	349			
2.1	2.1	5.7	5.7	0	371			
4.0	3.9	5.9	5.8	-0.1	384			
3.1	2.9	5.8	5.6	-0.2	356			

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:
EV048-SE-1-092419; 11:37 ~~HLe~~ KM	EV048-SE-1-092419 ~~11:37~~ 10:01	on COC.

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
								Total Met		9/21/19 @ 1253

Notes, Discrepancies, & Resolutions: Rec'd (1) 125 metals bottle - EV060-SE-4-092119 not on COC. Placed KM (~~There are a set of soils w/ same sample ID~~) Placed at the end of the job. Times do not match on Sample vs COC. Listed above

7/25/16

Page ____ of ____

K1909057

S-Environmental-Kelso	
17-S-13th-Ave	
lso, WA 98626	
Ph: 360-577-7222 Fax: 360-636-1068	

CHAIN OF CUSTODY

Porewater COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**
Teck American Incorporated	**Tel: +1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____		COC No: 10 1 of 2 COCs
ject Name: UCR 2019 Phase 3 Sediment dy	☒ 21 days ☐ Other _____		
) Quote #: 46976			

EDITS BY CC AECOM 10-7-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)	Total Metals - [Not Filtered] (EPA 6020A/6010C)				Sample Specific Notes:
EV 060-PW -1- 092619	9/26/2019	1358	Porewater	AT	4	X	X	X	X		X					
EV 060-PW -2- 092619	9/26/2019	1358	Porewater	AT	1				X							
EV 056-PW -1- 092619	9/26/2019	1143	Porewater	AT	4	X	X	X	X		X					
EV 056-PW -2- 092619	9/26/2019	1143	Porewater	AT	1			X								
EV 059-PW -1- 092619	9/26/2019	0916	Porewater	AT	~~3~~ 4	X	X	X	X		X					
EV 059-PW -2- 092619	9/26/2019	0916	Porewater	AT	1		X									
EF 013-PW -1- 092619	9/26/2019	1108	Porewater	AU	4	X	X	X	X		X					
EF 013-PW -4- 092619	9/26/2019	0905	Water	AU	3			X	X			X				
EF 001-PW -1- 092719	9/27/2019	1340	Porewater	AU	4	X	X	X	X		X					
EF 002-PW -1- 092719	9/27/2019	1056	Porewater	AU	4	X	X	X	X		X					
EF 001-PW -2- 092719	9/27/2019	1056	Porewater	AU	1		X									
EV 003-PW -1- 092719	9/27/2019	1415	Porewater	AT	4	X	X	X	X		X					
						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

cial Instructions/QC Requirements & Comments:
solved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
solved Metals by EPA 6010: Ca, Fe, Mg, K, Na

nquished by: Dave Lewis	Company: aecom	Date/Time: 9/30/19 0700	Received by: Mark Harris	Company: SCS	Date/Time: 9-30-19 0700
nquished by: Mark Harris	Company: SCS	Date/Time: 9/30/19 1340	Received by: Cocanes	Company: ACS	Date/Time: 9/30/19 1340
nquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1909057

LS-Environmental-Kelso
317-S-13th-Ave
elso, WA 98626
Ph: 360-577-7222 Fax: 360-636-1068

CHAIN OF CUSTODY

Porewater COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No:
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:	2 of 2 COCs

Cristy Kessel 509.496.1160
Cristy.Kessel@teck.com

oject Name: UCR 2019 Phase 3 Sediment udy

b Quote #: 46976

Analysis Turnaround Time
Calendar (C) or Work Days (W) _____

☒ 21 days

☐ Other _____

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
-B1-2019-PW -1- 092719	9/27/2019	1151	Porewater	AU	4	X	X	X	X		X					
EV 052-PW -1- 092719	9/27/2019	0933	Porewater	AU	4	X	X	X	X		X					
EV 001-PW -1- 092819	9/28/2019	1457	Porewater	AU	4	X	X	X	X		X					
EV 008-PW -1- 092819	9/28/2019	0943	Porewater	AU	4	X	X	X	X		X					
EV 027-PW -1- 092819	9/28/2019	1220	Porewater	AU	4	X	X	X	X		X					
EF 003-PW -1- 092819	9/28/2019	1121	Porewater	AU	4	X	X	X	X		X					
EF 004-PW -1- 092819	9/28/2019	1417	Porewater	AU	4	X	X	X	X		X					
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

cial Instructions/QC Requirements & Comments:
solved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
solved Metals by EPA 6010: Ca, Fe, Mg, K, Na

nquished by: Dave Lew	Company: Aecom	Date/Time: 9/30/19 0700	Received by: C Mark Harris	Company: SCS	Date/Time: 9/30/19 7:00
nquished by: Mark Harris	Company: SCS	Date/Time: 9/30/19 1340	Received by:	Company: ALS	Date/Time: 9/30/19 1340
nquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS

Cooler Receipt and Preservation Form

PC MH

Client Tech Am Service Request K19 09057

Received: 9/30/19 Opened: 9/30/19 By: Unloaded: 9/30/19 By:

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2 front + back
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
0.2	0.2	7.9	7.9	0	374			
0.3	0.2	5.9	5.8	-0.1	395			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Received 2 bottle for DOC for EV069-PW-1-092619. DOC not marked for this sample.

K1909230

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**CHAIN OF CUSTODY**	**Sediment COC**	Chuna Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No: 11
Teck American Incorporated	Tel: +1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:	1 of 3 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W)			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
EV 001-SE -1- 092619	9/26/2019	1103	Sediment	CP	6	X	X	X	X	X	X		X					
EV 001-SE -2- 092619	9/26/2019	1133	Sediment	CP	6	X	X	X	X	X	X		X					
EV 052-SE -1- 092619	9/26/2019	1226	Sediment	CP	6	X	X	X	X	X	X		X					
EV 072-SE -1- 092619	9/26/2019	1449	Sediment	CP	6	X	X	X	X	X	X		X					
EV 072-SE -2- 092619	9/26/2019	1520	Sediment	CP	6	X	X	X	X	X	X		X					
REF 014-SE -1- 092619	9/26/2019	1142	Sediment	DH	6	X	X	X	X	X	X	X						
REF 014-SE -2- 092619	9/26/2019	1142	Sediment	DH	6	X	X	X	X	X	X	X						
REF 014-SE -4- 092619	9/26/2019	1422	Water	DH	9	X	X					X						
REF 015-SE -1- 092619	9/26/2019	0920	Sediment	DH	6	X	X	X	X	X	X	X						
EV 049-SE -1- 092719	9/27/2019	1051	Sediment	CP	6	X	X	X	X	X	X		X					
REF 003-SE -1- 092719	9/27/2019	0950	Sediment	DH	6	X	X	X	X	X	X	X						
REF 004-SE -1- 092719	9/27/2019	1154	Sediment	DH	6	X	X	X	X	X	X	X						
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10-2-19 2000		AECOM	10/2/19 2000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10-3-19 1520		ALS	10/3/19 1520
Relinquished by	Company:	Date/Time	Received by	Company:	Date/Time:

K1909230

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**CHAIN OF CUSTODY**	**Sediment COC** China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐

Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** Tel: +1 801 204-4313 **Analysis Turnaround Time** Calendar (C) or Work Days (W) ☒ 21 days ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris**	**Date:** **Carrier:**
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #: 46976			COC No: 2 of 3 COCs

EDITS BY CC AECOM 11-21-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
4-B1-2019-SE--1-092619	9/26/2019	0813	Sediment	CP	6	X	X	X	X	X	X		X					
4-B6-2019-SE--1-092619	9/26/2019	0942	Sediment	CP	6	X	X	X	X	X	X		X					
EV 022-SE -1- 092819	9/28/2019	1200	Sediment	CP,SH	1	X	X	X										
EV 011-SE -1- 092819	9/28/2019	1419	Sediment	CP,SH	3	X	X	X		X	X							
REF 002-SE -1- 092819	9/28/2019	0857	Sediment	DH	6	X	X	X	X	X	X	X						
REF 001-SE -1- 092819	9/28/2019	1014	Sediment	DH	6	X	X	X	X	X	X	X						
REF 007-SE -1- 093019	9/30/2019	1141	Sediment	DH	6	X	X	X	X	X	X	X						
REF 008-SE -1- 093019	9/30/2019	1420	Sediment	DH	6	X	X	X	X	X	X	X						
EV 072-BMI -4- 092819	9/26/2019	1650	Water	SH	1	X	X											
REF 011-SE -1- 100119	10/1/2019	1030	Sediment	DH	6	X	X	X	X	X	X	X						
REF 011-SE -2- 100119	10/1/2019	1155	Sediment	DH	6	X	X	X	X	X	X	X						
REF 011-SE -4- 100119	10/1/2019	1630	Water	DH	9	X	X					X						
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company: AECOM	Date/Time: 10-2-19 2000	Received by:	Company: AECOM	Date/Time: 10-2-19 2000
Relinquished by:	Company: AECOM	Date/Time: 10-3-19 1520	Received by:	Company: ALS	Date/Time: 10/3/19 1520
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1909230

ALS Environmental-Kelso
1317-S-13th-Ave
Kelso, WA 98626
Ph: 360-577-7222 Fax: 360-636-1068

CHAIN OF CUSTODY

Sediment COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No: 11
Teck American Incorporated	Tel: +1 801 264-4313	Laboratory Contact: Mark Harris	Carrier:	3 of 3 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W)			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

EDITS BY CC AECOM 10-7-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B/7470B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Congs, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
EV 020-SE -1- 100219	10/2/2019	0935	Sediment	NM	1	X	X	X										
EV 020-SE -2- 100219	10/2/2019	1415	Sediment	NM	1	~~X~~ WATER	X											
REF 006-SE -1- 100219	10/2/2019	1400	Sediment	DH	6	X	X	X	X	X	X	X						
REF 009A-SE -1- 100219	10/2/2019	0:00	Sediment	DH	6	X	X	X	X	X	X	X						
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C						

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	10-2-19 2000	[signature]	AECOM	10/2-19 2000
Relinquished by: [signature]	Company: AECOM	Date/Time: 10/3-19 1520	Received by: [signature]	Company: ALS	Date/Time: 10/3/19 1520
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS

Cooler Receipt and Preservation Form

PC MH

Client Teck Am Service Request K19 09230

Received: 10/3/19 Opened: 10/3/19 By: L Unloaded: 10/3/19 By: L

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front + back
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N NA

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
5.4	5.5	5.5	5.6	+0.1	308			
3.5	3.4	3.3	3.2	-0.1	395			
0.7	0.7	3.1	3.1	0	349			
5.0	5.1	6.9	7.0	+0.1	392			
3.1	3.1	6.0	6.0	0	390			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

No sediment sample for EV020-SE-3-100219. Rec'd HNO_3 water bottle for EV020-SE-4-100219 not on COC.

1C190231

CHAIN OF CUSTODY

Porewater COC

China Bend ☐
Evans X
Deadmans Eddy ☐
Reference X

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☒ 21 days ☐ Other _____	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris** **Date:** **Carrier:**
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #: 46976		COC No: 13 1 of 2 COCs

EDITS BY CC
AECOM 10-9-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
REF 007-PW -1- 093019	9/30/2019	1632	Porewater	PH	4	X	X	X	X		X					
EV 048-PW -1- 093019	9/30/2019	1132	Porewater	JR	4	X	X	X	X		X					
EV 048-PW -2- 093019	9/30/2019	1132	Porewater	JR	1	X					X					
EV 072-PW -1- 093019	9/30/2019	1434	Porewater	JR	4	X	X	X	X		X					
EV 072-PW -2- 093019	9/30/2019	1434	Porewater	JR	1			X								
REF 009-PW -1- 093019	9/30/2019	1352	Porewater	JR	4	X	X	X	X		X					HOLD
EV 049-PW -1- 100119	10/1/2019	1506	Porewater	JR	4	X	X	X	X		X					
EV 071-PW -1- 100119	10/1/2019	0944	Porewater	JR	4	X	X	X	X		X					
REF 008-PW -1- 100119	10/1/2019	1259	Porewater	PH	4	X	X	X	X		X					
REF 008-PW -2- 100119	10/1/2019	1259	Porewater	PH	1			X								
REF 005-PW -1- 100119	10/1/2019	1544	Porewater	PH	4	X	X	X	X		X					
EV 018-PW -1- 100219	10/2/2019	1403	Porewater	JR	4	X	X	X	X		X					
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company:	Date/Time:	Received by	Company:	Date/Time:
[signature]	AECOM	10-2-19 2000	[signature]	AECOM	10-2-19 2000
[signature]	AECOM	10/3/19 1520	[signature]	ALS	10/3/19 1520
Relinquished by:	Company:	Date/Time:	Received by	Company:	Date/Time:

K1909231

ALS Environmental-Kelso	CHAIN OF CUSTODY	Porewater COC	China Bend ☐ Evans ☐ Deadman Eddy ☐ Reference ☐
1317-S-13th-Ave Kelso, WA 98626 Ph: 360 577 7222 Fax: 360 636 1068	Project Contact: Kevin Landmark Tel: +1 801 204 4313	Site Contact: Jennifer Pretare 510 681-6401 Laboratory Contact: Mark Harris	Date: Carrier:	COC No 13 2 of 2 COCs
Client Contact Tech American Incorporated Cindy Kessel 360 496 1161 Cindy.Kessel@tetra.com	Analysis Turnaround Time Calendar (C) or Work Days (W) [x] 21 days [ ] Other			
Project Name: EVR 2019 Phase 3 Sediment Study Lab Quote # 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Carculated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
4-B6-2019-PW-1-100219	10-2-2019	1009	Porewater	JR	4	X	X	X	X		X					
REF 011-PW -1- 100219	10-2-2019	1129	Porewater	CP	4	X	X	X	X		X					
REF 011-PW -2- 100219	10-2-2019	1129	Porewater	CP	1				X							
~~REF 011-PW -1- 100219~~ DUP	10-2-2019	1537	Porewater	CP	4	X	X	X	X		X					
REF011-PW-1-100219			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													

Preservation:													
						HNO3	H2SO4	HSO4	4±2°C	ZnAcl NaOH			

Sample Disposal
☐ Return To Client ☐ Disposal By Lab [X] Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Jon Ask	AECOM	10-2-19 2000		AECOM	10-2-19 2000
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
			Medsen	ALS	10/3/19 1520
Relinquished by	Company	Date/Time	Received by	Company	Date/Time

ALS

Cooler Receipt and Preservation Form

PC Mark

Client Tech America Service Request K19 09231

Received: 10/3/19 Opened: 10/3/19 By: AP Unloaded: 10/3/19 By: AP

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
-0.5	-0.5	3.9	3.9	0.0	371			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

K1909323

CHAIN OF CUSTODY

Porewater COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

ALS-Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 **Ph:** 360-577-7222 **Fax:** 360-636-1068	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313**	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris**	**Date:** **Carrier:**
Client Contact Teck American Incorporated Cristy Kessel 509.496 1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☒ 21 days ☐ Other _____		COC No: _____ of _____ COCs
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #: 46976			EDITS BY CC AECOM 10-9-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Cachulated Hardness as CaCO3 (SM 2340C)				Sample Specific Notes:
EV 022-PW -1- 100319	10/3/2019	1203	Porewater	JR	4	X	X	X	X		X				
EV 011-PW -1- 100319	10/3/2019	1431	Porewater	JR	4	X	X	X	X		X				
EV 036-PW -1- 100319	10/3/2019	0940	Porewater	JR	4	X	X	X	X		X				
REF 009A-PW -1- 100319	10/3/2019	1136	Porewater	CP	4	X	X	X	X		X				
REF 009A-PW -2- 100319	10/3/2019	1136	Porewater	CP	1	X					X				
REF 006-PW -1- 100319	10/3/2019	1405	Porewater	CP	4	X	X	X	X		X				
REF 010-PW -1- 100419	10/4/2019	1021	Porewater	CP	4	X	X	X	X		X				
EV 023-PW -1- 100419	10/4/2019	1117	Porewater	JR	4	X	X	X	X		X				
EV 024-PW -1- 100419	10/4/2019	1340	Porewater	JR	4	X	X	X	X		X				
						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH					

Preservation:

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company: AECOM	Date/Time: 10-7-19 1243	Received by:	Company: ALS	Date/Time: 10/7/19 1243
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Cooler Receipt and Preservation Form

PC MH

Client Teck Service Request K19 09323

Received: 10/7/19 Opened: 10/7/19 By: CG Unloaded: 10/7/19 By: CG

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 Front, 1 Back

   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
2.6	2.4	-0.7	-0.9	-0.2	356			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.c analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Client retained gel ice upon relinquishing samples.

KI 909499

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 **Ph:** 360-577-7222 **Fax:** 360-636-1068	**CHAIN OF CUSTODY**	**Porewater COC**	China Bend ☐ Evans X Deadmans Eddy X Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 18
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	1 of 1 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
DM 050-PW -1- 100819	10/8/2019	1124	Porewater	AU	4	X	X	X	X		X					
EV 015-PW -1- 100919	10/9/2019	1024	Porewater	JP	4	X	X	X	X		X					
DM 046-PW -1- 100919	10/9/2019	1202	Porewater	AU	4	X	X	X	X		X					
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
			Porewater													
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Dave Lewis	Ecosa	9-9-19 1445		ALS	10/10/19 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Cooler Receipt and Preservation Form

PC MH

Client Teck / Aecom Service Request *K19* 09499

Received: 10/10/19 Opened: 10/10/19 By: Unloaded: 10/10/19 By:

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered* Truck
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where?
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.4	0.3	1.1	1.0	-0.1	384			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves*
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

K1909500

ALS-Environmental-Kelso	**Sediment COC**	China Bend X
1317-S-13th-Ave		Evans ☐
Kelso, WA 98626	**CHAIN OF CUSTODY**	Deadmans Eddy ☐
Ph: 360-577-7222 **Fax:** 360-636-1068		Reference X

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 15
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	1 of ____ COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W)			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other ____			
Lab Quote #: 46976				

Sample Identification		Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B/7470B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
CB 035-SE	-1- 100319	10/3/2019	0940	Sediment	NM	6	X	X	X	X	X	X		X					
CB 035-SE	-2- 100319	10/3/2019	0945	Sediment	NM	6	X	X	X	X	X	X		X					
REF 005-SE	-1- 100319	10/3/2019	1000	Sediment	DH	6	X	X	X	X	X	X	X						
REF 010-SE	-1- 100319	10/3/2019	1430	Sediment	DH	6	X	X	X	X	X	X	X						
REF 012-SE	-1- 100419	10/4/2019	0930	Sediment	DH	6	X	X	X	X	X	X	X						
CB 036-SE	-1- 100419	10/4/2019	1110	Sediment	NM	6	X	X	X	X	X	X		X					
CB 046-SE	-1- 100819	10/8/2019	1048	Sediment	MM	6	X	X	X	X	X	X		X					
CB 018-SE	-1- 100919	10/9/2019	1546	Sediment	MM	6	X	X	X	X	X	X		X					
CB 018-SE	-2- 100919	10/9/2019	1546	Sediment	MM	6	X	X	X	X	X	X		X					
CB 006-SE	-1- 100919	10/9/2019	1012	Sediment	MM	6	X	X	X	X	X	X		X					
CB 012-SE	-1- 100919	10/9/2019	1136	Sediment	MM	6	X	X	X	X	X	X		X					
CB 007-SE	-1- 100919	10/9/2019	1336	Sediment	MM	6	X	X	X	X	X	X		X					
Preservation:							4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* X *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Dave Lewis	Aecom	9-9-19 - 1445		ALS	10/10/19 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1909500

ALS-Environmental-Kelso
1317-S-13th-Ave
Kelso, WA 98626
Ph: 360-577-7222 **Fax:** 360-636-1068

CHAIN OF CUSTODY

Sediment COC

China Bend X
Evans ☐
Deadmans Eddy ☐
Reference X

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 15
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	2 of ____ COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W)			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B/7470B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong. and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
DM 018-SE -1- 100919	10/9/2019	1530	Sediment	DH	6	X	X	X	X	X	X		X					
DM 002-SE -1- 100919	10/9/2019	1255	Sediment	DH	6	X	X	X	X	X	X		X					
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
			Sediment															
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Dave Lewis	Arcom	9-9-19 1445			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
				ALS	10/10/19 1500
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS

Cooler Receipt and Preservation Form

PC MH

Client Teck / AECOM Service Request *K19* 095004

Received: 10/10/19 Opened: 10/10/19 By: [signature] Unloaded: 10/10/19 By: [signature]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered* → Truck
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
5.7	5.8	1.4	1.5	+0.1	360			
0.4	0.3	1.1	~~+0.2~~ 1.0	-0.1	384			
-0.1	0.0	0.2	0.3 1.0	+0.1	379			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

| ALS-Environmental-Kelso | | |

| ALS-Environmental-Kelso | | |

PC MH

Cooler Receipt and Preservation Form

Client Tech Am Service Request K19 09583

Received: 10/14/19 Opened: 10/14/19 By: [signature] Unloaded: 10/14/19 By: [signature]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2, front
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
5.3	5.5	9.6	9.8	+0.2	393			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

All ice was at the top of the cooler. Temp blank at bottom.

| ALS-Environmental-Kelso | | |

KL909752

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**CHAIN OF CUSTODY**	**Porewater COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 25
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	2 of 2 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

EDITS BY CC AECOM 10-21-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
CB 009-PW -1- 101419	10/14/2019	1515	Porewater	SK	4	X	X	X	X		X					
DM 059-PW -1- 101619	10/16/2019	1400	Porewater	LH	4	X	X	X	X		X					
DM 007-PW -1- 101619	10/16/2019	1057	Porewater	LH	4	X	X	X	X		X					
DM 007-PW -2- 101619	10/16/2019	1057	Porewater	LH	1	X			X		X					
CB 002-PW -1- 101619	10/16/2019	1539	Porewater	SK	4	X	X	X	X		X					
CB 044-PW -1- 101619	10/16/2019	1350	Porewater	SK	4	X	X	X	X		X					
CB 029-PW -1- 101619	10/16/2019	1130	Porewater	SK	4	X	X	X	X		X					
CB 021-PW -1- 101619	10/16/2019	0921	Porewater	SK	4	X	X	X	X		X					
CB 021-PW -2- 101619	10/16/2019	0921	Porewater	SK	1			X								
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10/17/19 1530		ALS	10/17/19 1532
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time

Cooler Receipt and Preservation Form

PC MH

Client Teeka America Service Request K19 09752

Received: 10/17/19 Opened: 10/17/19 By: AP Unloaded: 10/17/19 By: NP

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
6.7	6.8	6.9	7.0	0.1	323	25		
8.1	8.1	7.3	7.5 (4U)	0.0	380			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: No ice, coolers came out of refrigerated truck.

K1909753

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**CHAIN OF CUSTODY**	**Sediment COC** China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris**
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #: 46976	the last 4 samples listed are included on SDG K1909754	**Date:** **Carrier:**
		COC No: 23 __1__ of _3__ COCs

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
JS 002-SE -1- 101019	10/10/2019	1234	Sediment	MM	6	X	X	X	X	X	X		X					
JS 001-SE -1- 101019	10/10/2019	1022	Sediment	MM	6	X	X	X	X	X	X		X					
DM 016-SE -1- 101019	10/10/2019	1035	Sediment	DH	6	X	X	X	X	X	X		X					
DM 015-SE -1- 101019	10/10/2019	1445	Sediment	DH	6	X	X	X	X	X	X		X					
DM 016-SE -2- 101019	10/10/2019	1300	Sediment	DH	6	X	X	X	X	X	X		X					
DM 008-SE -1- 101119	10/11/2019	1320	Sediment	DH	6	X	X	X	X	X	X		X					
DM 010-SE -1- 101119	10/11/2019	1028	Sediment	DH	6	X	X	X	X	X	X		X					
CB 016-SE -1- 101119	10/11/2019	1422	Sediment	MM	6	X	X	X	X	X	X		X					
CB 047-SE -1- 101119	10/11/2019	1124	Sediment	MM	6	X	X	X	X	X	X		X					
CB 039-SE -1- 101119	10/11/2019	0911	Sediment	MM	6	X	X	X	X	X	X		X					
CB 009-SE -1- 101219	10/12/2019	1123	Sediment	MM	6	X	X	X	X	X	X		X					
CB 010-SE -1- 101219	10/12/2019	1425	Sediment	MM	6	X	X	X	X	X	X		X					
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* [X] *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10/17/19 1551		ALS	10/17/19 1932
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

R1904753

ALS-Environmental-Kelso
1317-S-13th-Ave
Kelso, WA 98626
Ph: 360-577-7222 **Fax:** 360-636-1068

CHAIN OF CUSTODY

Sediment COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 23
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	2 of 3 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
CB 010-SE -4- 101219	10/12/2019	1622	Water	LH	1	X	X											1-125 ml poly
DM 025-SE -1- 101219	10/12/2019	1448	Sediment	DH	6	X	X	X	X	X	X		X					
DM 025-SE -4- 101219	10/12/2019	1550	Water	DH	1	X	X											1-125 ml poly
DM 061-SE -1- 101219	10/12/2019	1145	Sediment	DH	4	X	X	X	X	X	X		X					Limited volume, call Client Contact for priority
DM 019-SE -1- 101419	10/14/2019	1328	Sediment	SH	6	X	X	X	X	X	X		X					
DM 020-SE -1- 101419	10/14/2019	1125	Sediment	SH	6	X	X	X	X	X	X		X					
DM 027-SE -1- 101419	10/14/2019	1500	Sediment	SH	6	X	X	X	X	X	X		X					
CB 020-SE -1- 101419	10/14/2019	1019	Sediment	MM	6	X	X	X	X	X	X		X					
CB 021-SE -1- 101419	10/14/2019	1237	Sediment	MM	6	X	X	X	X	X	X		X					
CB 024-SE -1- 101419	10/14/2019	1357	Sediment	MM	6	X	X	X	X	X	X		X					
CB 027-SE -1- 101419	10/14/2019	1530	Sediment	MM	6	X	X	X	X	X	X		X					
CB 014-SE -1- 101419	10/15/2019	1312	Sediment	MM	6	X	X	X	X	X	X		X					
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Teck	10/17/19 1531	[signature]	ALS	10/17/19 1532
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

PC M/T

Cooler Receipt and Preservation Form

Client TecLAM Service Request *K19* 99753

Received: 10/17/19 Opened: 10/17/19 By: [illegible] Unloaded: 10/17/19 By: [illegible]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* refrigerated truck NA
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
12.2	12.3	—	—	+0.1	360			
7.5	7.5	8.1 ~~tr~~	8.1	0	374			
7.2	7.4	7.3	7.5	+0.2	385			
7.3	7.5	7.7	7.9	+0.2	393			
6.8	6.8	7.1	7.1	0	390			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

PC MH

Cooler Receipt and Preservation Form

Client Tech Am Service Request *K19* 09753

Received: 10/17/19 Opened: 10/17/19 By: [illegible] Unloaded: 10/17/19 By: [illegible]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
6.9	7.0	7.3	7.4	+0.1	367			
6.4	6.3	6.5	6.4	-0.1	384			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

o 8 samples listed are included
5 K1909753. SDG K1909754
with sample CB21-SE-1-101419.

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

K1909754

CHAIN OF CUSTODY

Sediment COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 **Ph:** 360-577-7222 **Fax:** 360-636-1068	**Project Contact: Kevin Lundmark** **Tel: + 1 801 204-4313**	**Site Contact: Jennifer Pretare 510-681-6401** **Laboratory Contact: Mark Harris**	**Date:** **Carrier:**
Client Contact Teck American Incorporated Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) ☒ 21 days ☐ Other _____		COC No: 23 2 of 3 COCs
Project Name: UCR 2019 Phase 3 Sediment Study Lab Quote #: 46976			

EDITS BY CE AECOM 10-21-19

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
CB 010-SE -4- 101219	10/12/2019	1622	Water	LH	1	X	X											1-125 ml poly
DM 026-SE -1- 101219	10/12/2019	1448	Sediment	DH	6	X	X	X	X	X	X		X					
DM 026-SE -4- 101219	10/12/2019	1550	Water	DH	1	X	X											1-125 ml poly
DM 061-SE -1- 101219	10/12/2019	1145	Sediment	DH	3	X	X	X	X	X	X		X					Limited volume, call Client Contact for priority
DM 019-SE -1- 101419	10/14/2019	1328	Sediment	SH	6	X	X	X	X	X	X		X					
DM 020-SE -1- 101419	10/14/2019	1125	Sediment	SH	6	X	X	X	X	X	X		X					
DM 027-SE -1- 101419	10/14/2019	1500	Sediment	SH	6	X	X	X	X	X	X		X					
CB 020-SE -1- 101419	10/14/2019	1019	Sediment	MM	6	X	X	X	X	X	X		X					
CB 021-SE -1- 101419	10/14/2019	1237	Sediment	MM	6	X	X	X	X	X	X		X					
CB 024-SE -1- 101419	10/14/2019	1357	Sediment	MM	6	X	X	X	X	X	X		X					
CB 027-SE -1- 101419	10/14/2019	1530	Sediment	MM	6	X	X	X	X	X	X		X					
CB 014-SE -1- ~~101419~~	10/15/2019	1312	Sediment	MM	6	X	X	X	X	X	X		X					
Preservation: 10 1519						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	10/17/19 1531		ALS	10/17/19 1532
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1909754

ALS-Environmental-Kelso	CHAIN OF CUSTODY	Sediment COC	China Bend ☐
317-S-13th-Ave			Evans ☐
Kelso, WA 98626			Deadmans Eddy ☐
Ph: 360-577-7222 Fax: 360-636-1068			Reference ☐

Client Contact	Project Contact: Kevin Lundmark	Site Contact: Jennifer Pretare 510-681-6401	Date:	COC No: 23
Teck American Incorporated	Tel: + 1 801 204-4313	Laboratory Contact: Mark Harris	Carrier:	3 of 3 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	Analysis Turnaround Time Calendar (C) or Work Days (W)			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B/7470B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
CB 014-SE -2- 101519	10/15/2019	1317	Sediment	MM	6	X	X	X	X	X	X		X					
CB 029-SE -1- 101519	10/15/2019	0940	Sediment	MM	6	X	X	X	X	X	X		X					
CB 044-SE -1- 101519	10/15/2019	1149	Sediment	MM	6	X	X	X	X	X	X		X					
-R7-2019-SE-1-101519	10/15/2019	1431	Sediment	MM	6	X	X	X	X	X	X		X					
DM 007-SE -1- 101519	10/15/2019	1252	Sediment	SH	6	X	X	X	X	X	X		X					
DM 024-SE -1- 101519	10/15/2019	0950	Sediment	SH	6	X	X	X	X	X	X		X					
DM 024-SE -2- 101519	10/15/2019	1005	Sediment	SH	6	X	X	X	X	X	X		X					
-B5-NRT-SE-1-101519	10/15/2019	1528	Sediment	SH	6	X	X	X	X	X	X		X					
CB 002-SE -1- 101619	10/16/2019	1353	Sediment	MM	6	X	X	X	X	X	X		X					
R8-2019-SE-1- 101619	10/16/2019	0954	Sediment	MM	6	X	X	X	X	X	X		X					
B6-NRT-SE-1-101619	10/16/2019	0912	Sediment	SH	6	X	X	X	X	X	X		X					
DM 044-SE -1-101619	10/16/2019	1625	Sediment	SH	6	X	X	X	X	X	X		X					
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☒ Archive until disposal permitted by EPA

Special Instructions/QC Requirements & Comments:

Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
Dissolved Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Teck	10/17/19 1531			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
				ALS	10/17/19 1532
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS

Cooler Receipt and Preservation Form

PC MH

Client TecLAM

Service Request K19 69754

Received: 10/17/19 Opened: 10/17/19 By: [illegible] Unloaded: 10/17/19 By: [illegible]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* refrigerated truck NA
3. Were custody seals on coolers? NA Y (N) If yes, how many and where?

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
12.2	12.3	—	—	+0.1	360			
7.5	7.5	8.1 ~~Kn~~	8.1	0	374			
7.2	7.4	7.3	7.5	+0.2	385			
7.3	7.5	7.7	7.9	+0.2	393			
6.8	6.8	7.1	7.1	0	390			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves*
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

Cooler Receipt and Preservation Form

PC MH

Client Tech Am

Service Request K19 09754

Received: 10/17/19 Opened: 10/17/19 By: Unloaded: 10/17/19 By:

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where?

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
6.9	7.0	7.3	7.4	+0.1	362			
6.4	6.3	6.5	6.4	-0.1	384			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves*
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
7. If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed* NA Y N
8. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
9. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
10. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
11. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

K1909828

ALS Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 **Ph:** 360-577-7222 **Fax:** 360-636-1068	**CHAIN OF CUSTODY**	**Sediment COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 29
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	1 of ____ COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) ____			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other ____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Total metals, percent moisture (Method EPA 6020A/6010C)	Total mercury (Method EPA 7471B)	Total Organic Carbon (Method ASTM D4129-05)	SEM and AVS (Method EPA 6010C/SEM-AVS)	Grain size (Method ASTM D422)	HOLD for Backscatter Electron Microscopy (4° C)	Pesticides, PAHs, PCB Aroclors and Congeners (Methods EPA 8081B LL, EPA 8270D SIM, 8082A-Cong, and 8082A-LL) (REFERENCE AREA LOCATIONS ONLY)	HOLD for potential organics analysis (-20°C)					Sample Specific Notes:
CB 056-SE -1- 101719	10/17/2019	1146	Sediment	MM	6	X	X	X	X	X	X		X					
DM 039-SE -1- 101719	10/17/2019	1410	Sediment	SH	3	X	X	X	X	X	X		X					limited volume
CB 005-SE -1- 101819	10/18/2019	0858	Sediment	MM	6	X	X	X	X	X	X		X					
CB 040-SE -1- 101819	10/18/2019	1204	Sediment	MM	6	X	X	X	X	X	X		X					
CB 005-SE -4- 101819	10/18/2019	1115	Water	MM	1	X	X											
DM 047-SE -1- 101819	10/18/2019	1334	Sediment	AP/SH	5	X	X	X	X	X	X		X					limited volume
DM 036-SE -1- 101819	10/18/2019	0952	Sediment	AP/SH	3	X	X	X	X	X	X		X					limited volume
DM 038-SE -1- 101919	10/19/2019	0930	Sediment	AP/SH	6	X	X	X	X	X	X		X					
DM 038-BMI -4- 101919	10/19/2019	1210	Water	AP/SH	1	X	X											
Preservation:						4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C	4±2°C					

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Total Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Total Metals by EPA 6010: Ca, Fe, Mg, K, Na
SEM Metals: Sb, As, Cd, Cr, Cu, Pb, Ni, Zn

Archive BSEM sample(s) for possible analysis by RJ Lee Group, Inc.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	10/21/19 0700	[signature]	SCS	10-21 7:00
[signature]	SCS	10/21/19 13:55	[signature]	ALS	10/21/19 1335

PC MH

Cooler Receipt and Preservation Form

Client Teck Am Service Request *K19* 09828

Received: 10/21/19 Opened: 10/21/19 By: A Unloaded: 10/21/19 By: D

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
0.1	0.2	9.5	9.6	+0.1	362			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

K1909830

ALS-Environmental-Kelso
1317-S-13th-Ave
Kelso, WA 98626
Ph: 360-577-7222 **Fax:** 360-636-1068

CHAIN OF CUSTODY

Porewater COC

China Bend ☐
Evans ☐
Deadmans Eddy ☐
Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 28
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	1 of 2 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
CB 046-PW -1- 101719	10/17/2019	1451	Porewater	SK	4	X	X	X	X		X					
CB 046-PW -2- 101719	10/17/2019	1451	Porewater	SK	1				X							
CB 035-PW -1- 101719	10/17/2019	1241	Porewater	SK	4	X	X	X	X		X					
DM 063-PW -1- 101719	10/17/2019	1152	Porewater	LH	4	X	X	X	X		X					
DM 064-PW -1- 101719	10/17/2019	1413	Porewater	LH	4	X	X	X	X		X					
3-R7-2019-PW-1-101719	10/17/2019	1035	Porewater	SK	4	X	X	X	X		X					
CB 036-PW -1- 101819	10/18/2019	0949	Porewater	SK	4	X	X	X	X		X					
CB 056-PW -1- 101819	10/18/2019	1201	Porewater	SK	4	X	X	X	X		X					
CB 055-PW -1- 101819	10/18/2019	1407	Porewater	SK	4	X	X	X	X		X					
DM 039-PW -1- 101819	10/18/2019	1109	Porewater	LH	4	X	X	X	X		X					
DM 043-PW -1- 101819	10/18/2019	1320	Porewater	LH	4	X	X	X	X		X					
DM 030-PW -1- 101819	10/18/2019	1527	Porewater	LH	4	X	X	X	X		X					
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	10/21/19 0700	[signature]	SCS	10-21 7:00
[signature]	SCS	10/21/19 13:35	[signature]	ALS	10/21/19 1335

KL909830

ALS-Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 **Ph:** 360-577-7222 **Fax:** 360-636-1068	**CHAIN OF CUSTODY**	**Porewater COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 28
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	2 of 2 COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W)			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other _____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Caclulated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
DM 047-PW -1- 101919	10/19/2019	1309	Porewater	LH	4	X	X	X	X		X					
3-R8-2019-PW-1-101919	10/19/2019	1456	Porewater	SK	4	X	X	X	X		X					
CB 005-PW -1- 101919	10/19/2019	1203	Porewater	SK	4	X	X	X	X		X					
CB 014-PW -1- 101919	10/19/2019	0930	Porewater	SK	4	X	X	X	X		X					
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive until disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
David Moore	AECOM	10/21/19 0700	C Mody Nick	SCS	10-21 7:00
Relinquished by: C Mody Nick	Company: SCS	Date/Time: 10/21/19 15:35	Received by: J Morrow	Company: ALS	Date/Time: 10/21/19 1335
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Cooler Receipt and Preservation Form

PC MH

Client Teck Service Request *K19* 09830

Received: 10/21/19 Opened: 10/21/19 By: [illegible] Unloaded: 10/21/19 By: [illegible]

1. Samples were received via? *USPS* ~~*Fed Ex*~~ *UPS* *DHL* *PDX* (*Clients' Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.4	0.4	5.8	5.8	0	349			

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

ALS-Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 **Ph:** 360-577-7222 **Fax:** 360-636-1068	K1910070 **CHAIN OF CUSTODY**	**Porewater COC**	China Bend ☐ Evans ☐ Deadmans Eddy ☐ Reference ☐

Client Contact	**Project Contact: Kevin Lundmark**	**Site Contact: Jennifer Pretare 510-681-6401**	**Date:**	COC No: 30
Teck American Incorporated	**Tel: + 1 801 204-4313**	**Laboratory Contact: Mark Harris**	**Carrier:**	1 of ____ COCs
Cristy Kessel 509.496.1160 Cristy.Kessel@teck.com	**Analysis Turnaround Time** Calendar (C) or Work Days (W)			
Project Name: UCR 2019 Phase 3 Sediment Study	☒ 21 days ☐ Other ____			
Lab Quote #: 46976				

Sample Identification	Sample Date	Sample Time	Matrix	Sampler's Initials	Total No. of Cont.	Dissolved Metals - [Field Filtered] (EPA 6020A/6010C)	Dissolved Organic Carbon - [Field Filtered] (EPA 9060A)	Total Organic carbon (EPA 9060A)	Alkalinity as CaCO3 (SM 2320 B) Chloride, sulfate (EPA 300.0)	Sulfide - Select locations (SM 4500-S2 D)	Cachulated Hardness as CaCO3 (SM 2340C)					Sample Specific Notes:
DM 036-PW -1- 102119	10/21/2019	1400	Porewater	AP	4	X	X	X	X		X					
DM 038-PW -1- 102119	10/21/2019	1145	Porewater	AP	4	X	X	X	X		X					
CB 040-PW -1- 102119	10/21/2019	0947	Porewater	SH	4	X	X	X	X		X					
CB 043-PW -1- 102119	10/21/2019	1429	Porewater	SH	4	X	X	X	X		X					
CB 043-PW -2- 102119	10/21/2019	1500	Porewater	SH	1				X							
CB 041-PW -1- 102119	10/21/2019	1203	Porewater	SH	4	X	X	X	X		X					
EV 032-PW -1- 102219	10/22/2019	1110	Porewater	AP	4	X	X	X	X		X					
EV 038-PW -1- 102219	10/22/2019	1320	Porewater	AP	4	X	X	X	X		X					
CB 052-PW -1- 102219	10/22/2019	1513	Porewater	SH	4	X	X	X	X		X					
CB 049-PW -1- 102219	10/22/2019	1300	Porewater	SH	4	X	X	X	X		X					
CB 048-PW -1- 102219	10/22/2019	0954	Porewater	SH	4	X	X	X	X		X					
EV 043-PW -1- 102319	10/23/2019	1232	Porewater	AP	4	X	X	X	X		X					
Preservation:						HNO3	H2SO4	H2SO4	4±2°C	ZnAc/ NaOH						

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☒ *Archive unitl disposal permitted by EPA*

Special Instructions/QC Requirements & Comments:
Dissolved Metals by EPA 6020: Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, Zn
Dissolved Metals by EPA 6010: Ca, Fe, Mg, K, Na

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Wade R. Hoss	AECOM	10/25/19 0705	Moody Nelson	SCS	10-25-19 7:05
Moody Nelson	SCS	10/25/19 13:36		ALS	10/25/19 1336

Appendix E

Field Logbooks

#1

Sediment

Cayuse

Rite in the Rain®

ALL-WEATHER

UNIVERSAL

№ 373-MX

MADE IN TACOMA
— SINCE 1916 —
Rite in the Rain®
— DEFYING MOTHER NATURE —

Name

AECOM

Jennifer Pretare, PhD
Senior Biologist
Project Manager

AECOM
1111 3rd Avenue
Suite 1600
Seattle, WA 98101

206 438 2700 tel
206 438 2175 direct
510 681 6401 mobile
866 496 5288 fax
jennifer.pretare@aecom.com

aecom.com

Address

Phone

Email

Projects 2019 Phase 3 Sediment Study
Upper Columbia River
Logbook #1

MADE USA
RITE GREEN
Archival paper
RiteintheRain.com

10 Sept 2019 Phase 3 Sediment Study page 1
Upper Columbia River
Weather · 53°F overcast, Chance of rain + thunderstorms; anticipated high of 65°F
0700 at warehouse in Kettle Falls
Tailgate Mtg. Led by T. Palmieri
Personnel today:
AECOM - T. Palmieri (Field Supervisor onboat), N. Moody, M. Stegner
Gravity - ~~Jeff~~ Wilson, Rene Trudeau
EPA / Jacobs - Frank Dillon
CNI - E. Weatherman, J. Weatherman, Dennis Gross, Doug Hadley
AECOM at warehouse / town: J. Pretare, A. Utter
ERM - James Keithly

Topics for tailgate · Task Hazard Assessment for Sediment Sampling : Driving, Loading, slips/trips/falls, Stay in cabin while winch is operating, PPE, CNI boats have Sat. phones
Boats to launch at Snag Cover. Sampling crew + visitors to be picked up at Evans Day use dock at ~ 0900
1040 Depart Evans. Brief boat-specific H2S talk, man overboard procedures.
1050 @ EV-064 - Decon sampler w/ Alconox; 2x River rinses
1115 1st attempt at EV-064. ~~Video looks like A~~ nm 9/10/19
1130 ST EV064-SE-1-091019 → for Chemistry / Physical
1218 - compositing sediment. - Using Powergrab instead of lexan tubs. Removed top 6 inches into ~~compos~~ nm SS bowls (large x3) Then Re-decon'd sampler; then put sediment back into sampler - composited sample. w/ drill mix
1236 - filling containers for chemical + physical.
1250 - finished above task; Anders arrives with lexan tub.
1300 - finished filling 2x buckets for Bioassay + TIE + H_2O Film.
1310 - Decon; handed of 2 buckets to Anders to take to Shore.
1316 - @ EV-064 - BMI; attempt 2 ~~23 cm - 10.5 cm~~ 23.5 cm accepted; then rejected as did not sieve Siphon water material discharged into river.
1330 - Attempt 3 at EV-064-2- 9.25 inches recovery
1345 ST EV064-BMI-~~2~~ 3-091019 - Removed top 6 inches into lexan tub; sieved nm siphon water. Waiting for technical expert on if using entire sampler (✓ only 0-6 inches)

9-10-19

Scale: 1 square = _____

10-SEPT-2019

1417 Finished on first BMI 5-gallon bucket. + 7 Liters of Ethanol - almost to top w/ 3/3 full sediment.

1418 Putting remaining sediment into 2nd bucket so all sediment from Lexan tub into bucket. No homogenization rinsed using other 250 µm sieves to filter water. 2gallons sediement w/ 1 gallon ethanol in 2nd bucket

1440 Arrival on site at EV063 for chem + physical.

1445 Power grab van veen dropped down deployed. - accepted

1500 ST EV063-SE-1-091019 - homogenized 0-6 inches in lexan tub w/ power mixer.

1512 homogenization complete.

1525 finish at 1st attempt, ; set up for ~~BMI~~ BMI

1535 @ EV063 - BMI Sample collection

1539 sieving syphon H_2O w/ 250 µm sieve

1552 Adding sediment into lexan tub 0-6 inches (all volume from van veen going into tub) then tub to buckets

1600 ST EV063-BMI-1-091019 -
1st bucket. 2/3 sed 1/3 Ethanol to top = Full.
2nd bucket ~~to sed~~ ~1.5 gal sed w/ 1.5gal ethanol

1600 Agitated buckets Post + ethanol
sieved / decanted water to collect <250 µm sed/benthics.
rinsed spoon + sieve w/ ethanol + tub.

1612 QC forms ✓ off location. - Heavy rain just hit w/ slight - mod wind - motor to Evans dock.

1620 Tieton at dock. - GPS check at Evans dock complete.

1640 Depart campground.

1700 ~~Sample time~~ Arrive at warehouse; check in forms + samples

9/10/19

9-10-19

Weather = AM → 50°F; Cloudy; calm; moderate humidity.
PM → high 70's, Partly Cloudy, calm (forecast 10% Rain)

0650 AECOM team at warehouse in kettle falls.
0700 tailgate meeting. Lead by Anthony Palmeri

Personnel
Gravity = Renee Trudeau, Jeff Wilson
CNI = Eric Weatherman, Josh Weathermaan, Dennis Grass
Doug Hadley
AECOM = Michelle Steyner*, Nicky Moody*, Jennifer Pretare, Anders Utter, Anthony Palmeri*
* = Tieton crew AECOM
ERM = James Kathly
Jalobs = Frank Dillon.

Topic for tailgate = Evans dock ramp hazards - steep slope
Boat to boat transfers.

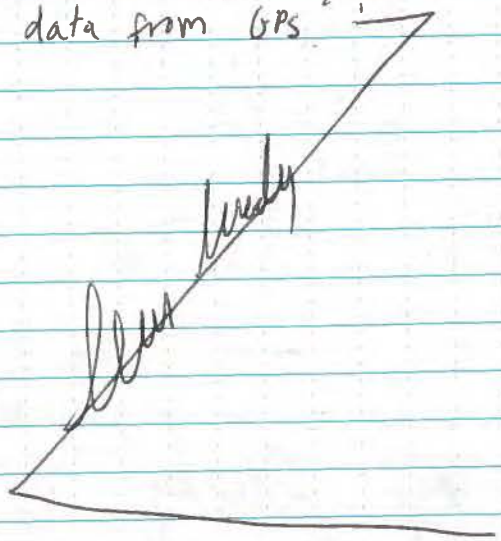
~~0852~~ 0815 AECOM vessel team at Evan campground., Tieton put in Saag Cove. and at Evans dock.
0850 Board vessel + load equipment.; fill out float plan.
0900 Vessel discussion HSE.; GPS location check at Evans dock.
0903 Depart dock. - motor to EV075; Float plan text to Dave Hose.
0908 At location EV075; Decon'd vanveen w/ Alconox
0916 1st attempt chemistry | bioassay | physical at EV075 (SE) w/ vanveen
0920 Reject 1st attempt as washed out.
0927 2nd attempt (SE) at EV075. - closed better, on video look like sand; closed better based on video.
0930 sampler on deck
0940 ST EV075-SE-1-091119; collect Avs jar
Tare + mass of empty decon'd lexan tub = 2.8 kg
Nothing > 5mm so didn't weigh tub w/ sediment.
1002 ~~filling + mix~~ homogenized; filling jars + 2 buckets
1010 Finished sampling; Decon all
1020 @ EV067
1022 1st attempt @ EV067 - SE
1025 Rejected b/c of Cobble in jaw no recovery
1027 2nd attempt @ EV067 - SE → better recovery
brought onto deck to inspect → didn't close quick enough < 1cm sand on rig.
1033 3rd attempt @ EV067 - only H2O - cobbles visible on river bottom in camera
1050 Discover GPS overlay of points + Facies are not aligning.
AP calls Jenny Pretare.; abandon location for now

Cloudy

59

Scale: 1 square = _____

1052 Leave EV067
1056 Motor to EV054 - video shows Sand w/ cobbles - maybe mFs here targeting samplable sand(s); Hamon would be perfect option. Moving off station. to EV053. instead.
1120 1st Attempt at EV053 - video = Still cobbles on surface. and sample rejected as just ~8 Cobbles. Not correct facies. Abandon location - move to EV057 instead.
1141 1st attempt at EV057 - Accepted. Mud ✓ facies.
1200 ST EV057-SE-1-091119 ~~SE~~ nm
1220 ~~1200~~ nm finish filling jars + 2x buckets.
1240 nm Heading to ~~EV070~~ mud M EV054 - Under Alter on board
1248 1st attempt @ EV054. - Accepted = Mud. facies w/ AECOM
1300 ST EV054-SE-T-091119 Homogenized 0-6 inches in lexan tub.
1330 Cleanup/ Decon; Containers filled 6 jars + 2 buckets
EV058 next up. - Samplable sand - S facies. w/ Van Veen
1358 1st attempt - cobbles only - rejected
1408 2nd attempt at EV058 - rejected 2 cobbles
1436 3rd attempt at EV058 - video appears to be some cobbles present. - Cobbles only. Need to return with hammon; moving within 0.5 Acre area; looking with camera for Samplable Sand
nm ~~1446 Move to EV005 = also Samplable Sand (S)~~
1450 Motor to location EV005 which is also samplable Sand; Sand facies.
1502 Arrived at EV005
1503 1st attempt at EV005 - accepted. -> black SAND.
1515 ST EV005-SE-1-091119
1538 Decon time; finished filling jars + buckets → Homogenized 0-6 inches in lexan tub.
1550 Motoring back to Evan dock.
1600 Arrive at Evans dock.; unload
1615 Depart Evans campground (AECOM) for warehouse.
1630 Arrive at warehouse and unload / check in samples; camera SD Card; Boat data from GPS



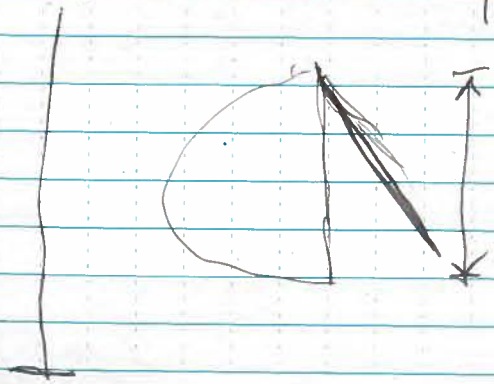
9/12/2019 RV Tieton

Weather → AM 50's F; partly cloudy, calm; moderate humidity
PM 70's F; partly cloudy, calm; moderate humidity

6:50 AECOM Team at warehouse in Kettle Falls
700 Tailgate Meeting lead by
Personel:
Gravity → Jeff Wilson, Renee Trudeau
CNI → Eric Weatherman, Josh Weatherman, Dennis Gross, Doug Hadley
ERM → James Kathley
AECOM → Michelle Stegner, Nicky Moody, Anthony Palmeri (crew) Jennifer Pistare, Jennie Rae, Denee McDonald
EPA → ~~Dan~~ John McCoy, Dan Lavoie 202.460.4162
Jacobs → Frank Dillon
AECOM Anders Utter in Spokane picking up supplies will return by noon

Topics: new staff will need safety and cultural briefing
Safety topics - new staff on boat, different (Hammongrab that will weigh more (1600 lbs) and will be large. Stay off deck while in motion. Keep an eye out for boat traffic and let boat staff know when airforce Planes overhead and protect ears.
CMA staff may arrive at warehouse in afternoon.

0810 AECOM team (NM, AP, & MS) arrives at Evans campground. FD + DL from Jacobs onsite also.
0910 Tieton arrives from Snag Cove @ dock.; board vessel.
0915 ~~Dock~~ New person boat tour / safety discussion
0925 Depart dock for Evans AOI
0935 Arrive at EV053 - using hamon sampler w/ full weights. @ ~~400~~ 510 lbs ~~w/ wts~~ = M433 of weights only.
0943 Alconox scrub on sampler w/ 2x River rinse ✓
0947 ~~1st~~ 2ND Attempt at EV053 → 3/4 penetration. = 9 inches. - observed. on video
0954 Sampler on deck - only H2O in sampler → 1st w/ hamon; 2nd Attempt Overall



total penetration potential.

Scale: 1 square = _____

1000 - Boat maintenance.
1030 - Moving to eastern side of 0.5 acre circle, from video location at target does not appear to be samplable sand.
1031 3rd ~~2nd~~ attempt at EV053 ~~with hamon~~ nm - appeared to just bump on cobbles.
1035 Sampler on deck - checking recovery.
Conclusion is not S facies at this location or mFs still plan to come back with freeze grab but might be other facies = mixed coarse or coarse - TBD. Could use as alternate for other facies. Abandoning location. Decon sampler.
1049 - motor to EV058 → tried 3 attempts on 9/11 w/ VanVeen.
1055 Cast sampler 1st w/ hamon ; 4th overall. -
Sampler appeared in video to get good penetration but came back empty except H_2O.
1104 5th attempt at EV058. - large cobbles visible. - skipped on top of cobbles. - maybe 4 ½ inches
1110 EV067 up next ; abandon nm → EV058.
1114 Decon time.
1117 Cast at EV067 - 4th Attempt overall.
Wire wrapped & cancel attempt - Redo - Erase GPS around both so wouldn't close. GPS label "Nothing"
See cobbles in video.
1127 Cast at EV067 - 4th Attempt overall (Redo).
looked like 4 inches penetration.
1132 sampler on deck - decanting H_2O - so far 1 boulder visible
1134 thin veneer of silt in bottom of sampler. Conclude not Samplable Sand.
1137 off location - move to EV075 - for BMI only.
adjusted weights from 510 to 300 lbs of weights
1145 1st cast at EV075 w/ hamon - cancelled as lid in wrong position. ↳ = 3rd overall attempt.
1154 Redo Attempt #3 ; Cast Sampler. - Accepted.
1215 ST EV075-BMI-1-091219 - 250 µm sieve used for siphon H_2O ; then to Filter H_2O from tub. ; using ethanol spray and ss scraper/spatula to remove all sediment from sampler. 1:1 Ethanol added 2.25 gallons. ; :
1232 Agitated sample.
1238 Motor to EV-065 Samplable sand mFS
1240 TS nm 1st Attempt - EV065-1 SE location for chemistry + bioassy - over penetrated in the Sands - too much
Need to come back with Vanveen @ EV065 →

Lee Lindy

Scale: 1 square =

1305 - at EV049. - checking w/ video - supposed to be mCs
1306 - 1st Attempt w/ any device - using hamon as right here & wanted to look with video.
~~1307~~ Grab acceptable but ~~not~~ sample did not collect any coarse visible in video.
1322 AP call J. Pretare ; JW added 180/65.
1326 2nd attempt EV049 w/ Hamon. - rejected as < 6 inch penetration
~~Call to discuss how location & what collect different no cobbles/ in sample~~ (NM 9/12)
1349 Cast - 3rd attempt at EV049. ; video = cobbles/boulders present. Sampler bumped on bottom and kicked out sediment when it tried to close ; Abandon location - should be freeze grab. Reject 2nd attempt.
1406 Decon sampler - abandon location ; Motor to EV005 to collect BMI Sample. Target = Sampleable Sand ; S
1423 EV005 - 2nd attempt (1st w/ Hamon) - sand on video
1440 ST EV005-BMI-1-091219 - 1.4 gallons.
Penetration depth was 6-inches so entire contents ~~was~~ of hamon scrapped into sampler. ~1.4 gallons sed + ~1.4 gallons ethanol added. ; Agitated bucket.
1453 Decon work;
1456 Motor to EV008 - video to see if really "S" as then come back with VanVeen.
1502 - view bottom ✓ = Sand on video - perfect for VanVeen another day.
1507 Motor to EV010
1508 1st Cast attempt. ; video looks like sand ; target Samplable sand MFS ;
1515 1st attempt accepted. ; AVS jar filled @ 1530 from grab at 1st attempt.
1530 ST EV010-SE-1-091219
1521 Hamon contents dumped into tub. - need additional volume We have > 2mm so we will sieve w/ 5mm sieve once have additional volume ; need to tare tub also.
1524 2nd attempt at EV010 for more volume - for bioassay ✓Accepted 45 kg - 2.8 kg = 42.2 kg of mass from 2 attempts.
1548 3rd attempt at EV010 - accepted. on hold - Michelle Stegner making calls. - wood objects.
1622 Attempt 4 - accepted. - still not enough volume as likely ≥ 50% will be ≥ 5mm.
1635 Attempt 5 - ~~acc~~ - rejected as < 4 inch recovery.

Scale: 1 square =

1642 Attempt 6 at EV010 w/ hamon. - accepted. - last part of 67 kg - 2.8 kg = 64.2 kg. in 2nd tub. -SE Sample.

Sieve = 3.3 kg

+ 42.4
106.6 kg.

1654 Attempt 7 at EV010 for BMI - accepted
1700 ST EV010-BMI-1-091219 - 7inches = 3 gallons sediment + 3 gallons ethanol

1708 Agitate + duck tape bucket.

1713 Now sieving >5mm out of sediment from attempts ~~1-4, 6~~ 1, 2, 3, 4, 6 for chem/physical + bioassay.

1733 Finished sieving out gravels. 43 kg - 2.8 kg = 40.2 kg mass removed
Large tub = 4.1 kg tare
14 - 4.1 = 9.9 kg = Mass not used in samples.

1747 Motor back to Evans ~~boat~~ dock, clean up / decon.

1800 @ Evans dock; unload

1815 Depart Evans.

1830 @ warehouse

1800 * GPS check done in pm at dock. *

0700 AP - conducts tailgate meeting.
People present that will be on Tieton
Gravity = R. Trudeau (captain); J. Wilson (deck hand)
AECOM = Tony Palmeri, N. Moody, M. Steyner.
Jacobs = D. Lavoie, F. Dillon
CNI = J Weatherman, D. Hadley, G. Schernatchi, D. Gross.
See warehouse log book for H+S observation.
0815 Depart for Evans dock; Tieton putting in at Snag Creek
0845 Arrive at Evans
911 Board RV Tieton.
0920 GPS Control point check at Evans dock
0922 Depart dock for samplable Sand locations. Hamon grab on vessel.
12x internal weights = 300lbs (25lbs x 12)
6x Donuts weights = 180lbs (30 x 6)lbs
Currently only 12 x internal weights = 300lbs. on Hamon.
0938 Arrived at EV012.; decon complete. Alconox, 2x River rinse.
0944 Cast 1st attempt w/ any device at EV012. → accepted.
video = sand w/ maybe some gravel.
~~0100~~ 0955 ST EV012-SE-1-091319 - filled AVS container from 1st grab.
1000 Sieving out > 5 mm material.; weight all at end.
1010 Cast 2nd attempt ✓accepted
1017 Sieving out > 5 mm material.
1022 Cast 3 - accepted + Sieved
1034 Cast 4 - accepted + Sieved
1050 Cast 5 - accepted + sieved. ①
Mass removed 1/2 = 36.4 - 2.8 kg = 33.6 kg
1105 Cast 6 - will be use for BMI
1130 ST EV012-BMI-1-091319
1135 processing BMI sample. 1 bucket only. - duck tape + Ethanol.
1145 lunch break Entire hamon volume used.
1205 Motor to EV013.
1211 1st Cast at EV013 Still w/ Hamon. - accepted
1215 ST EV013-SE-1-091319 fill AVS jar initially before sieve of empty sampler into tub.
1225 Sieving; mass removed attempt 1 = 17.4 - 2.8 kg = 14.2 kg >5mm
1239 Attempt 2 at EV013 - accepted
1245 Sieving; mass removed attempt 2 = 17.3 - 2.8 nm = 14.5 kg >5mm
1302 Attempt 3 at EV013 - accepted
1311 Sieving; mass removed = attempt 3 = 12.2 - 2.8 = 9.4 kg >5mm

mass < 5 mm
59.7 kg - 4.1 kg = 55.6
13.8 kg - 55.6 nm
2.8 = 11 kg

② 11kg > 5mm Gravel
= 43.6 kg Cobbles
7.1 - 4.1 kg = 3 kg remaining <5mm

Scale: 1 square = _____

1324 Attempt 4 at EV013 - accepted

1340 Sieving; mass > 5mm removed = 13.7 kg - 2.8 kg = 10.9

Total mass removed > 5mm = 14.2 kg + 14.5 kg + 9.4 kg + 10.9 kg = 49 kg

~~Attempt~~ 5th Mass of < 5mm = 59.1 − 4.1 kg = 55 kg

1350 Total Mass of sample = 104 kg.

1355 Attempt 5 at EV013 for BMI - accepted.

1400 ST EV013-BMI-1-091319

1405 Entire contents of Hamon, volume dumped into bucket x2 buckets duck taped buckets + 1:1 ethanol 2 gallons sed to 2 gallons ethanol in each bucket.

1430 ST EV013-SE-4-091319; collect rinsate blank on stainless steel ~~bowl~~ spoon. ~~Do~~ using lab di water. This is our rinsate for week.

1440 Motor back to Evans campground dock.

1445 At dock.; unload

1500 Depart Evans

1520 At warehouse to hand off samples.

0700 Team at Mancave Ethanol.
0715 Morning tailgate meeting. - Freeze grab method.
Special gloves needed
pinch hazards - O-Ring replacement.
Using methanol now
Glass; shells in samples or fish hooks.
No bioassay samples today
Inventory of people in warehouse binder
RV Cayuse = N. Moody, A. Palmari, J. Wilson & R. Trudeau & M. Stegner
CNI = E. Weatherman + D. Hadley
Jacobs = D. Lavoie.
0730 Load Cayuse.
0745 At Evans
0900 Load vessel; boat safety + freeze grab methods discussion
0950 Depart Evans; GPS Control point check. - motor to EV049
1000 Setting up at EV049; Alconox rinse HDPE mat.
Decon SS pan underside w/ Alconox + 2x River rinse
using freeze grab sampler without hammer.
1005 + dry ice to SS pan. then mesh + lead weight; kettle on.
+ O-ring on top of SS pan.
seating frame on top of O-ring.
35 x 4 = 140 lbs weights
1011 Methanol poured into reservoir + ~~PTFE~~ teflon sealing tape
1012 Cast 1st attempt. (4) bubbles visible on video
set stop watch - watching 7-10 mins - retrieving at 11 mins - bubbles subsided 90%.

Attempt #1
1st w/ FG but 4m overall

1026 On deck - no recovery.
Empty spikes. - no recovery.
1032 Resetting for 5th attempt at EV049
1034 O-Ring on. / methanol + tape done - kettle on!!
1037 5th attempt at EV049
1038 Released methanol into SS pan - bubbles visible
1043 Pulled out of sediment - coming up.
1044 Nothing.
1048 Discuss plan - moving to new location as location is should be sampled w/ FG + hammer.
1054 Motor to EV042

Nicky Moody

Scale: 1 square = _____

Rite in the Rain

1058 + Dry ice to SS pan - prepping sampler.
1108 Adding methanol into reservoir.
1110 Cast 1st attempt on location EV042
Large boulder in background of video; shadow visible.
1120 8 mins passed now; pulling up sampler.
1121 On deck - no recovery.
1130 Moving to another location; lunch break
1138 Recon EV036 area with camera
1140 EV036
1151 Setting up FC sampler w/ Dry ice, O-Ring, Methanol.
1158 1st attempt at EV036 - boulders visible in video.
1207 pulling up sampler. - some cobbles on spike + pan bottom
1215 Pour Hot H2O into pan to melt frozen sediment
1220 Sampler placed into lexan tub - held and set aside.
1228 2nd attempt at EV036
1234 On deck - characterize partially will wait to defrost for full characterization
1311 Setting up for BMI location.
1316 Cast of attempt 3 for BMI.
1330 ST EV036-SE-1-091419 - jars for chem/physical. from 2nd attempt.
1327 Bringing up sampler - from 3rd attempt.
1345 ST EV036-BE BMI-1-091419
Frozen BMI Sample placed into Lexan; filtered (250 um)
River water added to defrost stab of sediment.
Wash BMI from coarse gravel and cobbles, + debris
Discard coarse gravel & cobbles + debris
Removed water from sample by pouring through 250 um Sieve.
Material + sample go into bucket.
Wash sieve w/ Ethanol. 1½ inches of sed = 1 gal.
1422 Prep freeze grab for attempt 4 at EV036. need additional volume for containers (6 jars).
1426 Methanol added
1427 Cast attempt 4.
1439 Pulled up Freeze grab
1446 Hot H2O added FC tray to defrost.
Added Attempt 4 into Lexan total = 14.5kg - 2.8 kg = 11.7 kg
1508 EV046 - looks more coarse than S-Sampleable Sand - Haimen not VanVear

Zoey Lewis

Scale: 1 square =

9-14-2019 RV Cayuse

1510 filling AVS jar from EV036-SE-1-091419.
1514 Heading back to Evans dock.; still processing above. sample - hand removing < 5mm.
1523 Arrive at dock; Departure exit, back to warehouse Removed so far 10.9 kg - 3.3 kg = 7.6 coarse gravel - cobbles We will finish sieving EV036-SE-1 @ warehouse
1600 Depart evans campground for Warehouse
1620 @ Warehouse; unload and finish processing EV036-SE-1-091419 575 grams of additional gravels removed. = 0.57 kg
1725 finish collection of EV036-SE-1-09142019, No 2nd archive sample.
1738 Finish Deconing tubs.
1800 Depart warehouse

049
042
036
034
022

Scale: 1 square = _____

9/16/2019 Dead Mans Eddy AOI (RV Cayuse - Sediment)

See Warehouse - log book. for all team members.

Team Cayuse

Gravity: Pete Jenkins - Captain PJ
Jeff Wilson - Deckhand JW
Maggie ~~Mckeon~~ Mckeon - Deckhand MM

AGcom: ~~Stn~~ Holmes
Paul Hamidi
Kelli Mitchell
Nicky Moody

CNI Dennis Gross

Jacobs: John Gondek - EPA observer.

Depart warehouse = ~~2:30 pm~~ 1330
Arrive ~~Deadmans Eddy~~ Northport Boat Launch ~~3:15 pm~~ 1415

1500 Load vessel; Gravity still setting up vessel with Hamon.
1512 Vessel safety meeting. (+ 300lbs of weights) - All new folks except JW + MM
Control point is the NW most steel piling.)
w/ size of cayuse - we can't add donut weights to sampler
only brick weights on sampler.
1527 depart dock, motoring to DM040
1541 boat ashore for maintenance; boat overheating
1600 motoring again, but not able to fix overheating
decided to head back to dock
1612 arrived back at dock; working on boat issue
1647 Departed dock for DM040
1702 arrived to DM040; decon. of Hamon
depth 3.5m; location photo taken
1709 setting up Hamon
1717 Dropped Hamon, bucket Target acquisition
1730 sample Rejected ~~too many cobs~~ No Penetration
1732 2nd attempt w/ Hamon - 1 cobble only Rejected
1738 moving for 3rd Attempt
Jeff putting in spikes for traction
1742 3rd Attempt w/ Hamon
1748 Sample Rejected - <20% fines
3 attempts made at DM040; Next attempt will
be at alternates for sampleable sand/mFs tomorrow
1754 motoring for dock; End of sampling
1804 arrived at Dock
1821 load gear in car
1830 Left Northport Boat Launch
1922 arrived at warehouse - End of Day

9/17/2019 Deadmans Eddy AOI (RV Cayuse - Sediment)

See warehouse log book for all team members.

Team Cayuse

Gravity: Pete Jenkins – Captain
Jeff Wilson – Deckhand
Maggie Mckeon - Deckhand

AECOM: Sta Holmes (Geo/Bio, logbook)
Michaela McCoog (Geo)
Michelle Stegner (Archaeologist).

Jacobs: John Gondek (EPA observer).

1210 Depart warehouse in Kettle Falls.

1250 Arrive at Northport Boat Launch. Waiting for all team members to arrive.

1310 Josh Weatherman conducts boat safety meeting (CNI). Discuss cut off time to avoid dangerous night-time driving conditions. Boats will aim to check in w/ each other at 1530, back at boat launch no later than 1700.

1347 Cayuse team aboard vessel, departing for station DM041, which is alternate to attempted DM040 from 9/16.

1355 At station DM041. Decon Hamon sampler. Depth = 3.5 m

1416 Hamon setup w/ 300 lbs lead. Attempt 1 made. Predominantly cobbles, sample rejected.

1420 Looking through video for evidence of sampleable sand in vicinity.

1427 Attempt 2 made. Cobble in grab w/ no sampleable material, rejected. Performing more video reconnaissance in vicinity.

1442 Attempt 3 made. Little to no material in sampler. Rejected.

1447 Leaving station. Will head to station DM042 (primary). Current noted, flow dynamics may have changed since facies mapping.

1448 At station DM042. Performing video reconnaissance around target. Observing cobbles. Continue to move around.

1455 Continuing to observe cobbles around DM042 35 m buffer.

1501 Observe possible sand w/in cobbles, make attempt #1. Very limited recovery (~ 1 tbsp sand). Leaving station due to lack of suitable stratum.

1505 At station DM052. Decon * ~~grab~~ Hamon sampler.

1506 Looking at substrate thru video. Cobbles.

1509 Moved around 25 m buffer for DM052, deploy video - cobbles.

1513 Moved to new area of DM052, deploy Hamon sampler. Little to no recovery. Continue w/ video recon.

1519 Finding no suitable material w/ video.

Scale: 1 square = _____

9/17/19

1522 Leaving DM052

1526 At station DM051. Sampler (Hamon) is deconned. Video river bottom, possible sandy zone w/ gravel. Make sample attempt #1. Less than 1/4 cup recovery of m SAND w/ rounded gravel.

1530 Motor to shore for quick break, catch up on notes.

1550 Resume recon w/ video of DM051 vicinity

1553 Make DM051 attempt #2. Rejected due to minimal recovery and penetration. Also, predominantly gravel.

1559 Search around DM051 with video. River bottom is gravel/cobbles. No third attempt made.

1603 Leaving station for DM044.

1606 Arrived at station DM044. Decon Hamon sampler.

1607 Deploy sampler with camera. Observe cobbles w/ boulders. No attempt made, look for suitable area w/in 25m buffer.

1610 Deploy sampler w/ camera, more boulders and cobbles observed. No attempt.

1613 Deploy sampler w/ camera. Boulders and cobbles. No more suitable loc's w/in DM044 vicinity outside of cultural resource areas. To avoid risk of damaging the sampler on large cobbles/boulders, we are not making an attempt.

1614 Departing station for DM048.

1617 At station DM048. Decon Hamon sampler.

1619 Performing video recon w/in DM048 25m buffer. Find some apparent sandy spots w/ boulders, but loc. is outside of MFS polygon. Discuss w/ JG, we agree to ask Kevin Lunmark if it's OK to attempt sample in this situation.

623 Continue video recon. Seeing boulders/cobbles w/ small ~2' windows of apparent sand/silt.

1627 Make attemp #1 onto sandy surface w/in cobbles. Only get ~3 tbs recovery, but is sandy. Very unlikely that sufficient # of grabs for required vol. can successfully be made in this area. Reject grab.

1630 Receive word from porewater boat (Tieton) that they are having difficulty w/ their sampling equipment. Discuss whether we should stay out past pre-determined time to return to boat ramp of 1700 to better sync w/ them. Will attempt one more station and re-evaluate.

1640 Leaving station for DM050

1642 At station DM050, Decon Hamon sampler.

1647 Recon DM050 vicinity w/ video. Find wide areas w/out boulders or cobbles. Make attempt #1.

1650 Observing sample, over penetration is evident as Hamon top did not

Scale: 1 square = _____ 9/17/2019

close, is overstuffed w/ sample. Material is fa-med SAND w/ silt nodules. Would be a sampleable sand. We will come back to DMOSO tomorrow and re-attempt w/ less weight.

1700 Leaving station DMOSO, heading back to Northport boat launch.

1710 Back at Northport boat launch.

1715 Gravity completes GPS control point check-in.

1720 SH, MM, MS, JG off of RV Cayuse.

1730 QC'ing field forms, waiting for RV Tieton to allow for two AECOM people in each car.

1825 RV Tieton at boat launch,

1880 communicate to Gravity and CMA that we are starting at boat launch @ 0800 tomorrow.

1840 AECOM departing for Kettle Falls

1924 Arrived at warehouse - offload forms, etc.

Start Arabus 9-17-19

Scale: 1 square = _____

9/18/2019 Deadman's Eddy A01

See warehouse logbook for all team members. H/S.
weather: Rainy and overcast, 50s.

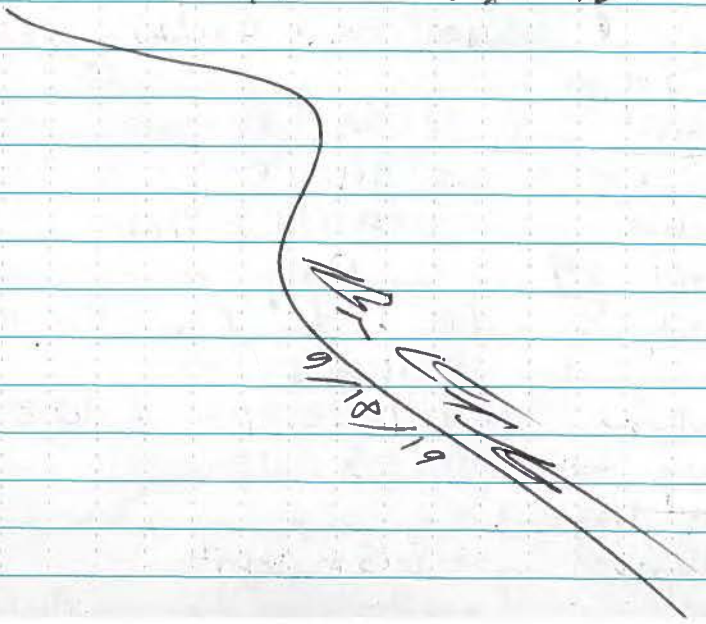
0828 Depart warehouse
0918 Arrive Northport boat launch
0929 H/S check in, lessons learned

Team Cayuse
AECOM: Brian Fletcher (note taker), Michaela McCoog, Kelly Mitchell, Paul Hamidi, Stc Holmes, ~~Lindt~~ (BF 9-18-19)
Gravity: Pete Jenkins (captain)
Maggie McKeon (deckhand)
Jacobs: John Londek (EPA observer)

1010 Onboard H/S briefing and general work flow for the day.
1014 Depart boat dock to DM057
Note: Paul Hamidi and Stc Holmes are on the support vessel until mid-day and intend to transfer to Cayuse to replace Brian Fletcher and Michaela McCoog. Idea is to have more personnel get experience sampling while the Ingalls vessel is getting repaired.
1024 Arrive DM057, Target Stratum is samplenble sand
~~1027 Decon~~ (BF 9-18-19) Target facies MFS
1027 Decon Hamon bucket
1036 Captain declared that we are on station
1041 Lowering Hamon into water column
DM057-Video Recon
East 447036.96 Depth 7m
North 5420499.11
1044 Lifted Hamon for video recon in proximity of samplenble sand
1047 DM057 ~~SE-1-091819~~ (BF 9-18-19) Attempted only
E 447031.70 8.1 m deep
N 5420492.13
1056 Sample rejected
1100 DM057 ~~SE-2-091819~~ (BF 9-18-19) 8.4 m depth. Second attempt
E 447031.78
N 5420489.14
1112 Sample accepted
1120 AUS jar filled after cultural cleared CHEM
DM057-SE-1-091819
1134 DM057 attempt 3 for additional material
1138 Sample rejected due to poor recovery

Continue →

1145 Deployed Hamon for video recon/attempt 4
1150 Air compressor for Hamon had to be plugged in farther to activate it. Bucket did not close properly on last attempt.
1148 DM057 attempt 4 (waited for compressor to close bucket)
E 447034.17
N 5420484.69
1156 DM057 attempt 4 collected
1200 DM057-4 rejected for poor penetration/recovery
1206 DM057-5 rejected for very poor recovery
1226 Hamon raised after video recon failed to locate target facies.
1236 Determining feasibility/suitability of sample location for target facies. Support boat came alongside to transfer personnel or observe sample attempt 6
1245 Processing recovery from attempt 2. DM057-SE-1-09(8)19 cleared for cultural resources
Siphoned water 2.8kg (BF 9-18-19) 6.1 (BF 9-18-19)
Weighed 8.9 kg total w/tub ~~-4.2kg~~ tub = ~~4.7~~ kg total Sample total mass includes some water
1300 Filled 5 jars for Chem plus 2.5 gal bucket (plus AVS jar)
Small tub 2.8 kg (not 4.2 kg because small tub)
1325 Tared the small tub at 2.8 kg. Recalculated sample mass:
Total sample mass 8.9 kg - 2.8 kg = 6.1 kg total sample mass
Six jars and 2.5 gal collected.
0.7 gallons collected in the 2.5 gal container.
18 photographs at this location
1332 Transition out Brian Fletcher and Michaela McCoog and bringing in Paul Hamidi and Stu Holmes.



Scale: 1 square =

1340 Boat ashore on beach while safety boat goes to Northport Dock; bathroom break
1417 Safety boat returned; Kelly back on boat
1421 Motoring for DM066; safety boat following us
1427 thru shallow channel - 2m deep
1433 approaching station DM066
1434 arrived at DM066; swift water - hard to maintain station w/ bails
Not possible to do Video survey - may be bedrock bottom - discussion on how to approach sampling
1441 Pete wants to drive around w/ Hamon partially in water - must decide right away whether to ~~grab~~ sample or pull up right away. Stu will help with bringing up cable
1445 Casting Hamon - 3' in water to test maneuverability 7.5 m deep
1448 Lowering Hamon 8.5 m deep
Viewed large gravels in Video - Hamon brought back up w/o sample 10 m deep when raised
Video Attempt #1 DM066
1451 approx. E 447425.60 Cast Time 1451
N 5421283.01
1453 Resending Hamon - Video Attempt #2 DM066
8.0 m only large gravels in video
1454 Cast Time E. 447408.49 Cast
N. 5421280.97
1457 Video Attempt #3 DM066
1458 Sending Hamon
1459 Viewed gravel thru Video - retrieving w/o sample 17.4 M
1502 Video attempt #4 Video Recon. - large gravel
No Sample E. 447467.68
DM066 N. 5421297.26 16 M deep
1505 DM066 Attempt #4 Sending 11.5 m deep
grabbing sample to characterize Viewed large gravels
E 447447.64
No Sample taken 5421292.31 < 20% sands
1521 departing for DM053 (Alternate)
1531 arrival at DM053
1533 Casting Hamon at 6.5 m depth

Paul Winkel 9-18-19

Scale: 1 square = _____

9-18-19

1535 Viewed large gravel + small cobbles with video moving around station with Video attempt #1 DM053
E. 446916.34
N. 5420384.

1539 Hamon retrieved w/o sample

1540 2nd Video Attempt DM053
Large gravels

1541 E 446907.49
N 5420348.16 6.2M deep

1543 Attempt #1 w/ Hamon at DM053
~~Sample~~ retrieved grab - Large rounded gravels w/ 10% Sand - See Sample Form

1556 Video
Continue surveying DM053 Polygon

1558 Sending Hamon for Video Attempt #3
E. 446933.24
N. 5420409.55 5.3M deep Large gravel

1600 Continue Video Recon.
Sending Hamon 10m deep Viewed sand pockets

1602 taking grab - retrieving Hamon w/in gravels
Attempt #2 E. 446958.76
DM053 N. 5420421.51 9.8m deep
bucket almost empty - 1 tablespoon of F-M. Sand w/ silica glass - See sample Form

1606 Stu decided DM053 requires no more attempts

1608 departing for DM049

1612 VR attempt #1 - Viewed large gravels
E. 446883.07 DM049
N. 5420360.45 6.4M

1614 Sending Hamon

1615 VR attempt #2 E 446868.01 4.8M large gravels
DM049 N. 5420342.52 No sample Retrieved

1624 Departing for North Port Dock

1630 arriving Dock

1635 de boating

1710 Leaving Northport

1755 Arrived Warehouse Keith Falls
off load samples + forms

9-18-19

Scale: 1 square = _____

9-19-19

0630 Depart Hotel for NorthPort

0730 arrive North Port DOCK Weather: Low clouds, 50's-60's No wind

0745 Safety meeting with Cayuse Team + Safety boat

~~0800~~ Using Hamon today at Dead man's Eddy

discussion Re: Procedure for Video survey

EPA Rep. may exchange with another after Noon

discussion of safety in eddy + boils if overboard

0805 Loading gear

Team Cayuse

Cerawity: Pete Jenkins, Maggie McKeon

AECOM: Stu Holmes, Kelly Mitchell, Paul Hamidi (Note Taker)

Jacobs: John Gondek

CNI: Dennis Gross, George Schwenitz (?)

0820 Depart North port DOCK for DM046 Target mfs

0831 arrive Dead man's Eddy

0834 Decon of Hamon by maggie

0837 Decon complete

ON Station - sending Hamon

turning Box ON for Video, turning on screws

Problems with Video Connection - Screw will not activate

0849 Hamon raised, getting boat ashore to fix Video

0852 Problem fixed, screw is on, returning to station

Re-sending Hamon at DM046

0855 grabing Sample Attempt #1 looks like mfs

Looks like over Penetration - See collection Form

0901 dumped bucket into TUB to view

Sample rejected due to over penetration

0908 Sample returned to River

0911 Video recon - resending Hamon Video Attempt #1

0912 446861.92

5420300.00 7.1 M DM046-SV-1

Silty fine Sand w/ gravel

Will return w/ Van Veen

decided to continue Video survey to find mfs

0916 Hamon retrieved 1m - Video survey continued

Viewing Cobbles over Sand - discussion on

Whether to try to get Sample 7.3M deep

decided to return to location of 1st grab

w/ Van Veen for sampling efficiency

Paul Hamidi 9-19-19

Scale: 1 square = _____

0921 departing for DM045
Decon of Hamon
0930 Jacobs PM will be picked up at Northport Dock to switch with JOHN on Cayuse
decided to do further Video ReCoNN of DM045
0940 Sending Hamon for Video ReCon - depth 5.5m
bottom looks similar to previous VS attempt
0942 going for grab - retrieving bucket
0943 5.4m deep 446841.61 DM045
5420284.46
0951 Attempt #2 at DM045
no sample in bucket (See collection Form)
0957 Resending Hamon at DM045
grabing sample Attempt #3
bucket lifted = hard bottom 6.2m
1008 Resending Hamon w/in DM045 ~6m
Video ReCon attempt DM045-SV-1
Cobbles w/ sand
Recorded on Location Form
1012 ~~Video attempt~~ On
attempting grab DM045 Attempt #4
beaching boat to analyze sample
Decanning Tubs + tools; Photo
See Collection Form
Filed AUS-SE Jar
1030 Meryln Gauthier, Jacobs observer switched out with JOHN
1048 moving for attempt #5
1057 Sending Hamon at DM045 - See Collection Form
String log or Boulder
Lifted bucket - likely debris on bottom
1103 Resending Hamon - Looks like MFS
not closing - maybe hard surface
Compressor is off Attempt #6
NO ~~pen~~ PENetration See Collection Form
1111 Sending for attempt #7 at DM045
Looks like fines over hard pan / stones - NO recovery
1112 burning smell, beaching boat to check out smell
1129 Problem fixed - moving

Scale: 1 square = _____ 9-19-19 Rite in the Rain

9-19-19

1134 Video Recon - Looks very cobbly
Retrieving Attempt #7 - See Collection Form
1135 Casting DM045 Fine Sand
1148 dumping bucket into Lexan Tub w/ sediment from Attempt #4, mixing to homogenize
1155 ~~filling~~
Weighing 17.8 K - 2.8 K = 15.0 kg
filling 1 16oz Jar + 4 8oz Jars
filling 2.5 gal bucket for bioassay
sed. in bucket 4.5" deep 1.37 gal w/in 2 gal bucket
1218 all Sample Jars + 2 gal bucket put in cooler w/ ice
Sample Collection Complete for DM045
Not enough sediment for 5 gal bioassay bucket or BMI Sample
1225 Lunch break
1234 making attempt #8 at DM045 for BMI
1236 ~~Sending~~ Hamon - Looks like fine sand
Stu called Tony re: BMI Sampling method
Discussion re: BMI Sample insufficient for BMI. Repeated
1248 Sending Hamon for attempt #9 DM045
Looks like fine sand
1250 beaching in order to analyze Sample
1255 Sieving decant water from bucket w/ 250-micron screw
1300 transferring sediment into 5 gal yellow bucket
Can't find special labels to put into BMF (washed w/ ethanol)
made label on write-in-the Rain Paper
1320 adding ethanol to bucket
estimate of 1.35 gal of Sed. for BMI Sample
Shut Lid on bucket
1325 Decon Hamon + Tools
End of Sampling for DM045 - all samples Collected except for 5-gal. bioassay bucket
1341 Departing station, heading to DM037 (Alternate for
1345 Sending Hamon - Looking like mFs
1346 6.1 in deep Hamon "walked"
nothing in bucket Attempt #1 DM037
1351 Sending for video Recon. #1
Visual + Cobbles (large gravels) - No
Seeing large gravels
1355 DM037SV-2 large gravels + Cobbles

Scale: 1 square = _____

9-19-19

1359 SV-3 DM037-SV-3 gravel & Cobbles, Little Sand
moving to West "Tail" of MFS Polygon
Marilyn has photos of area from survey last year-Confirm (Cobbles & gravels)
1404 depth 9m DM037-SV-4 Cobbles w/ small Pockets of Sand, gravels
last video survey for Polygon & DM037
1407 Departing DM037 for DM054 (alternate)
1411 on station 4 m deep
Viewed cobbles & gravels
1413 DM054-SV-1 4.2m
1417 Sending Hamon for SV-2
Viewed boulders, cobbles, gravel
1420 Sending Hamon for DM054-SV-3 4.8 m deep
viewed large gravels & cobbles
attempting grab - looks like gravels w/ some sand
Nothing but water in bucket See Collection Form
determined that DM054 is not Sampleable 5.6m
1429 Departing Station for DM034 for video recon.
1433 Sending Hamon 10.3 m Looks like large gravels w/ thin sand
1437 attempting grab - Bucket is only water
see collection form for DM034
1450 Sending Hamon for DM034 Video Recon
Looks sandy 9.6 meters deep
1451 DM034-2 NO Sample
E. 446657.62 Nothing but water in bucket
N. 5420460.54 See Collection Form
1504 moving to ~~new~~ DM033 for video recon
1508 9m Sending Hamon looks like gravels.
1509 DM033-SV-1 Depth 9.6 M no attempt to grab
1512 Sending Hamon for 2nd video Recon
looks like gravel
1513 DM033-SV-2 10.3 m deep
1516 End of video recon. End of sampling - Tie down Hamon
1526 Heading back to North Port Dock
~~1526~~ decided to switch to Van Veen for Friday
1532 arrived North Port Dock
GPS point Control
1532 443477.42 DM-CP_190919
5419082.87
1600 Unloaded gear to car, depart for Rath Falls
1650 Unload Samples at Warehouse, End of Day

Scale: 1 square = _____

9-20-19

0700 Safety meeting at North Point
Lessons learned on boats
damaged extension cord on Cayuse
When stopping for wildlife - Look to see who is behind you (logging trucks, etc) may have to sacrifice turkey)
Watch for changes in River elevation - logs get Released. Pinch Points w/ Van Veen, Friday - watch for drinkers on Road.

0730 Cayuse crew setting up boat

0810 boarding boat weather: Partly cloudy 60° F calm

Team Cayuse
Gravity: Pete Jenkins, Maggie McKeon
AECom: Stu Holmes, Kelly Mitchell, Paul Hamidi (Mike Takvel)
Jacobs: John Gondek
CNI: Dennis Gross, George Schatnitz

0838 Departing for DM050 to try w/ Van Veen
Previously attempted with Hamon on 9-17-19

0848 Laxon Hub Lid came off - in water
Reorganizing Tubs
Decon. of Van Veen

0907 On station DM050

0908 2nd attempt - sending Van Veen (1st was w/ Hamon)
Retrieved
Samp - DM050-SE-1-092019 - 6.4 m
@ 0908 14.5 cm

0915 Beaching to analyze sample

0923 Weight 49.3 kg - 2.8 = 44.5 kg

0930 Filled AQS Jar
Filled 4 x 8oz Jars
Filled 16 oz Jar

0943 Filled 2gal bucket for Biocasses 14.5 kg 2.4 gal
Filled 5gal bucket " " 29.0 kg 4.3 gal

0955 all containers filled except BMI
Chowing down
Stu Talked w/ Anthony P. Re: BMI Samp

1007 departing Shore for Attempt #3 for BMI

1010 Discussing BMI sampling mod w/ John Gondek, he wants to clear w/ Jacobs + EPA that the method of using half of surface area of Van Veen is approved for provisional use.

Paul Hamilton 9-20-19

Scale: 1 square = _____

1025 John off call, we need to verify that Chuck has signed off on change, but will continue working as we do that.

1032 Make attempt for BMI grab at DM050
Co. 2 m deep
Sample DM050-BMI-1-092019 at 1032
measuring Penetration - boat ashore for Sample analysis

1042 Sieving decant water thru 250-micron sieve
collecting Sed. in Yellow 5 gal bucket
Penetration is 6" - using 1/2 of Sampler for BMI

1115 Used ethenol to wash 27.1 kg 5.8 gals
Sampler - decanted water into Bucket

1124 rolling Sample bucket to mix w/ ethenol
departing shore - Chaining TUBS + tools + DECON.

1135 Boat approached to ask what we are doing

1141 Boat ashore to do rinsate Sample

1150 collected insete blank on stainless steel large scoop.
sample ID: DM050-BMI-4-092019
Sample time: 1150

1210 added extra 100 lbs to VAN VEEN - NOW 250 lbs

1213 arrival at station DM046 for attempt #2 - #1 was on 9-19-19

1217 Sending VAN VEEN at DM046
Sample: DM046-SE-1-092019 at 1217
34.1 - 2.8 = 31.3 kg - weight of Sample
Filled 1 16oz Jar, 5 8oz Jars
Filled AVS first
Filled 2 x 2.5 gal biocassay buckets (1 for EPA field split)
Filled 1 5-gal bucket for bioassay 1.1 gal, 6.7 kg
→ Volume 2-gal, * 12.4 kgs
2-gal 12.0 kgs field split

1330 Completed chem Sample, departing beach, DECON.
EPA Split: DM046-SE-3-092019

1333 Sending VAN VEEN for BMI Sample at DM046

1336 Sample: DM046-BMI-1-092019 at 1336

1346 decanting water through 250-micron sieve

1352 moving sed. into 5gal yellow bucket - TOP 0-6"

1407 Filling bucket w/ equivalent amount ethenol
~~Sample: DM046-BMI~~
~~Weight~~ 2.5 gal Volume of Sed. Weight = 23.2 kg
Chaining + DECON of equipment

1417 Departing beach for next station DM034

Scale: 1 square = _____

9-20-19

Rite in the Rain

This will be Attempt #3 at DM034
near previous Attempt #2

1433 Sending Van Veen - looks like fine to large gravels w/ 20% sand
decided to not attempt retrieval
Video reconn Attempt 1 DM034-SV-1
10 meters Did not match target facies
decided no more attempts at DM034

1438 moving to DM035

1439 Sending Van Veen looks like sand w/ gravel + cobble
1440 = Video recon 14:40 DM035-SV-1 10.2m
1445 DM035-SV-2 10.2m
Looked at transect between two

1451 decided one more attempts at DM035

1453 Sending Van Veen for video Attempt #3 at DM035
Looks like all gravel - Little Sand
DM035-SV-3 11.4 m

1458 moving to DM033 for video attempt #2
two attempts on 9-19-19

1501 Sending Van Veen at DM033
Looks Like all Cobble
DM033-SV-3 11.1 meters
decided to forgoe additional attempts at DM033

1505 moving station to DM023
Target facies is Sand

1519 arrived to Station DM023

1520 Sending Van Veen for Video reconn.
Looks like Sand, will attempt grab tomorrow

1523 End of Sampling; returning to Dock

1535 arrived North Port Dock
Taking GPS Control Point
DM-CP-200919
N 4434 77.22
E 5419082.83

1600 Depart North Port Dock.

1649 Arrive Keith Falls Warehouse
drop off Samples
End of Day

Paul 9-20-19

Scale: 1 square = _____

9-21-19

0610 Depart Hotel in Colville Weather 42°F low clouds, calm
0700 arrive Northport Dock; Safety meeting
0 Discussion about fishermen on River
0730 loading gear on boat
0757 Departing Northport Dock for DM023
0808 arrived on station, decon. equipment
0814 Sending van Veen
0815 Sample: DM023-SE-1-092119 Retrieved sample - move to beach
0830 AVS sample - arch. Review
decant water
moved sample into Lexan Tub
0840 Weight: 37.1 - 2.8kg = 34.3kg
filled 4 x 8oz glass Jars
filled 1 16oz glass Jar
Filled 2 1/2-gallon bucket sed = 1.9 gallons, ~~18.8~~ 21.4 lbs
0850 Filled 5 gallon bucket sed = 5.2 gallons, ~~57.4~~ 64.0 lbs
0902 Completed chem. samples for DM023, moving to attempt #2 for BMI; ~~Decon.~~ Chaining deck
0908 Sending Van Veen - Sample retrieval
0912 beaching boat for sample analysis
Decant water through 250-micron Sieve
Yellow bucket: 57.4 lbs 6 gal total w/ ethanol
3.4 gal sediment
Sample: DM023-BMI-1-092119 at 0908
0950 Decon. equipment
0958 moving to DM026 - Need field Duplicate
1000 arrive on station
1008 Sending van veen
Primary Sample: DM026-SE-1-092119 at 1008 Attempt #1
1031 moving to station for Attempt #2 at DM026
retrieved sample
Station DM026 has a field duplicate and EPA-split (Bioassay)
Duplicate Sample: DM026-SE-2-092119 at 1045 Attempt #2
mixed Attempt #1 & #2 - then filled all jars & buckets
Filled 2 1/2 gal bucket → sample is 2-gallons for Bioassay
for Primary & field ~~duplicate~~ split 25 | 25.6 lbs
EPA Field Split Sample: DM026-SE-3-092119 at 1008
Filled 5gal bucket for bioassay → 5.6 gal. sediment 69 lbs
1130 completed Station gill chem samples, duplicate + split Need BMI

Scale: 1 square = _____

Paul 9-21-19

Rite in the Rain

1139 Sending Van Veen for BMI Sample attempt #3
BMI Sample: DM026-BMI-1-092119 at 1139
decant water through 250-micron Sieve
1200 Place in 5 gal yellow bucket 0-6" Layer
added ethanol | Volume of Sed. 3.8 gallons
1220 Rolled bucket to mix ethanol | Weight 59.4 lbs
1227 departing to next Station DM022
Decon. equipment
1233 Sending Van Veen Attempt #1
retrieved sample
Sample: DM022-SE-1-092119 at 1234
Put Sample into Coran tub (0-6")
1300 Depart for Attempt #2 at DM022
1307 Sending Van Veen
1310 going ashore to analyze sample
add sample to tub, homogenize sample
Removed wood debris
1326 Weight 57.8 kg - 2.8 kg = 55 kg Sample Weight
filled 1 16oz Jar & 5 x 8oz Jars
filled 2.5 gal bucket → Sediment = 1.9 gal biossay
filled 5 gal bucket → Sed 5.4 gal biossay
add river water to buckets of Sed w/ Lids
Over Sampled by 27.8 lbs = 12.6 kg - 2.8 kg
- 9.8 kg
1345 Depart for BMI Sample - DM022 BMI Attempt #3
Retrieved Van Veen - contained lots of wood debris
Rejected sample
1353 Re Sending Van Veen for DM022 Attempt #4
for BMI Sample
Retrieved Sample - looks acceptable
1357 ashore for Sample analysis - Sieved decant water
BMI Sample - Sed = 3.5 gallons
Trying to open New can of ethanol
Sample: DM022-BMI-1-092119 at 1353
Put in 5 gal yellow bucket
Sed = 3.5 gal 57.4 lbs
1410 completed Sampling for DM022
cleaning Deck - Decon Tools - Organize +
inventory of boat to prepare for going to Canada
1509 Departing beach for North Port Dock

David Hamilton 9-21-19

Scale: 1 square = _____

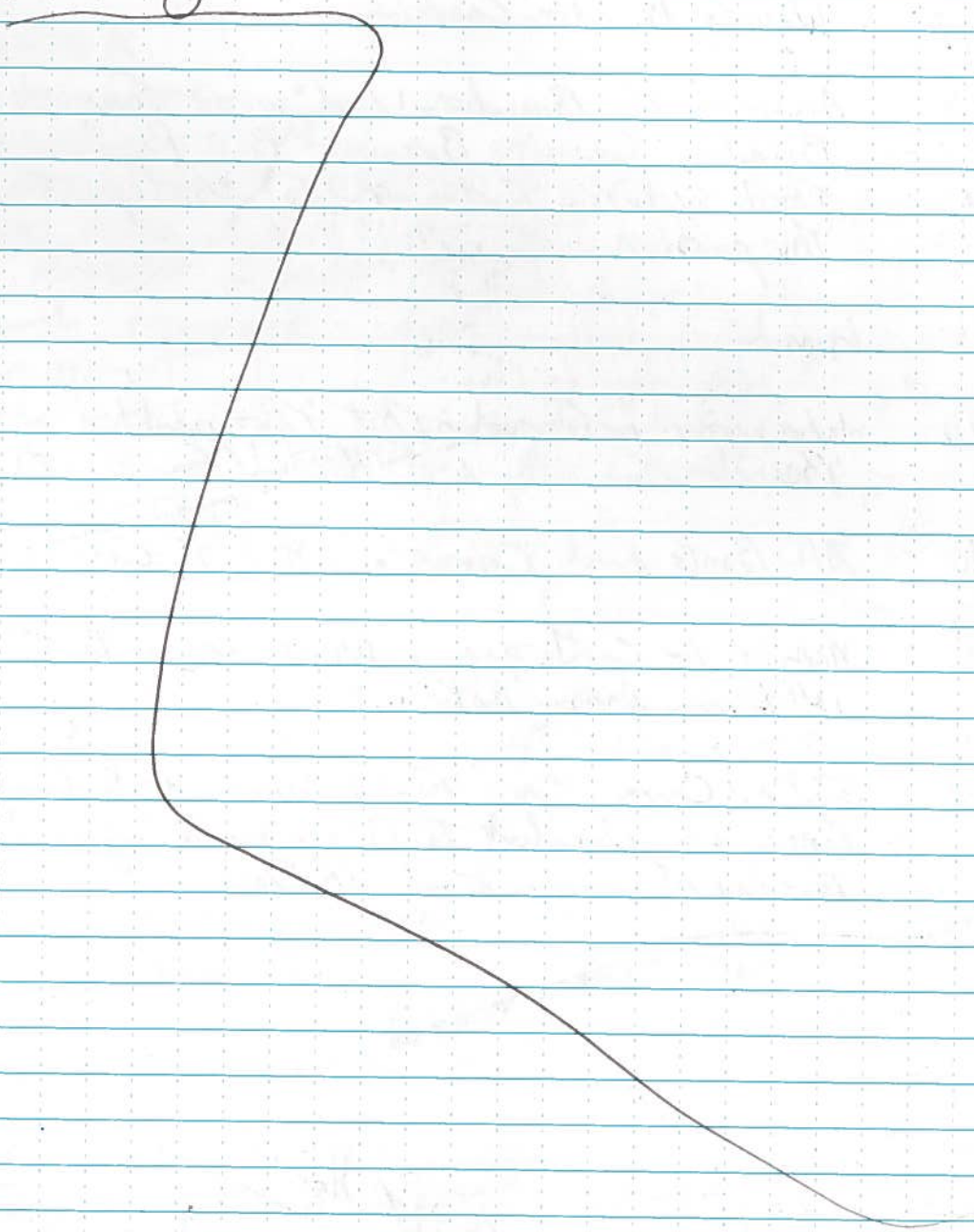
9-21-19

1519 arrived North Port Pock
GPS control point DM-CP-092119
going to Ramp to bring samples ashore
E 443477.03
N 5419082.94

1540 moved samples to VAN

1600 Depart North Port

1643 arrive Warehouse Kotth Falls
unload samples + gear to warehouse
End of Day



Scale: 1 square = _____

9-21-19

9/23/19

UCR Phase III Sediment Sampling

0700 Crew converges at Kettle Falls Warehouse To Receive H+S Brief and Cultural Resources Orientation

0800 Load Cars for Move To Canada

0900 Depart Kettle Falls for Northport Boat Launch

1000 Team all At Northport Boat Launch. Conduct briefing of what To Expect at Boundon and Depart for Waneta Boundon Crossing

1045 Arrived at Boundon and were Turned away by Canadian Boundon Security Because Boat Paperwork was not in Their System. Returned To Northport to work out the problem

1200 Lunch

1600 We were informed That The problem with Canadian Boundon Security and Headed for Waneta Crossing

1700 All Boats and Crew admitted To Canada

1800 Arrive in Castlegar. Weathermans To Scout Boat Launch in Lower Arrow Lake

1900 Ending Crew Meets for Dinner and Discuss Plan for Tomorrow. Decided To Begin working in Lower Arrow Lake Tuesday Morning. End of Day

David R. Hoos
9/23/19

Scale: 1 square = _____

9/24/19 UCR Phase III Sediment Sampling page 33

Reference sites

0800 MEETING AT ARROW LAKE BOAT LAUNCH
CAYUSE CREW, TIETON CREW SAFETY MEETING
- MUSTER POINT - parking lot - Syringa launch or Scotty's Marina
- Lake may have high winds
- Bear aware / Moose aware
- bring radio water offshore bathroom use (no cell coverage)
PLAN TO SAMPLE REF 13, 14, 15
0810 WEATHER: 53°F PARTLY CLOUDY LIGHT WINDS.
PREDICTION: 67°F High mostly cloudy.
CAYUSE CREW:
JACOBS - JOHN GONDEK:
AECOM - DAVE HOSE (LEAD)
MARK HAUG (CULTURAL)
GLEN MEDINA (NOTE TAKER - SCIENTIST)
CONTR DUFFIELD, MIKE (BOAT CAPTAIN)
MAGGIE MCKEON (DECK HAND)
1007 Boat launch equipment load
Setup equipment
1033 HEAD TO REF013
AT Beach Recon Sampling equipment
Volume calculation
15 x 15 x ~~6~~ 6 = 1350 / 144 / 12 = 0.8 cu ft
~~0.74~~
x 7.48 =
5.8 gals per grab
1109 PHOTO OF LOCATION REF013 (0m) north to shoreline
13.1 meter depth REF013-1-CHEM
1112 drop camera on - Sand on Camera
1113 close - shut
1114 pull up - 12.9 meter depth
REF013 attempt 1 top 6inch
1129 REF013-SE-1-09242019
Not enough volume → grab #2
1147 REF013-2 13 meter depth Sand obs on camera
closing as pull up winch shut
rejected rock in jaws
E 435362.47 13 m
N 5466487.38

Scale: 1 square = _____

Rite in the Rain

9/24/2019

1152 REF013-3-CHEM
~~grab deeper than~~ com
grab at 8 inches scoop top layer
Accepted

1210 Homogenizing
NOT Steele fines

1224 Total Weight ~~202 lbs~~ 102 lbs
in Lexan tub

1238 3" from top 5 gal bucket
0" from top 20.5 gal bucket

1243 Lunch Break

1301 start for BMI sample
drop grab
REF013-4 Depth 12.9m Attempt #4

1304 close Sand obs on camera
REF013-BMI-1-09242019

#9 container 10" 2 gal sediment
fill 5.5" from top with ethanol 4 gals

#10 container 9" 2.5 gals. sediment
5" from top. 4.3 gals

1342 81.2 lbs both BMI Samples

1347 Decon equipment

1349 REF015-1 overpenetrated 1ST Attempt
~~1358~~ Rejected ~~overfilled~~ 20.4 m

1358 REF015-2 2nd attempt
overpenetrated

1407 weights removed for 3RD GRAB

1408 cast REF015-3 3RD Attempt
depth = 20.5
incomplete closure stick in jaws
Rejected

1415 REF015-4-BMI for ~~3rd~~ 4th Attempt
Boat to shore opaque sample

1428 REF015-BMI-1-09242019

2 Buckets #9 container 2 gallon sediment filled to 5" 4.3 gal
67.0 lbs #10 container 2 gal sediment filled to 5" 4.3 gal

Scale: 1 square =

09242019

1457. Meet up with Tiffon
1519 Coordinate plan next day ⇒ week
Head back to boat launch
1548 At Boat Launch
Unload Samples in van. Load equipment / kits for tomorrow
1629. At hotel Samples on ice
ENTER
1643 HAND Sample on ice off to Dave Lewis to wash

9 24 2019

Scale: 1 square = _____

09 25 2019

0700 MEET at Syringa Boat Launch – Caylee
Weather: 43 F Mostly Sunny
Predicte High of 66F Sunny
0732 Safety Briefing – keep boat right., Weather/wind may pick up in afternoon. | meet point syringa Boat launch emergency meet at Salty's marine Dam radio monitor channel 16
Crew: John Gondek (Jacobs) Mike Duffield (County) Maggie McKean (County)
AECOM: Dave Hose, Mark Hale. Glen Mejia
0750 leave Boat launch to stations in Upper portion of Arrow lake
0831 Heading to REF018
0850 cast Van Veen REF018-1 Attempt #1
steep stress to the slope / angle
closed jaws
Rejected penetration not achieve / angle
0859 cast REF018-2 attempt #2
Found First
incomplete closure – wood in jaws – Rejected
~~0904~~ cast REF018-3 attempt #3
0906 incomplete closure – st branches in jaws
0913 cast REF018-4 attempt #4
Note area near creek out
Accepted.
overlying water – surface not eroded
6.5" of material dump all into lexan tube
0925 ~~REF018-SE-1-09202019~~ on
NOT enough material – n
0934 cast REF018-5 grab
Rejected sediment loss: empty grab
0947 cast grab ID: REF018-6
Rejected incomplete closure log/branch in jaws add wt
0957 cast grab ID: REF018-7-CHEM
Accepted
1007 REF018-SE-1-~~0924~~ 09252019
AVS sample taken from Attempt #7
Rest Homogenized with #4-7
Filled all SE plastic

Scale: 1 square =

09252019 Sea on 2.0

Filled 2.5 gallon to top. sealed w/o overlying water

1033 Filled 5 gallon. 23.4 lbs

~~36.4~~ 45.4 lbs 4" = 4.7 gallons

1037 for 2.5 gallon Bioassay removed plastic seal to add overlying water and duct tape lid to re-seal

1048 Cast GRAB ID: REF018-8-BMI Attempt 8

1100 Accepted REF018-BMI-1-09252019

Container #9 10" from top 2 gallon sediment 35.6 lbs

container #10 10" from top 2 gallon sediment 34.8 lbs

1117 Total Wt BMI = 70.4 lbs

1124 Head to REF016

1130 Cast GRAB ID: REF016-1-CHEM added 125 wt

Video on Accepted Attempt 1

1140 REF016-SE-1-09252019 1140

Filled AVS from attempt

1202 Cast GRAB ID: REF016-2-CHEM

1214 to Accepted.

Homogenize GRABS 1 and 2

Fill Sediment Samples

2gal 25.2 lbs

5 gal 66.8 lbs

1243 Cast grab ID: REF016-3-BMI

Accepted.

Boat to Shore for processing

1302 REF016-BMI-1-09252019 (1140) 1302 Time

Fill 2 5-gallon buckets 36.8 / 38.2

10" → 2gallon of sediment

1320 Break Lunch

1337 meet up with Tide down REF012 TO REF017.

1340 Cast GRAB ID: REF017-1 attempt #1

Rejected overpenetrated / branch in jaws remove Weights

1352 Cast grab ID: REF017-2 attempt #2

Accepted REF017

1405 Sample ~~REF016~~-SE-1-09252019 1405

AVS filled no headspace on ice

Scale: 1 square = _____

09252019

1410 grab sample in lexan tub.
not enough sample attempt another grab
1417 Cast Grab ID: REF017-3
Rejected rock / cobble in jars
1423 cast grab ID: REF017-4-CHEM
Approved Accepted
Homogenized with Attempt #2.
In Lexan Fill Set sample
1450 sample in 2 gal bucket 2 gal 25.8 lbs
5 gal bucket 5.2 gal 58.2 lbs
3"

1456 BMI attempts
1459 cast grab ID: REF017-5-BMI
Accepted
1505 Sample ID: REF017-BMI-1-09252019

1521 Yellow bucket Container #9 2gal - 33 lbs
Yellow bucket container #10 2gal - 35.2
1527 person - on shore
1547 meet up with tractor
all sample on ice
1553 TO Launch
1636 at symmes boat launch
1738 at hotel.
transfer sample on ice to Denver

9-25-2019

09262019 Cayuse

0800 meet at boat launch STRINGER
0820 safety meeting: rain overnight Be care of wet surfaces
plan: Finish stations in Arrow Lake
meet Sarah at noon for pick up.
TEAM CAYUSE.
GEARITY: MIKE DUFFIELD, Maggie McKeon
JACOBS: JOHN GONDECK
AECOM: DAVE HOSE MARK HANE GLEN MEJIA
WEATHER 52°F SHOWERS
PREDICTED 63°F MOSTLY CLOUDY
Lake water levels rising ~1ft over two days
0840 Load equipment leave Boat launch to REF015
0852 at station REF015
Continued Attempts from 09242019 last Attempt #4
0902 cast grab ID: REF015-5 Attempt #5
Accepted REF015-5-CHEM
0920 REF015-SE-1-09262019 Time 0920
Filled AVS placed on ice
0932 Cast grab ID: REF015-6 Attempt #6
Rejected large log in jaws.
0939 cast grab ID: REF015-7-CHEM Attempt #7
Accepted
0954 Homogenized with grabs 5,7
1007 Jars for primary Sample on ice
Fill Sample for EPA TX Split
REF015-SE-3-09262019 time 0920

	Contains #7	24.6 lbs	2 gal
1013	EPA split	24.8 lbs	2 gal
1019	5 gal - #8	5.2 gals	57.2 lbs

Bathroom break
1033 Decon to REF014
1042 cast GRAB ID: REF014-1
1042 Video recording Attempt #1
Rejected incomplete closure
1048 Cast GRAB ID = REF014-2
NOTE: Video recording last two days.

Scale: 1 square = _____

Rite in the Rain

page 40 of use

09 26 2019

1051 Rejected Attempt #2 incomplete closure
1054 Cast GRAB ID REF014-3 Attempt #3
Rejected only 3 inches
1103 Cast GRAB ID REF014-4 Attempt #4
3 attempts around pore water moving away
for location moved using video to avoid cobbles
REJECTED no overlying water present
1111 casted GRAB ID REF014-5 Attempt #5
TRY deeper water
REJECTED Incomplete closure
1117 casted GRAB ID REF014-6 Video recon Attempt #6
pick up. jaws move to shore.
1123 drop. again closer to shore
closed
REF014-16 ~~CHEM~~ ~~Accepted~~ REJECTED ~~retation~~
1132 Retained - continue to sample attempts
1134 cast GRAB ID: REF014-7-CHEM Attempt #7
FOUND ROCK
Accepted
1142 - Sample REF014-SE-1-09262019
duplicate REF014-SE-2-09262019
Fill AVS From Attempt #7 placed on ice
dumped sample from grab #6
1201 cast GRAB ID: REF014-8 Attempt #8
Rejected incomplete closure
1207 on shore: Meet Sarah. BMI Buckets
1229 For attempt #9
1230 Cast GRAB ID: REF014-9 Attempt #9
REJECTED incomplete closure
1246 Cast GRAB ID: REF014-10
Rejected Incomplete closure rock in jaws
1251 cast GRAB ID REF014-11
CM brought Sarah on board for abs
Accepted REF014-11-CHEM
1257 REF014-SET 09262019
REF014-SE-2-09262019 Time 1257
#7 28.2 lbs 20 gal
1324 #8 5 gal

Scale: 1 square = _____

09262019

Cayuse

jar sampler placed on ice

1331 Attempt #12

1334 Cast. GRAB ID: REF014-12-BM1
Accepted 6" sediment obtained

1340 Sample ID: REF014-BM1-1-09262019
#1 38.0 2 g/l
#10 37.8 2 g/l

1407 Sampling complete at REF014.
To Boat Launch

1414 At Syringa Boat Launch
Video time stamp.

1422 prep For rinsate For Stations REF013 → REF018
ID: REF014-SE-4-09262019
Equip Rinsate

1448 all samples on ice transfered to Sarah's Minivan. for transport to warehouse

1500 leave boat launch

1534 At Hotel.
transfer data, flash drive, video card to Sarah

GMcp 9-26-2019

Scale: 1 square = _____

page 40

09272019

Duplicate Page 40 inadvertantly misnumbered in orignial hard copy logbook.

Capture

0730 At Gypo Park, TRAN
0900 Safety talk for the Day: River Environment - awareness
WEATHER: 40°F partly cloudy - Predicted 57°F rain
CAPTURE CREW: JACOBS: John Goodrich Gravity Mike Dafford
Maggie McKeon ECOM: Dave Fox Mark Hale Glen Magee
PLAN FOR TODAY
Birchbank Upper REF003 - REF004
0940 REF003 near location
Decon setup equipment
0852 VIDEO AT REF003 too shallow camera is not in water
0852 cast grab REF003-1 Attempt #1
Rejected - sediment loss / angle
shallow water
0858 cast grab REF003-2 Attempt #2
REJECTED cobble in jaws
0900 cast grab REF003-3 Attempt #3
0904 cobble in jaws on
Rejected incomplete closure
add more Weight
best area near spit
0917 cast grab REF003-4 Attempt #4
Rejected incomplete closure
0920 cast grab REF003-5
rejected Incomplete closure Attempt #5
attempt to chew.
0923 cast grab REF003-6 Attempt #6
Rejected Incomplete closure
difficult area for Van Veen boat to shore
walk shoreline assess substrate
Dave Fox assess area
0940 switch to manual sampling using a shovel.
Used shovel to collect substrate into
4 Pyrex tube REF003-7-CHEM
0950 Sample REF003-SE-1-09272019
Filled AVS sample placed on ice

9/27/2019

Duplicate Page 41 inadvertantly misnumbered in orignial hard copy logbook.

Page 41

Cayuse

1006 Rest of Sediment Sample jars placed on ice

1014 Fill bucketts

#7	29.8 lbs	2 gal	49° 10' 21.1"
#8	81.4 lbs	5 gal	117° 42' 54.6"

cast grab REF003-8-BM1

1102 Fill Sample: REF003-BM1-1-092719

Duplicate REF003-BM1-2-092719

2gals of Sediment each BM1

#9	38.4 lbs	2
#10	43.6 lbs	2
#11	42.2 lbs	2
#12	37.0 lbs	2

1109 TO REF004-1 grab rejected

use hand tool - shovel to collect sample becuse to shallow and material cobble van van won't close s.

1123 on shore to use hand tools

1128 GRABS ID REF004-2-CHEM Time 1154

Sample ID: REF004-SE-1-092719

Sieve sample

gravel: 56.8 lbs + 80.8 lbs + 51.8 lbs

1224 + 62.2 lbs + 70.6 lbs = 322.2 lbs

Sieveing

Large cobble: 23.4 lbs

<5m sand: 118.8 lbs

Fill sample jars placed on ice

EPA "TX" Split REF004-SE-3 092719 Time

Split		
#7	2gal	26.0
#8	5gal	25.8
		67.0

1304 GRAB ID REF004-3 ~~-BM1~~

~~5m - 3" = 65.4 + 66.8~~

REJECTED - sample collection method

Discussed protocol with EPA and Palmes agreed to the following process

Rite in the Rain

092719

1345 Shovel material into Lexan for 1 area 4 feet square

- pull corners rinse with ethanol over sample bucket: Site water from tub decanted through filter
- grains and sand in buckets
  any remain water decanted through filter the filter rinsed with ethanol into buckets.
  Ethanol added to buckets with 1:1 ratio with sediment.

1350 GPS REF004-4-BM1.
see above for process
Sample ID: REF004-BM1-1-092719 1154 time
#9 57.6 2 gal
#10 47.8 2 gal

1415 ~~Samples~~ Completed.
RECON REF001-002.
sandy beach in cove appears to be good

1434 Substrate

1439 Head back to GYRO

1511 AT GYRO unload samples transfer to vehicles

1600 Transfer Samples to Dave Lenn
Photos of logbook - (6-12

092719

Scale: 1 square = _____

09282019

page 43
Capture

0730 Meet at Gyro park
0745 Safety Meeting: rain today. Weather: 40°F cloudy
prediction 41°F rain.
Capture CREW: Jacobs: John Gooch
Cranby: Mike Duffield Maggie McKeon
AECOM: Dave Hosé Mark Hale Glen Mejia
0810 leave launch boat ramp to
Birchmere
0827 at REF002 Set up equip down
0846 Cast grab ID: REF002-1 Attempt #1
REJECTED Incomplete closure rocks in jaw
0850 Cast grab ID: REF002-2-CHEM attempt #2
Accepted 6" sample penetration
0857 Sample ID: REF002-SE-1-092819 Sample time [0857]
FILL AVS JAR. place on ice
GRAB enough material to FILL remain SED sample
#7 2gal wt: 26.2 lbs
#8 5 gal wt: 67.2 lbs
0928 CAST GRAB ID: REF002-3-BMI Attempt #3
Accepted
0933 Sample ID: REF002-BMI-1-092819 [0857]
#9 5gal wt: 38.6 Taped and agitated
#10 5gal wt 39.8 taped and agitated
0952 sampling complete at REF002
Move to Station REF001
0959 AT station REF001
Cast GRAB ID REF001-1
substrate dense cobbles difficult to
FIND spot ~ 6m.
Rejected Incomplete closure
1006 Cast grab ID ~~REF002~~ REF001-2-CHEM
Accepted
1013 on shore to process samples
1014 Sample ID: REF001-SE-1-092819
FILL AVS. SEM JAR

~~Paul~~

Scale: 1 square = _____

Rite in the Rain

Page 44

092819

Carfuse

1018 - station REF001 sieving sample
REF001-SE-1-092819 1014
wt: gravel 14.0 lbs
1030 decanting water from sediment.
enough material to fill remaining sed samples
placed on ice
Biomassay #7 2 gal wt 26.2 lbs
#8 5 gal wt. 65.0 lbs.
1100 Sediment sample complete, BMI grab next.
1111 cast grab ID REF001-3-BMI Attempt #3
Accepted.
Sample ID: [REF001-BMI-1-092819] [1014]
#9 2 gal sed in 5 gal bucket wt: 36.6
#10 2 gal sed in 5 gal bucket wt. 36.2
Tape and agitated
1136 Sampling complete at REF001
Break for lunch
1210 RECON General [5-10] / upper canopy [11-12]
~~00 5 mixed (edges of sand) cm~~
~~004 sand cm~~
~~009 sand cm~~
~~006 mixed (edge of sand) cm~~
1222 RECON with camera REF009 1.6 m mixed
~~mixed~~ cm
REF008 - 11 m deep - sand
REF007 - 5 m deep sand
REF005 - 5 m deep mixed
REF006 - too shallow to get in - could not access
REF011 - sand beach 0.5 m
1305 REF012 - 8.0 m mixed sand gravel
REF010 - default to access shallow current; coarse
unable to recon by boat, recon on foot
1341 Substrate collected - ~~Dam D~~
1347 Head back to boat dock
1413 At Dock. Transfer samples to Vehicle.

GMay 9-20-19

Scale: 1 square =

Page 45 9-30-19

Tram Cayuse
Mike Duffield, Maggie McKeon Corvair Ky
Dave Hose, Matt Hall, Paul Hamidi (Note taker) AECOM
Nicoh Brandon Jacobs observer for EPA | Safety Boat CNI #1
Water is 2' lower than last week

0925 Safety Meeting at Gyro Park, Dock
GPS control Point E. 448335.9 at 0958
N. 5439045.99

0955 AOI Gabrielle - Departing Gyro Park REF006 → 012
1005 Hot motor - smelling smoke - going to beach boat to check
smoke was steam from anti-freeze
Need to fix impeller - Replace
1040 Problem fixed - Continuing to Gabrielle
1058 arrived AOI REF00 - beaching to disuss w/ Porewater boat
1106 DECON equipment + Set up
1117 motoring to REF007 (Bio assay Split)
Target Stratum is Sand - Confirmed on Video
1122 Sending Van Veen at REF007 Attempt #1
E. 448722.93 Depth 3.5 M
N. 5450204.87
1126 Beaching to Observe Sample
Sample: REF007-SE-1-093019 Time: 1141
1141 fill AVS 8oz Jar
fill 4 x 8oz Jars Grav.
fill 1 x 16oz Jar
1156 Not enough Sample to fill buckets + Split
decided for 2nd Attempt
1159 Send Van Veen (DECON) Sampler
Video Shows Sand - Attempt #2
1159 E 448723.65 N 5450205.41 3.5 M Depth
added 2nd Attempt to remaining 1st attempt Sample
all Jars empty 1.4 kg Full = 4.1 kg
Sample in Jars = 2.7 kg
Add 2.7 kg to Total Sample weight

1215 Sed bucket = 1.1 kg empty
" " full = 27.2 26.1 kg sediment
Drum tub w/ Sed = 49.2 kg - 2.8 kg (Tub)

Paul Hamidi 9-30-19

Scale: 1 square = _____

Rite in the Rain

9-30-19

Weight of Sed. in Tub = 46.4 Kg
Weight of Sed. in 5 gal bucket = 26.1 Kg / 5.2 gallons
Weight of Sed in Jars = 2.7 Kg

12.23 filling 2x2 1/2 gallon buckets Biosassay 2.3 gallons
1 for EPA split

Sed in Tub 46.4
Sed in 5 gal bucket 26.1
72.5 Kg

Residual Sed = 26.5 - 2.8 = 23.7
72.5 - 23.7 = 48.8
48.8 + 2.7 = 51.5

1235 disposed of remaining unused sediment
Dave Hosi has question about having to Wash tated Sample when there are no gravels or cobbles

1238 Decon of equip. returning for BMI Sample
Sending Van Veen - looks sandy on video
Attempt #3 Rejected because Sampler not closed due to organics

1248 Sending Van Veen for Attempt #4
Sample accepted. Collecting 0-6" layer
1301 to 2 yellow 5 gal buckets
decant water through 250-micron Sieve
Filled ~~3.74~~ added 1:1 ethanol
1312 3.74 lbs + 38.8 lbs
BMI Sample: REF007-BMI-1-093019 at 1301
LUNCH

1348 Decon of Equipment
1351 Moving to REF008 - Sending Van Veen Attempt #1
Video shows mostly sand (some cobble)
Sample Rejected due to loss of sediment
1358 Attempt #2 - Sample rejected due to Sed. Loss
+ <6" Penetration
1404 Attempt #3 at REF008 - Rejected due to Sediment Loss
Decon Sampler
1408 attempt #4 - Rejected - lost Sed. - stick in jaws
1412 Attempt #5 - Sample accepted - return to shore
1420 Sample: REF008-SE-1-093019
0-6" ~~non-agonized~~ PA Filled AVS 8oz Jar

Paul Hunter 9-30-19

Scale: 1 square = _____

9-30-19

1432 Sed Placed in Laken TUB to homogonize
1436 Filling 4x 8oz JARS for CHEM
Filled 1x 16oz JAR
biosafety Filled 5 gal bucket 4.9 gal sed
biosafety Filled 2 gal bucket 2.14 gal sed
1445 filled with River water & Sealed
1450 DECON equipment
Sending Van Veen for Attempt #2 BMI Sample
at REF008, Video Looks like Sand
1451 Sample: REF008-BMI-1-093019 at 1501
ashore to Process Sample
1505 filled 2 yellow, 5 gal. buckets, 2.2 gal. Sed. each
Surface 1.5 x 1 x 6" 1.25 x 1. x = 4.6 gal
= 4 gallons
7.48 gal/CF
1515 1:1 ethenol - Taped & Rolled - Sampling complete
1520 DECON of equipment
1533 RECON to find alternate to REF006
Can't access REF006 due to low water on one side
and swift water on other side
bed is all cobbles
1548 E. 4486772.31 , Potential Sample location for REF006
N. 545012.2.14 V. shallow
mixed bed
1558 Potential mixed sand bed - alternate for REF010
E. 448743.59
N. 545048.9.07
1600 FINISHED RECON.
Returning to Gyro Park
1626 Arrive Gyro Park

Paul Smith 9/30/19

Scale: 1 square = _____

Rite in the Rain

P.48 Oct 1, 2019

Team Cayuse

Gravity: Mike Duffield, Captain Maggie McKeon
AECOM: Dave Rose, Mark Hale, Paul Hamidi (Note taker)
Jacobs: Nicole Brandon - EPA observer
CNI: Eric Weatherman, Boat #1

0845 Safety meeting + discussion of day's activities finding alternatives for REF006 + REF010
0927 Leaving Cayuse Park dock for REF011
0940 Text from Jimmy P. - reminder to do FSP-specified duplicates + blanks
0953 arrived near REF011 - on beach to set up equipment
Target fields is sand
will do field duplicate (chem)
throw BMI - duplicate
Center of REF011 is dry, but can get sample w/in 50' radius
1000 Problem with Video - picture talking
1021 Sending Van Veen Attempt #1
Video looks like sand - filled AUS 8 oz Jar + Split
1050 Not enough sample - return for Attempt #2
Sending Van Veen - Sample accepted
1100 added Attempt #2 sample to #1 sample
Homogenize sample: REF011-SE-1-100119 + REF011-SE-2-100119
1104 Filling chem sample Jars for Primary + EPA split
Total metals, mercury, TOC
grain size
Organic chems
Organic chemicals
1115 Filling 5 gal bucket 5.2 gm sed. / 67.8 lbs
2 gal bucket 2.14 gm sed / 28.6 lbs
added River water + Seahd buckets
1120 Completed Sample + EPA Split
1125 discussion on what to collect for Split; Nicole confirmed that Just 1 8oz Jar is needed for metals
Next will get duplicate; should be completely new attempt
DECON equip. before Duplicate
1140 Returning to REF011 for duplicate, Attempt #3
Sending Van Veen
1144 stick in Jaw, Sample Rejected Incomplete Closure

Paul Hamidi 10-1-19

Scale: 1 square = _____

10-1-19

Attempt #4

1147 Bamph accepted for duplicate: REF011-SE-2-100119

1155 filled AVS gar

1200 Nonhomogenized samph
filled all chem jars for duplicate

1215 Mark H. Removed unnecessary samph jars from EPA split for chem, just kept total metals (jar #1)
Taking leftover material from split to fill organics jars that had been filled to 3/4 full since REF samphs should be full jars

1220 Duplicate Samph Complete - No bioassay buckets
LUNCH

1230 Return to REF011 for Attempt #5 for BMI samphs

1239 Samph; REF011-BMI-1-100119 0-6" at 1250
decant water run through 250-micron sieve

1250 Sed placed into yellow 5 gallon bucket
Pour ethanol into bucket, lil ethanol
Samph divided into 2 5gal. buckets
In order to add enough ethanol
BMI Samphs 2 gal / 36 lbs sealed + Rolled
Primary 2 gal / 35.6 lbs to mix w/ ethanol

1300 Primary BMI Sample complete
Decon equip.

1307 returning for BMI duplicate for REF011

1310 Sanding vgn Vern for Attempt #6
looks like sand

1311 Samph accepted: REF011-BMI-2-100119

1315 Putting Samph 0-6" into 5 gal yellow buckets

1320 decant water run through 250-micron sieve
Sieve washed into Samples with ethanol spray

1325 added ethanol (1:1) into each bucket
Sealed, Rolled

1330 Decon equipment

1338 Departing for REF009 - target facies of sand

1353 arriving REF009 - Looks Mixed fines on video

1355 Attempt #1 - Samph Rejected
Jaws didn't close - No samph - due to gravels

1400 Video recon to find sand
Looking like cobbles & gravels

Paul Hinz 10-1-19

Scale: 1 square = _____

Rite in the Rain

10-1-19

1411 Attempt #2 Sample Rejected
Too gravelly - Jaws not closing fully
1424 Attempt #3 - Rejected, Jaw not closing due to gravels
1429 Attempt #4 - Sample Rejected - Jaws not closing due to gravels
may be able to obtain sample just out side of 50m Circle. - going to take coordinates
1440 Potential Sample/Sand for REF009
REF009 ???
E 448649.07
N 5450386.48
1442 moving to REF010 + Possible alternative
REF010 is mixed
1448 Dave + Nicole walking to survey potential sample sites
1512 Some sand is available, but would have to reach on foot and porewater sample not possible
moving to REF006
1500 Walked the EPA observer to Location REF010 To Show Them The existing Conditions. Location is out of the water and no sand present in the area that could be accessed by the penetration Boat.
1515 Moved to Location REF006 Alt To attempt grab
Sending Van Veen for Attempt #1 REF006A
1521 Attempt #1 for REF006-ALT ORIG
Sample rejected - Jaws not closing due to gravels
Decon sampler for Next attempt
1527 Attempt #2 - Sample rejected - Jaws not closing due to gravels
1532 Attempt #3 for REF006 ALT ORIG - Sample Rejected
Jaws not closing due to gravels
Decided to return with Hamon to sample mixed facies
1537 Picking up Van Veens from Cliff on Tieton
Returning to Gyro Park dock
1601 Arrived Gyro Park dock, unloading Samples + gear
1615 Doing Rinsate Sample
1652 Filled 9 bottles from Rinsate, used 2 scoops

Paul Hamilton 10-1-19

Scale: 1 square = _____

Page 51 October 2, 2019

Team Cayuse Weather: 40's light wind, low clouds Temp 36°F at start
Mike Duffield, captain Maggie McKeon Gravity
Paul Hosa, Mark Hale, Paul Hamid; (Note Taker) AECOM
Nicole Brandon, Jacobs ESPA observer
Eric Weatherman, Steve Bachman CNI #1 Safety boat
0830 Safety meeting - Anchoring watch for wood; watch for fishing boats
0902 Departing Gyro Park Dock for REF009-ALT
Target facies is Sand
0921 Arrived at REF009-ALT going ashore to set up equip.
alternate for REF009 - outside 50m circle
attempting with Hamon
0944 Sending Hamon for Attempt #1 at REF009A
Penetration 9" sample accepted
0956 Sample REF009A-SE-1-100219
filled AVS from 0-6" layer, insufficient quantity for entire sample
Discussion of how to determine penetration depth w/ bucket
1011 Returning for Attempt #2 - w/ Hamon
1014 Sample Rejected, bucket is over-penetrating
Per SOP, bucket should penetrate 4-8 inches
Maggie is adjusting bucket - lower legs on pontoon
so does not penetrate as far
1042 moving to REF009A for Attempt #3
1046 Attempt #3 - Over-Penetrated - Sample Rejected
1049 Attempt #4 - Siphon bucket - Sample accepted
Remove 0-6" from bucket to add to sample
from attempt #1; insufficient sample amount
1105 Attempt #5 - Sample accepted - 9" Penetration
added to sample 1+4 = homogenized
1115 filled all CHEM JARS - ½ total (+AVS from Attempt #1)
1120 filled bioassay 5 gal bucket - 4.7 gal sed 65.6 lbs
1125 filled bioassay 2 gal bucket - 2.0 gal sed 27 lbs
1130 Returning to REF009A to collect BMI sample
1134 Attempt #6 for BMI sample
Discussion of whether multiple attempts/grabs permissable for
1155 Attempt #7 for BMI - over penetration - Sample Rejected BMI
1159 Attempt #8 - Under penetration - Sample Rejected
1204 Attempt #9 - Sample accepted 8" penetration
1212 decant water run through 250-micron sieve
Remove 0-6" to 5 gal yellow bucket
1224 filled with 2.5 gal sediment, filled 1:1 with ethanol

Paul Hamid 10-2-19

Scale: 1 square = _____

Rite in the Rain

10-2-19

1227 LUNCH

1235 This location has "A" in name to differaniate this location from original REF009 where a Porewater sample was previously collected. Confirmed with Jenny Prytak Orginal REF09 was a Phase 2 location - so we want to retain original location's porewater sample. Sample: REF009A-BMI-1-100219

1245 filled bucket is 50.6 lbs, sealed + Labelled bucket Decon equipment

1250 moving to REF006 Target is mixed facies

1256 Attempt #1 at REF006 - Sample accepted w/ Harmon decant water ~~for~~

1305 Put sample into Lexan tub with 5mm sieve Put gravels into 5 gal bucket (retained on sieve) washed sediment in sieve using Porewater from sample

1310 Nicole asked question about washing sample SOP says not to wash sample Dave confirmed that Anthony Palmieri gave OK on this since only way to get accurate volume of sand

1324 Anthony Palmieri called; cannot use water pumped from River to wash sample when sieving, can ONLY use porewater for washing. Sample sieved from Attempt #1 was discarded

1328 Attempt #2 at REF006 accepted Sample is mostly sand, not mixed

1335 Attempt #3 - Incomplete closure - Sample Rejected

1339 Attempt #4 - Sample accepted - correct facies ~~decon~~ Porewater from sample saved Sample put into Lexan TUB with 5mm sieve (combined with #2) gravel picked out Put into 5 gal bucket sieve washed with porewater retained in TUB Insufficient sed. for sample

1357 Attempt #5 - Sample accepted + added to Attempts 2+4 added to Lexan tub with 5mm sieve Removed gravels Filled AVS Jar using sed. from sampler Attempt #5

1413 Attempt #6 - Sample accepted Put into Lexan tub sieved with attempts 2, 4 and 5 surface water siphoned

Paul Hinkle 10-2-19

Scale: 1 square = _____

10-2-19

1426 Stiff insufficient volume for Samph
Returning for Attempt #7 -

1431 Attempt #7 accepted
added to Lexan tub w/ 5 mm sieve
washed with Pore water siphoned from samph
insufficient samph volume

1450 Attempt #8 - Samph accepted
added to Lexan tub sieve
gravels removed Samph: REF006-SE-1-100219

1500 Composite Samph of Attempts 2, 4, 5, 6, 7, 8
Sample homogenized; wood debris + vegetation Removed
gravels in 5 gal bucket = 28.3 kg (gravels)
- bucket = 27.2 kg gravels
No Cobbles
1.0 kg bucket empty

1518 Filling Bioassay 5 gal. bucket - 4.7 gal Sed | 23.8 kg Sed.
[Remaining Tub = 21.7 kg] - 2.8 kg (Tub) = 18.9 kg
Total Samph Weight = 42.7 kg <5 mm
filled all CHEM bottles 1 8oz + 4 x 8oz

1534 Filled 2-gallon bioassay bucket
Returned gravels to River
Chem Samph Complete, Clean deck + ~~Decon eq.~~
Return for BMI Samph w/ Itamon
adding 150 lbs to Itamon to get better Penetration

1547 Returning to REF006 for BMI Samph - Attempt #9

1548 Samph rejected due to over Penetration
Removed 50 lbs from Itamon

1555 Returning for Attempt #10 for BMI at REF006

1' Over-Penetration; Samph rejected
Removing 100 lbs weight from Itamon
NO more added weight Now

1604 Attempt #11 at REF006 for BMI Samph
Samph accepted
ashore to Process Sample
decant surface water through 250 micron sieve

1611 Filling 5 gal bucket from 0-6" in Itamon bucket
Ethanol Spray to Clean wood debris + ~~fish~~ sieve
~~5 gal.~~ 2.5 gal Sed. Put into bucket

1615 Samph: REF006-BMI-1-100219

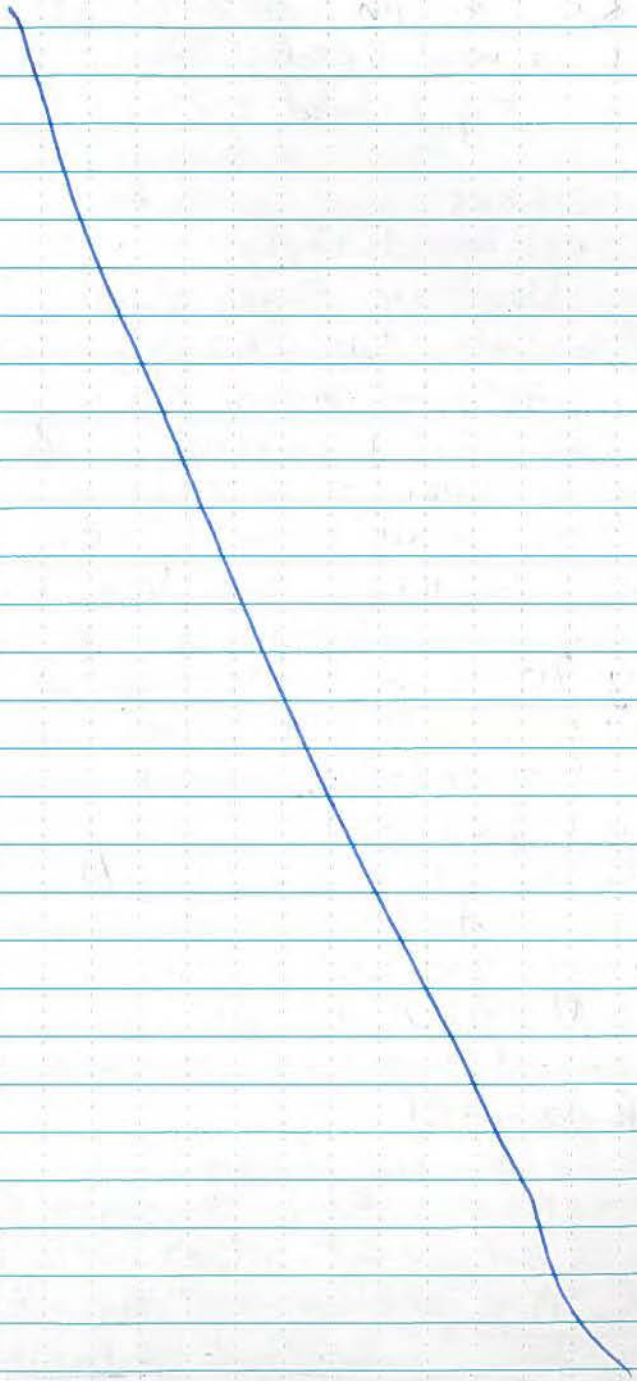
Paul Murphy 10-2-19

Scale: 1 square =

P.54

10-2-19

Ethanol added at 1:1 ratio
1625 bucket sealed and rolled
Sample completed
Clean Deck + Decon
1645 Departing for Gyro Park Dock
1703 arrived Gyro Park Dock
unload gear
1726 hand off samples to Dave Lewis for
Return to Kettle Falls



Paul Smith 10-2-19

Scale: 1 square =_____

P.55 10-3-9

Team Cayuse
Mike Duffield, Maggie McKeon Gravity
Dave Hose, Mark Hale, Paul Hamidi (not taken) AECOM
Nicole Badon, Jacobs EPA Observer
ERIC Weatherman, Steve Brockman CNI Safety Boat #1

0730 Safety meeting
Today's goals, mixed coarse facies at REF005 and REF010
Control Point
0815 E 948336.03
N 543904.96
0817 Departing Gyro Park Dock for REF005
0836 arriving at REF005, set up equipment (going ashore)
0842 Chaining Hamon Sampler - moving to location
0850 Attempt #1 Video looks like mixed, Sample accepted (V. gravelly)
Decon. Tools
Placed sediment into Lexan tub with Sieve (5 mm)
Returning for additional sediment
0859 Attempt #2 - bucket sliding on bed.
Sample rejected, under-penetration
Adding 250 lbs to Hamon
0908 Attempt #3 at REF005 looks like mixed
Video - bucket still sliding on bed
Sample Rejected only 3" penetration
added two spikes to improve penetration
0915 attempt #4 Sample rejected, under penetration
Moving closer to Porewater Sample location
0921 Attempt #5 Sample looks sandier
Over-penetration in Sands - Sample Rejected
0924 Attempt #6 bucket mould less, Sand + gravel
Sample accepted - 7" penetration
Sed. added to Lexan tub with 5mm sieve
washed with Porewater to help sieving
Putting gravels in 5gal. bucket (No cobbles)
0949 Attempt #7 - looks like Sand + gravel
sample accepted - added to tub w/ sieve
1000 AVS Sample taken out of bucket
1014 Attempt #8 Sample accepted, added to Lexan Tub
~~1030~~ 1027 Attempt #9 - Insufficient recovery - sample rejected

Paul Hamidi 10-3-9

Scale: 1 square = _____

Rite in the Rain

P.56 10-3-19

1030 Attempt #10 Sample accepted & added to LEXAN TUB to sieve
1st 5 gal. bucket 27.9 kg - 1.1 = 26.8 kg gravels
1054 Attempt #11 Sample rejected over penetration
1059 Attempt #12 Sample accepted - sieved (5 mm) and added to existing Sample
2nd 5 gal bucket with gravel
28.8 kg - 1.1 = 27.7 kg gravels
1114 Attempt #13 Sample accepted, sieved w/ 5mm + added to existing Sample
1129 Attempt #14 Sample rejected - under penetration
1133 Attempt #15 Sample rejected - over penetration in sands
1137 Attempt #16 sample rejected - over penetration
1142 Attempt #17 Sample accepted - sieved and added to existing Sample - composite of attempts #1, 6, 7, 8, 10, 12, 13, 17
Sample: REF005-SE-1-100319 homogenized meets mCs
3rd bucket: 20.9 kg - 1.1 = 19.8 kg gravels
1156 total gravels = 26.8 + 27.7 + 19.8 = 74.3 kg
weight of sand =
2.14 gal 2 gal bucket 11.8 kg - 0.4 = 11.4 kg
5.4 gal 5 gal bucket 34 kg - 1 = 33 kg
sand in Tub 10.4 kg - 2.9 = 7.5 kg
all Jars 4.4 kg - 1.5 kg = 2.9 kg
54.8 kg
1218 Total = 74.3 + 54.8 = 129.1 kg
57.6% 42.4%
Filled all CHEM Jars 1 x 16oz + 4 x 8oz glass Jars
filled 2 gal bioassay bucket - 2.14 gallons
filled 5 gal bioassay bucket - 5.4 gallons
1222 Cleaned deck, return to REF005 for BMI
1225 Attempt #18 Sample rejected, UNDER-Penetration
1232 Attempt #19 Sample rejected, OVER penetration VOLUME
1235 Attempt #20 Sample rejected, insufficient
1240 Attempt #21 Sample rejected, over-penetration
1244 Attempt #22 Sample accepted for BMI
1250 Sample: REF005-BMI-1-100319
decant water run through 250-micron Sieve
Sediment placed in 5 gal bucket, large gravels removed by hand - washed with ethanol into bucket

~~1305~~

Paul Bowers 10-3-19

Scale: 1 square = _____

10-3-19

1305 filled yellow bucket w 2.5 gal. Sed.
added 2.5 gal. ethanol
sealed bucket + Rolled to mix
1320 moving to REF010
Video RECONN - looks like cobbles w/ some sand
1340 brought up one test sample to see how it would work - mostly cobbles + large gravels in bucket -
1353 will attempt ~~mCs~~ location with mCs (mixed coarse sand) fewer cobbles
1357 Attempt #1 at REF010 - sample rejected over penetration in sand
Removing 50 lbs - now 200 lbs added weight
1412 Attempt #2 Sample accepted, Put through 5mm Sieve, washed with Porewater from sample
1421 ~~Attempt #3~~ Sample accepted, added to existing sample
1445 ~~Attempt #4~~ Sample accepted [filled AUS Jar
Sieved and added to existing Sample
1457 Attempt #5 Sample accepted, Sieved using Porewater
Weight: 29.9 kg - 1.1 (5 gal bucket) = 28.8 kg gravels bucket #1
added to existing sample
1513 Attempt #6 Sample accepted, sieved out gravels + added to existing sample
(gravels put in separate 5 gal bucket to weigh)
1532 ~~Attempt #7~~ Sample NOT accepted, ~~Sieved + added to existing~~ PH
1537 Attempt #8 Sample accepted, sieved + added to existing sample
1551 Attempt #9 Sample accepted, sieved + added to sample
Sample: REF010-SE-1-10319 meets mCs target
Composite of ~~attempts~~ #2, 3, 4, 5, 6, 8 + 9
all gravels put into 5 gal bucket to weigh, sand homogenized
1600 Weight of gravels 27.3 kg - 1.1 = 26.2 kg bucket #2
gravels total = 28.8 + 26.2 = 55 kg
1605 Sand weight = 50.2 - 2.9 = 47.3 kg
total sample weight 55 + 47.3 = 102.3 kg
54% 46%
1613 Filled 1 16oz + 4x 8oz glass jars for CHEM
Filled 5 gal. biossay bucket 5.4 gal sediment (Sand)
Filled 2 gal biossay bucket 2.14 gal. sediment (Sand)
added Porewater to buckets

Paul Nemitz 10-3-19

Scale: 1 square = ____

10-3-19

1621 Biomass 76.2 lbs / 5.4 gal. Seahd + labelled
Buckets 30.4 lbs / 2.14 gal
Comphted CHEM / Samphs
1622 Returning for BMI samph at REF010
Attempt #10 for BMI
Samph accepted - decant water through 250 micron sieve
sediment placed in 5 gal. bucket, ethanol added 1:1
filhd 2 gal. sediment 39.4 lbs
1643 Seahd + rolled to mix ethanol
Samph: REF010-BMI-1-100319
Comphted Samph
Cleaning Deck, stripping equipment
1654 Depart for Gyro Park Dock
1711 arrived Gyro Park Dock
Unload samphs - give to Josh for transport to Kettle Falls

Paul Thimsen 10-3-19

Scale: 1 square = _____

Page 59 10-4-19

Team Cayuse
Mike Duffield, Maggie McKoon Gravity
Dave Hose, Mark Hale, Paul Hamidi (Note Taker) AECOM
Nicole Badon, Jacobs EPA Observer
Eric Weatherman, Steve Brockman, CNI Safety Boat #1

0756 E 448335.70 GPS Control Point
N 5439045.85

0800 Departing Gyro Park DOCK
heading for REF012 about 6 miles
Target is Mixed

0819 arrive REF012
Set up equipment, Decon. Tools
Video Recon - trying to avoid cobbles
found sand - moving toward edge of sand
area mostly gravel & sand

0835 Attempt #1 at REF012 - Sample rejected - not enough Volume
Video recon. to find mixed facies w/o cobbles

0847 Attempt #2 Sample rejected - Low Volume

0853 Attempt #3 Over-Penetrated in sands - Rejected
Video recon - too many cobbles - or all sand
Can't find target of gravel & Sand

0905 Went ashore - walked shore to determine if hand sampling possible along beach
Return to Boat w/in 20'

0916 Attempt #4 Sample Rejected - large cobbles prevented Closure of bucket; lost sand
Decided to attempt sample with shovel

0920 This location consist of either Very Hard Cobbles The size of cantelop - or Rock Longer and Very soft sand. The Best option to obtain a sample of mixed sand/gravel is to beach the Boat and excavate material By Hand in 6 to 12 inches of water ~~etc~~ ON along the shore. This is 6 meters within our ~~radius~~ ON allowed Radius for Sampling. Coordinates are E 451478.00 N 5453438.00. This location was selected with the concurrence of the EPA observer. David R. Hose / Nicole Badon/Jacobs

0930 Attempt #5 for REF012 - ON beach by hand
Sample accepted IN 0.2 to 0.3m deep water
filled 4 OZ JAR

Paul Hamidi 10-4-19

Scale: 1 square = _____

Rite in the Rain

10-4-19

\# Samph: REF012-SE-1-100419

1000 Sieving through 5 mm Sieve, wash with porewater gravels placed in 5 gal bucket to weigh
Weight of gravel 18.4 kg - 1.1 kg = 17.3 kg gravels homogenized Samph in Lexan Tub

1035 weight of sand 41.1 - 2.9 = 38.2 kg
Total weight = 38.2 + 17.3 = 55.5 kg
filling all CHEM JARS 1 x 16oz + 4 x 8oz glass Jars

1048 Filling 5 gal bioassay bucket 4.8 gal Sediment / 67 lbs
Filling 2 gal bioassay bucket ~~1.5 gal sediment~~ → 1.1 gal sediment / 16.2 lbs

1100 CHEM complete - Chasing Deck
Return for BMI Samph
Off Beach in 0.3m water
Used Stnl Scoop

1215 Attempt #6 for BMI - accepted & placed in 5 gal bucket → 2.5 gal. Sediment
added 2.7 gal Ethanol & Mixed in bucket
Note: label ~~Says~~ inside bucket is wrong - Says 1215 instead of 1115.
Samph: REF012-BMI-1-100419

1145 Samph complete, Chas Deck
moving to REF010 to collect GPS points where original REF010 w/ Pics of substrate & alternate point that is closest approach to it

1154 arrived at REF010 ~~(actual)~~ (alternate)
walking to ~~primary~~ REF010 w/ hand held GPS
Took photos of original and alternate Samph Locations - See photo Log for descriptions

1238 Returning to Gyro Park Dock

1300 arrive Gyro Park Dock
unload Gear

Paul Ahrens 10-4-19

Scale: 1 square = _____

10-8-2019 Cayuse

0730 Meet at Nordport boat launch
Plan to sample Dead mans Eddy.
Safety Meeting: All Hands Cayuse tem
Tucton Tem / CNI boats
Mike Dufford, Ed Skoore Coeurity
Dave Hoss, Ragan Driver, Glen Megan AECOM
Tamara Knudson: Spokane Tribe
0900 setup equipment project orientation for new crew. Load sediment sample equipment.

0943 ~~DME-013-1~~ ~~DM-013-1~~ DM013 at Location
mixed coarse target ~10m
1000 DM013 Video recon
mixed sand at gravel cobbly -
target substrate observed
~~cast freeze grab DM013-1~~
1011 beach to setup freeze grab - decon equip.
1106 cast freeze grab DM013-1 attempt #1
1106 Attempt 01 DM013 on bottom
1111 DM013 Attempt 01 pulled up to surface - incomplete recovery
1116 on beach re-load dry ice
1140 Cast freeze grab DM013-2 Attempt #2
1141 DM013-2 on bottom
1148 DM013-2 pulled to surface
incomplete recovery rejected
1203 on beach repack dry ice
1220 cast freeze grab DM013-3 Attempt #3
1225: DM013-3 on bottom
1230: DM013-3 pulled to surface
1238: on beach incomplete recovery.
add donut weights to freeze grab. x 35 lbs
1322 decide to move to eddy sta DM036
observed leptocline (creosote) hydrolysis hydrogen
stabilized
1335 DM036 video recon
1340 power to video down - technician troubleshooting
checked fuse, power, contact ohmm.
1434 detected short on cable.

Scale: 1 square = _____

Rite in the Rain

Deep 62 100819

Capture
main camera down - recon with splash camera

1454 DM036 video recon using splash camera ~12.3 ~~meeting~~ meters

1500 DM036 Video Recon image captured mixed coarse target substrate confirmed

1503 DM032 video Recon using splash camera ~12.3 meters

1513 DM032 video recon image captured mixed coarse target substrate confirmed high current Photo blurry

1516 DM038 video recon ~7m depth

1517 Photo captured DM038 mixed coarse target substrate confirmed

1520 DM047 video recon ~5.5m depth

1522 DM047 video recon image captured mixed coarse target substrate confirmed

1526 DM048 video recon ~4.8m depth

1532 DM048 image captured cobbles & sand

1534 Splash camera system pulled from water

1538 buttoning up equipment - head to northport boat launch for repairs to video cables

1551 at boat launch northport
no samples taken.

100819

Scale: 1 square = _____

10-09-2019

Cayler

0830 Meet crews at Northport boat launch
Weather 40°F partly cloudy.
Prediction 46°F partly cloudy
Safety meeting
Crews: Mike Duffield, Ed Sloan
AECOM Dave Hose, Colen Mejia
WCE Ragin Driver
EPA: Jon Roach
0954 Grab setup: launch boat change Grab to Hamon
1013 TO Station DM002 to Shore for Recon
1055 Cast grab ID DM002-1 Attempt #1
1055 DM002 Video Recon
1103 DM002 Attempt #1
1111 Grab Sampled DM002-1-CHEM Accepted
1136 Sieved grabs. not enough material
1139 Cast grab ID DM002-2 Attempt #2
Rejected too much gravel
1150 Cast grab ID DM002-3-CHEM Attempt #3
1155 On shore check grab
Accepted grabs
1231 Sieved Sample
26 (kg) Sand 28.6 gravel (kg)
1249 Cast grab ID DM002-4-CHEM Attempt #4
1255 Sample ID DM002-SE-1-100919
collect SEM AVS from grab place on ice
1328 Sieve grabs weight gravel 1.8 kg + 29.6 = 30.4
weight Sand: 55.1 kg
Total Weight: 85.5
36% gravel 64% Sand
Homogenize Sample
1348 Fill all sediment containers place on ice
Cast grab for BMI.
1352 Cast Grab ID DM002-5-BMI Attempt #5
Grab accepted
Sample ID DM002-BMI-1-100919
Surface area is one square foot
1400 63.6 lbs 2.9 gallons of sediment
1434 Sampling Complete for DM002

Scale: 1 square = _____

Rite in the Rain

10.9.2019

Cayuse

1434 Decon equipment. Head to DM018

1445 At Station DM018

1447 Cast Grab ID DM018-1 Attempt 1

Rejected - overpenetration

~~Cast Grab ID DM018-2~~ Or ~~Attempt 2~~

remove weights - adjusted hgt

1523 Cast Grab ID DM018-2 - CHEM

Accepted.

Collect AVS - on

Sample ID DM018-SG-1-100919

AVS sample collected placed on ice

1540 Cast Grab ID DM018-3 - CHEM Attempt 3

Accepted - Homogenized with 2

Sediment jars filled placed on ice

Biomass filled - 5.6 gal 77.4 lbs

2.14 gals 31.6 lbs

1614 Cast GRAB ID DM018-4-BM1 Attempt 4

accepted BM1

Sample ID DM018-BM1-1-100919

BM1 - 3 gallon sediment 60.4 lbs

1633 Sampling complete at DM018

1764 At boat launch Northport.

transfer Sample to vehicle

10/9/19

Scale: 1 square = _____

10-10-19

Captain

0630 Meeting Crews at Northport
Weather 28°F clear
predict 50°F clear
SAFETY meeting be aware of icy conditions
Gravity Mike Dagfoord Ed Sloan
AECOM Dave Hess Glen Meyer
WCE Ragan Driver
EPA Leila Savage.
0935 LOAD equip Water Elevation 1287.8 ft 37°F
launch boats
0959 at Deadmans Eddy Decon on shore
plan to DM016
1025 at station DM016
1030 Cast grab ID: DM016-1-CHEM Attempt 1
~7cm Acceptable
Sample ID DM016-SC-1-101019 Time 1035
Fill AVS jar from grab place on ice.
Empty rest of grab into lexan tub. move to collect 2nd grab
1048 cast grab ID: DM016-2 Attempt 2
Rejected overpenetration
1055 Cast grab ID DM016-3 Attempt 3
Holding portion of grab. interesting- unique sand conglomerate layers of redox - retained loss of solids
when pulling up grab piece of sediment broken
1108 Decided to retain top 4" of sample grab
Rejected but retained
1118 Cast grab ID: DM016-4 Attempt 4
Incomplete recovery - rejected
1123 Cast grab ID: DM016-5 Attempt 5
Incomplete recovery - rejected clear 46°F
1131 Cast grab ID: DM016-6-CHEM Attempt 6
accepted - added grab to lexan tub
penetrated to 9" keep top 6"
1143 Cast grab ID: DM016-7 Attempt 7
rejected incomplete recovery.
1157 Cast grab ID DM016-8-CHEM Attempt 8
Accepted Good
back to shore process samples

Scale: 1 square = _____

Calfuse 10.10.2019

1155 on shore - add grab to Logan tubs
mussel Attempts 1, 6, 8 Fill remaining jars
DI7 for chemistry placed on ice
Fill bioassay buckets 2.14 grabs 29.6 lbs
5.2 grabs 79.4 lbs
1234 boat to DM016 For duplicate sample Field dup = 2
1237 cast. grab ID: DM016-9 Attempt 9
rejected overpenetrated
1243 cast grab ID DM016-10 Attempt 10
rejected sediment loss - insufficient sample collected
1249 cast grab ID: DM016-11 Attempt 11
rejected no sediment in grabs
1257 Cast Grab ID DM016-12-CHEM Attempt 12
Accepted boat to shore
1300 Duplicate Sample ID [DM016-SE-2-101019]
Fill AVS jar, place on ice
Fill rest of CHEM jars.
1315 lunch break
1337 move to station for BMI sample
1340 cast grab DM016-13 Attempt 13
rejected overpenetrated.
1347 cast grab DM016-14 Attempt 14
rejected insufficient materials
1353 cast grab DM016-15-BMI Attempt 15
1359 on shore
1400 BMI sample: [DM016-BMI-1-101019]
Fill bucket 3.0 gal sediment
59.4 lbs
Completed sampling at DM016
1424 move to DM015 at station
1432 Cast grab DM015-1 Attempt 1
weeds observed ~1.8 m
sand observed drop grabs
Rejected insufficient depth material 3"
1441 cast grab DM015-2-CHEM
Fill AVS sample
1445 Sample: [DM015-SE-1-101019]
On shore - place AVS sample on ice

Scale: 1 square = _____

10/10/19

1454 cast grab DM015-3-CHEM Attempt 3
Accepted 8" penetration on shore add to lexan tubs
need more material move to station
1505 cast Grab DM015-4 Attempt 4
Rejected insufficient penetration - material
1511 cast grab DM015-5-CHEM Attempt 5
Accepted boat to shore
process sample for chemistry add
grab sample to lexan tub ~~2, 3, 5~~ 2, 3, 5
1527 Homogenized fill chem jars placed on ice
Fill processing buckets: 5.0 gal 75.0 lbs
1543 cast Grab DM015-6 2.14 gm 30.8 lbs
Attempt 6 Accepted 4" recovery
1545 BMI sample ~52 F H2O
DM015-BMI-1-101019 ~45 F air
2.5 gal - 47.4 lbs
move to shore back at station
1600 cast grab ID DM015-7 Attempt #7
rejected over penetrated.
1605 cast grab ID DM015-8 Attempt #8
Accepted BMI Duplicate sample
1611 DM015-BMI-2-101019
2.5 gallon 49.6 lbs
1623 End sample to boat launch
1633 At boat launch
Transfer samples to vehicle

10.10.19

Scale: 1 square = _____

Rite in the Rain

DFS 10/11/19

page 68

10.10.19

Calyuse

0630 Meet crews at Northport boat launch: safety meeting
weather 29°F. predicted 54°F clear
0931 launch boats 34°F load equipment 1.287 conn water elevation
plan to survey Deadmans Eddy DM008 – DM010
Calyuse Crew: (Gravity): Mike Duffield, Ed Sloan (WCE) Ragan Driver:
(AECOM) Colen Mapes, Dave Hoss (CCE) Joe Wichmann
0945 at Deadmans Eddy Ocean
1016 on station DM010 meet EPA split for metals
1023 cast grab ID DM010-1-CHEM attempt #1 Accepted. 8" recovery
1028 Sample ID: DM010-SE-1-101119
Ars sample taken from Grab - added grab to lexan tube
move to station to collect more sample
1038 cast grab ID DM010-2 attempt #2 Accepted 8" recovery
added sample to tub for homogenization
Fill remain Chem jars
AND EPA split for metals: DM010-SE-3-101119
1101 Fill Bruary Buckets. : 2.14 gallons 29.2 lbs 5.6 gal 78.2 lbs
move to station for BMI sample
1117 cast grab ID DM010-3 attempt #3 Accepted
1125 BMI sample: DM010-BMI-1-101119
2.75 gals 54.2 lbs
1215 move station DM008
1221 cast grab ID DM008-1 Attempt #1 Rejected
insufficient material recovered 1" sediment
1230 cast grab ID DM008-2 Attempt #2 Rejected
insufficient material recovered
to shore: raising legs on grabs and add spikes
1304 move back on station
1306 cast grab ID DM008-3-CHEM Attempt 3 Accepted
penetration 3¼" on one side 4" on other side enough material
1320 Collect Ars. Sample DM008-SE-1-101119
place remain grab into lexan Tub - need more material.
1332 cast grab ID DM008-4-CHEM Attempt-4 Accepted
move to shore add to lexan tub. need material
1344 cast grab ID DM008-5-CHEM Attempt 5 Accepted
move to shore add grabs to tub need more material
1356 cast grab ID DM008-6 Attempt 6 Rejected
Insufficient material

Scale: 1 square =

10.11.19

Capture

1403 cast grab DM008-7-CHEM Accepted
to shore add grab to tubs
1415 cast grab DM008-8-CHEM Accepted added to tubs
1426 cast grab DM008-9-CHEM Accepted added to composite tub
1437 cast grab DM008-10-CHEM Accepted 57°F air
move to shore process sample - Homogenize Sample
Fill chemistry jars
composited material partial consolidated. hard crust.
color olive Byr 2.5/1 blank 807 Silica gloss
plan for QA/QC

1500 EPA TX SPLIT: DM008-SE-3-101119 gal 2.14 lbs 33.6
Bioassay gal 2.14 lbs 32.0
1510 gal 5.6 lbs 81.0
1513 Move to station for BMI.
Cast grab ID: DM008-11-BMI Accepted
1520 BMI Sample ID: DM008-BMI-1-101119
2 gal
39.2 lbs Sampling for station DM008 complete
1532 clean up Deck. breakdown equip
~~1600~~
1600 at Northport boat launch. unload samples transfer to vehicles

10.11.19

10.12.19

Cayuse

0830 Meet at northport launch safety meeting 29°F air 1287.4 Er
Safety meeting: First Day Hunting modern weapons.
be aware of gunfire
Cayuse Crew: Crowley: Mike Duffield Ed Sloan
AECOM: Dave Hose Glen Mayo WCG: Ragan Driver
0937: Load Equipment 40°F air: Launch Boat
0954 At Deadmans Eddy setup Equipment 44°F 3mph
1019 Move to Station DM035 1023 At station. DM035.
1020 Cast grab ID. DM035-1 cobbles at location searching.
found spot mostly sand clumps - trough clumps pushed down to close
Rejected insufficient material - dump grab
1038 ~~Cast grab ID DM035-2~~ Video recon entire Polygon
no sampable sand areas ~~located~~ apparent.
1111 Cast grab ID DM035-2 Rejected no volume
1116 Cast grab ID DM035-3
1124 after video recon of entire polygon - and 3 grabs attempt with
no recovery we have determined polygon is MIXED coarse
no areas of sampable sand. For primary DM035 and alts
1130 boat to DM061 on Station
1135 Cast grab ID DM061-1-CHEM Accepted
appear to be sandy - weeds. - to shore for
1145 Collect AVS sample ID DM061-SE-1-101219
add remaining volume to tub for composite
1158 Cast Grab ID DM061-2 Rejected overfilled
~~1216~~ thick layer of mud - vegetation
1215 Cast Grabs ID DM061-3 Rejected overfilled
difficulty find patch of sand with out weeds/mud.
1241 Cast Grab ID DM061-4 rejected insufficient volume
photo of crust of slag. Slag crust is preventing
grab from penetration.
Homogenized sample from first grab. Fill chemistry
jar according to Work plan. 1. Total metals/mercury/TOC
2. Grain size
3. BSEM

Weighing: 5.6 kg sediment (89%), 0.7 gravel 11% 6.3
small sampleable area in field of weeds. aquatic vegetation
Fill Bioassay: 0.75 gallon 11.4 lb 5 liter bucket
Not enough sample to fill organic or 5 gal bucket
1330 Depart Equip - ~~All Primary locations attempted~~ on
Lunch Break

Scale: 1 square = _____

10-12-19 DM-

1346 on shore near station 025
Alternate Location for sample station DM025

1353 Cast grab DM025-1 rejected overfilled - over penetrated adjusting legs of grab for proper depth

1427 cast 4 grab DM025-2-CHEM Accepted
add to Location tub

1444 cast grab DM025-3-CHEM Accepted
~~Homogenize~~ collective AVS from sample

1448 AVS ID DM025-SE-1-101219

Homogenized Sample - Fill remaining jars Chemistry
Bioassay 2.0 gal sediment 28.8 lbs
TX 5.0 gal sediment 72.2 lbs

EPA SPLA ID DM025-SE-3-101219

~~1514~~ on 2.0 gal sediment 28.8 lbs

1514 move to station for BMI sample

1515 cast grab ID: DM025-4

1520 BMI Sample ID: DM025-BMI-1-101219

3.0 gallon sediment 61.8 lbs

Rinsate collected from Hamon grabs

1550 Rinsate sample ID: DM025-SE-4-101219
using small bowl, funnel, and pump
sample represents equipment used at all sample locations this week:
DM002, DM018, DM016, DM015, DM010, DM008
DM061, DM025.

1552 Boat to Launch

1617 at North 4 Boat Launch - breakdown equipment transfer Sampler to vehicle.

1730 transfer samples to Waterhare

10/12/19

Scale: 1 square = _____

10.14.19

Cayuse Northpoint Boat Launch - DeArmons Eddy. 1287.7 ft
0930 crew meeting: new staff rotation: safety meeting
cold going through crew! Load equipment
Cayuse Crew: Coxswain: Mike Duffield Ed Stone.
Adcon: Stan Holmes, Colin Meyer, NCE - Payne Brown
EPA Maureen Gauthier Harbor grab on Cayuse
0949 Load Equipment on boat :: 43°F calm ⇒ 56°F
Plan to go to DM020 ~~Alt (53)~~ Alt ~~for~~ DM051 ~~37~~ 35
0956 leave boat launch - Cayuse collected GPS control point.
1033 Boat maintenance leave boat launch to DME.
1050 At lower eddy - beach setup grabs, cabin/ship on fire
opposite shore intense smoke blanket flame! no winds.
1111 on station DM020 (Alt for DM051) Harbor grab 10x25 lbs waypts
1120 cast grab ID DM020-1-CHEM ~4 m spoke up
Accepted overlying water - video recovery good
1125 Collect AVS Sample DM020-SE-1-101419
transfer material from grabs to lexan tubes
1137 cast grab ID DM020-2 - CHEM - Accepted
transfer material from grab to lexan tub
1148 Cast grab ID DM020-3-CHEM - Accepted
transfer material from grab to lexan tubs - homogenize
on shore to process chemistry - bioassay. - Fill chem jars
1209 Bioassay buckets: 2.14 gal - 30.2 lbs
5 gal - 68.4 lbs
1218 cast grabs ID - DM020-4 Rejected low volume
1224 cast grab ID-DM020-5 - BMI Accepted
1227 collect BMI Sample DM020-BMI-1-101419
Fill BM. Bucket: 2.25 gal sediment 45.6 lbs
1240 Sampling Complete at DM020 alt for DM051
1249 lunch
1302 ID Station DM019 - (Alternate for ~~DM051~~ DM033)
1303 cast grab ID DM020-1 Rejected: overfilled.
aquatic vegetation mat on surface collected in grab
vegetation scattered search for bare area
1314 cast grab ID DM020-2 Rejected over penetrated
vegetation in sample - grass
1324 cast grab ID DM020-3-CHEM Accepted
1326 Collect Sample AVS DM020-SE-1-101419
1336 Cast grab ID DM019-4
Rejected sediment on top of sampler lid

Scale: 1 square = _____

10/14/19

1342 cast grab ID DM019-5-CHEM Accepted.
add material to Lexan tub - Homogenize
Fill chemistry jars. bioassay buckets 2.2 gallons 29.2 lbs
5.2 gallons 74.0 lbs

Move to Station for BM1 grab
1410 cast grab ID DM019-6-BM1 Accepted.
1414 collected sample BM1 DM019-BM1-1-101419
Buckets - 2 buckets used 1.6 gallons 33.0 lbs
for BM1 2.0 gallons 41.8 lbs
1440 complete sampling to DM019 alt for DM033
1452 at station DM027 (alt for DM040) ~ 5.3 m
1454 cast grab ID DM027-1-CHEM Accepted.
1500 Collect AVS sample ID: DM027-SE-1-101419
add material to lexan tub - boat to station.
1507 Cast grabs ID - DM027-2-CHEM Accepted
add material to lexan tub - homogenized fill remaining chem.
Fill bioassay buckets. 2.14 gallons 31.6 lbs
5 gallons 72 lbs
1531 cast BM1 grab ID: DM027-3-BM1 Accepted
1535 add to BM1 sample ID: DM027-BM1-1-101419
Filled two Yellow buckets: 1.8 gallons 34.2 lbs
2.5 gallons 48.0 lbs
1550 Complete sampling for DM027 alt for DM040
1552 Breakdown. clean up sampling equipment.
1611 to Boat launch
1619 off boat Northport boat launch. unload equipment
Samples transferred to vehicle
1730 At warehouse transfer samples to warehouse

Rite in the Rain

page 74
Cayuse

10.15.19

0800 · Safety Meeting: Crew Meeting this (TECH) . Discuss wildlife push down to Ords because of hunting, school buses
0850 load equipment, coordinate boats, gates
Cayuse: Gravity Mike Duffield, Ed Shan, AECOM: STU Holmes Glen Mejia WCE Ragan Drivel Spokane Tribe: Tamara Knudson 287.7 ft
0907 leave Nordport boat launch. Weather 39°F predict 56°F
0907 Deploy equipment on Show at lower eddy - Deadmans Eddy A81 using small Van Veen with 150 lbs of added weight, bald eagle
0944 on station DM024 (alt DM048) plan to chem dup | EPA TX split?
0946 cast grab ID: DM024-1-CHEM successful grab accepted
0950 ~~collect AVS primary sample ID: DM025-SE-1-101519~~ GM
~~collect AVS duplicate sample ID: DM025-SE-2-101519~~ GM.
added material to lessen tub - decided to collect from next grab
1003 cast grab ID DM024-2-CHEM Accepted.
1005 · collect SE AVS primary sample ID DM024-SE-1-101519 Time 0950
collect SE AVS duplicate Sample ID DM024_SE-2-101519 Time 1005
~~1030 collect 1030 EPA onboard to observe EPA TX split~~
~~EPA observer Ellie A~~ on
1038 Fill primary and duplicate sediment chemistry jars
Note: Station DM024 is alternate for DM048
1040 EPA observer on board to observe ~~EPA TX split~~
EPA: Ellie Sample TX split: DM024-SE-3-101519 0950
Bioassay bucket filled 2.14 gals 29.2 (EPA)
primary = 2.14 gals 29.8 (primary)
primary = 5.2 gals 67.8 (primary)
1054 complete chemistry - bioassay attempt BMI grabs
1058 cast BMI grab DM024-3-BMI accepted
1102 on Shoe to sample BMI buckets (chironomid) (water mites)
1105 fill BMI Sample DM024-BMI-1-101519 time 1105
two Yellow buckets 2.9 gallons 56.0 lbs.
2.9 gallons 56.4 lbs.
1131 Cast grab ID: DM024-4 . Rejected
incomplete closure - wood in jaws
1136 cast grab ID DM024-5-BMI Accepted
snail shell, limpets observed in grab.
1140 collected Duplicate BMI DM024-BMI-2-101519 1140
fill two buckets 2.6 gallons 48.6
2.7 gallons 52.6 lbs
1459 complete sampling at DM024 (alt DM048)

Scale: 1 square = _____

Cayuse

101519

1243 cast grab DM007 alt for DM066
1247 cast time DM007-1-CHEM Accepted
1252 to shore. process ans sample [DM007-SE-1-101519]
then add rinsing grab to lexan tub
1314 cast grab DM007-2-CHEM accepted.
added grab to lexan tub for homogenization
Fill rinsing chemistry jars, bioassays 2.14 gal; 27.0 lbs.
(5.2 gal; 67.2 lbs.
1338 cast grab for BMI, DM007-3-BMI Accepted
collect BMI sample ID. [DM007-BMI-1-101519]
Fill two yellow buckets 2.9 gallon 54.6 lbs.
2.9 gallon 55.8 lbs
Also note: Van Veen is small version on Cayuse (also called medium power grab)
1407 Sampling complete for DM007 (alt DM066)
1426 at station DM044 4 metres
1427 cast grab DM044-1 Rejected Attempt #1
insufficient volume, silts with slag and fine sand.
≤ 1 in penetration
1436 cast grab DM044-2 Rejected. Attempt #2
hard crust on surface insufficient penetration
only area of sand appears to be mound / slope
grab unable to stay upright, surface crust dense
brown crust layer with slag
1453 cast grab DM044-3 Rejected Attempt #3 insufficient penetration
small area of sand in mostly cobble mixed coarse
polygons. unable to penetrate thick crust of likely
slag. ~~optional~~ freeze grabs maybe potentially useful
1505 Discussion option with Jenny. move to locations that
previously sampled this morning. off station.
1609 station DM1-B5-NRT
1619 grab DM1-B5-NRT-1 Rejected insufficient
penetration ~ 2", low volume, incomplete closure.
1624 cast grab DM1-B5-NRT-2-CHEM Accepted.
1628 sand / mud. collect ~~ans~~ 98 Sample: [1-B5-NRT-SE-101519] 1528
Bioassay buckets filled 15 gallons, 19.6 lbs
2.9 gallons, 45.8 lbs
1600 cast grab 1-B5-NRT-3-BM1 [1-B5-NRT-SE-1-101519]
1607 collect BMI sample ID [1-B5-NRT-BMI-1-101519] 1607
2 buckets, zooplankton present. 2.7 gallon 48.2 lbs
1709 samples transfered to vehicle 2.7 gallon 48.0 lbs
1759 samples transfered to warehouse

101519

Scale: 1 square = _____
Rite in the Rain

10.16.2019

Cayuse

0800 crews meet at Northport boat launch for safety meeting plan day. A little warmer today, put chance of rain. Also changing grabs later different hazards. Roadways may be a little slight at end of day take your time getting home
0838 LOAD equipment on boat, have dry ice on Cayuse today Cayuse starting with Van Veen. then freeze grabs later
0849 leave boat launch - collect
0857 at Deadmans Eddy A01 setup equipment to station 1-B6-NRT using Van Veen for grab of sample eastern sand in lower eddy
Cayuse crew: Grant - Mike Driscoll, Ed Sloan, AECOM: Stan Tulmo Glen Meyer WCG - Roger - Spokane Tribe Tamara Knudsen
Water level 1287.5 ft. Weather 42°F & cloudy predict 62°F rain (60%)
0904 Decon station 1-B6-NRT-CHEM Accepted ~ 0.5 m
0912 collect ~~ARS~~ SED Sample: 1-B6-NRT-SE-1-101619
Stratification sand on sand fine grain over medium add sample to lexan bucket, enough material for chem/bioassay homogenize - fill jars place on ice fill bioassay - 2.14 gallons 28.4 lbs, 5 gal 70.8 lbs
0949 cast grabs for BMI Sample: 1-B6-NRT-2-BMI Accepted
fill two Yellow buckets BMI Sample 1-B6-NRT-BMI-1-101619
Note van veen smaller unit on cayuse (medium power grab)
2.7 gallons 52.6 lbs 2.5 gallons 50.2 lbs
1016 Leave station 1-B6-NRT to ~~DM066~~ DM061
1023 on station DM061 ~ 3m revisit with Van Veen collected sample before with Hamon
1026 lowering video reem - transect.
1030 cast grab ID DM061-5-BMI accepted
lots of aquatic vegetation, cobble, isopod, amphipods observed
Collect BMI Sample DM061-BMI-1-101619 1035
isopods amphipods observed elodea vegetation. silty fine sand
2.6 gal 44.4 lbs and 2.5 gals 44.0 lbs
1105 finish sampling rain starting 40°F
1118 to boat launch to change Van veen to freeze grab
1128 at Northport boat launch change grabs
1246 freeze grabs on leave launch boat to DM044
1257 at station DM044 attempt with freeze grab
cast grab DM044-4 - ~~CHEM~~ BMI ~~accepted~~
1327 Freeze grab w/ hammer however hammer not engaged.
1328 pulled up grab. pour off method.

Scale: 1 square = _____

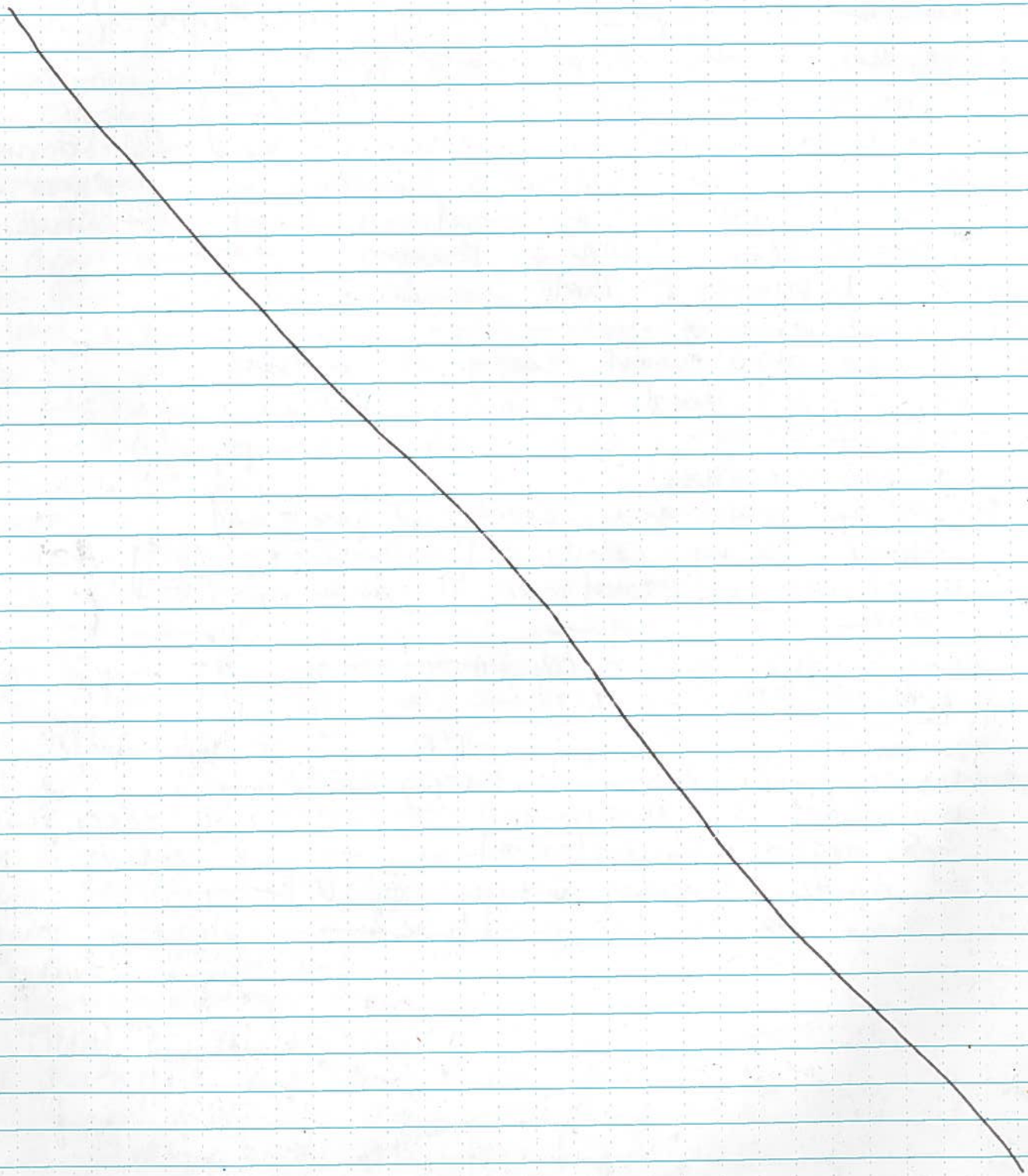
10 16 19

1349 thawing sample with hot water on top of grab after attempt
as sample is thawing. set up freeze for attempt #5
1420 cast grab DM044-5-BM1 Attempt #5
7 minutes on bottom. pulled up grab. minimal material need more material attempt another grab.
1439 DM044-6-BM1 cast grab attempt #6
1441 on bottom release methanol - hold for 8 minutes
freeze grab not flush with bottom only spike able to pull up material. difficult for full penetration. samples thawing, prepare
1521 grab ID DM044-7-BM1 Accepted.
1525 release methanol
1536 pull up grab - good recovery of material
attempt #8 need for more volume.
1602 DM044-8-BM1 cast grab Accepted.
1610 release methanol
1618 pull up grab. good recovery of material
1625 sample thawing - collect ID: DM044-SE-1-101619 1625
Fill priority jar: Total Metals, TOC, grain size, BSEM, organics enough volume to fill all chemistry
BM1 sample bucket ID: ~~DM044-SE~~
DM044-BM1-1-101619 Time 1615
For BM1 sample combined all 5, 6, 7, & BM1.
Sample partial frozen to keep inactivants as intact as possible.
~2.5 gallon of material.
1655 at dock. transfer sample to vehicle
1682 transfer sample to warehouse

10.16.19

Scale: 1 square = _____

SEDIMENT CAYUSE LOG BOOK. CONTINUED ON LOG BOOK #6



10-17-19

Scale: 1 square =

#6

SEDIMENT
CAYUSE

Rite in the Rain®
ALL-WEATHER
UNIVERSAL
№ 373-MX

WorkCare
MAKING HEALTH COUNT

DCS Americas
Employee Hotline #

1-800-348-5046

AECOM

MADE IN TACOMA
— SINCE 1916 —
Rite in the Rain®
— DEFYING MOTHER NATURE —

Name

Address

Phone

Email

Projects 2019 Phase 3 Sediment Study
Upper Columbia River
Logbook #6

AECOM

Jennifer Pretare, PhD
Senior Biologist
Project Manager

AECOM
1111 3rd Avenue
Suite 1600
Seattle, WA 98101

206 438 2700 tel
206 438 2175 direct
510 681 6401 mobile
866 496 5288 fax
jennifer.pretare@aecom.com

aecom.com

MADE USA
RITE GREEN
Archival paper
RiteintheRain.com

17 OCTOBER 2019 RESEARCH VESSEL CAYUSE
PHASE 3 SEDIMENT STUDY -
WEATHER: 47°F cloudy 30% chance of RAIN
WINDS 4 mph from South prediction: high of 51°
AOI: DEADMANS EDDY meet at Northport Boat Launch
CAYUSE CREW: Gravity. Mike Duffield Ed Sloan
AECOM: Stu Holmes Glen Mejia WCE Ragan Driver
Spokane Tribe Tamara Knudson
0800 CAYUSE AND TIETON CREWS Meeting - SAFETY - Logistics
Topics: Deer road, school bus, near grab, swifter water
plan if multiple overboard - form group easier for rescue
CAYUSE GEARED up with GRABS, FREEZE GRABS
0857 Load up equipment dry ice hazards
Plan to go to Lower Eddy DM014 - fly freeze grab
0905 leave Northport Boat Launch. and attempt to land.
grab without tipping over before pack with dry ice.
0912 on shore in deadmans eddy setup equipment
0928 at station DM014-SV-1(0935) video recon. ~10m.
recon DM014-SV-2(0938) and DM014-SV-3(0941)
0937 DM014-SV-1 video recon area of mixed coarse
in vicinity of DM014 logged 3 sediment videos all
showed coarse material: fine gravel to small cobbles,
mostly coarse gravel, swift current, made no
attempts due to incorrect facies due to absence
of sand.
plan to look for alternates in downriver portion
of polygon where current maybe less swift
0949 boat to DM004
0951 deploy camera - grabs - current swifter ~6m
explored downriver portion of polygon three videos at DM004
and DM005, conducted transect recon between point
DM004 - DM005. only area with finer substrate
DM004-SV-2 one area of sand (<20% sand reground
from mc's sediment facies. brought sample up
for photo DM006. Took photos for DM005 before
DM004
1017 boat to DM006 - coring video for DM006
DM006-SV-1 video, interstitial sand under well-rounded
coarse gravel, attempt to collect from location
setting up vibratory to freeze grab

Scale: 1 square = _____

Rite in the Rain.

10-17-2019

Survey

Boat to station DM006 freeze grabs setup. Added dry ice, gasket, methanol

1051 cast grab ID: DM006-1 Rejected

1054 release methanol, boat pistoned in swift water. pulled dragged on boat, boat 180 turn recovery. no recovery. on grabs, material lost or none frozen grab came up with no volume.

1105 on shore repack freeze grabs.
note: weight of grab is 175 lbs

1121 cast grab ID DM006-2 Rejected
no material recovered on freeze grabs based on video recon and 2 attempts determined DM006 refusal.

1135 to shore lunch break, setup equipment. Plan next station.

223 boat to DM032

1229 on station video recon attempt to stod grabs conducted 2 video recons DM006-SV-1, DM006-SV-2 gravel, small cobbles with apparent interstitial space with fines, pack freezed grabs for attempt to collect material, note grab was tilting uneven terrain, no cloud of fines when grabs landed.

1303 cast freeze grabs ID ~~DM00~~ DM032-1
rejected - no recovery on freeze grabs able to keep grabs on surface for 7minutes but no material frozen on grabs, penetration not achieved ~~boat down to~~ refusal at DM032 move

330 boat to station DM039, pack sampler with dry ice, prep for deploy.

335 cast grab ID DM039-1-CHEM accepted

348 recover material, to shore for processing.
thawing material, removed 4" cobbles

1410 sample ID | DM039-SE-1-101719 | time 1410

need another grab for BMI, pack grabs

1427 cast grab ID DM039-2-BMI accepted
used vibratory to penetrate

Scale: 1 square =

Cayuse

1445 BMI sample ID: DM039-BMI-1-101719
sample thawing good recovery of material
for sediment chemistry collected metals, grain size, and 1 per organics.
AVS / BSE not collected.

1514 cast grab ID DM039-3-BMI accepted good recovery of material. combine grab with attempt #2, thawing

1550 volume ~~taken~~ in ocean tub on way back to boat launch.

1606 sieving sample in BMI buckets. while tied up to dock at Northport.
1.3 gallon of sediment, taped and rolled.

1615 transfer samples from cayuse to vehicle.

1809 transfer to samples to warehouse

10-17-19

Scale: 1 square = _____

Rite in the Rain

Page 81
Cayuse

UCR Phase 3 Sediment Study
Weather: Partly Cloudy, 50°F

10-18-2019

0755 Sky Holmes (logbook), Anthony Palmieri (Geo), Ragan Driver (Archy) at Northport Boat launch
0800 Conducting health + safety meeting w/ full crew (RV Tieton, Eagle-1, CNI Safety boat). See tailgate form for full list of attendees.
0830 Loading boats/equipment. RV Cayuse prepping.
0851 RV Cayuse Crew on-board
AECOM: S. Holmes, R. Driver, A. Palmieri
Gravity: Mike Duffield (Captain), Ed Sloan (Deckhand).
0857 AP calls Jenny Pierce about additional attempts at DM032 and DM006. Agreement re: number of attempts if obvious collection not possible. AP will call Marilyn Gauthier (Jacobs) to confirm this approach as it is in agreement w/ FSP.
0911 At station DM036, prep to perform video recon.
0920 Video river bottom, able to land sampler and penetrate w/ spikes. Target facies at initial video recon from 10-8 confirmed, will load sampler w/ dry ice and attempt.
0952 Sampler (Freeze grab w/ Vibracore hammer + 175 lbs lead) deconned, sent down for attempt #1.
1001 Pulling sample onto deck. Abundant gravel, cobble with little sand adhered to sampler. Thaw and collected sample, take to back deck.
1015 Loading freeze grab for attempt #2.
1036 Attempt #2 methanol initiated
1044 Pulling sample onto deck. Similar to attempt #1. Scrape out material and thaw on back deck.
1118 Attempt #3 methanol initiated
1127 Pulling sample onto deck. Successful grab, like others w/ slightly more volume.
1140 Mixing first three attempts for composite sample. Remove cobble/gravel
1158 Dock w/ CNI-2 so Elle (Jacobs/EPA) can observe the sampling of metals split. Fill each jar w/ 50 g of sediment
1210 Filled minimum volume for grain size analysis and organics. BEM not filled due to MCS facies, AVS not filled (freeze grab), not enough mass for extra jars. Cobbles and gravels weighed.
1220 Break for lunch.
1236 Attempt #4, for BMI.
1245 Bring sample on deck. Low recovery again. Running into 4 hour on-station limit for freeze grab method per

Scale: 1 square = _____

Ethan Graham 10-18-19

Samples collected @ DM036
Sed Primary: DM036-SE-1-101819 @ 0952 Metals, Grain Size, Organics
EPA SED split: DM036-SE-3-101819 @ 0952
BMI Primary: DM036-BMI-1-101819 @ 1236

1236 Attempt #4 still thawing, AP melting sampler contents into BMI Bucket
1315 Finish processing BMI sample, heading to DM047.
1325 At station DM047. Decon freeze grab sampler. Load w/ dry ice.
1334 Attempt # 1, methanol released
1343 Pulling sample onto deck. Successful grab, correct faches.
1352 Loading sampler w/ dry ice/methanol for attempt #2.
1402 Attempt #2, methanol released.
1411 Bringing sample on-board. Success, similar to attempt #1. Attempt #1 still thawing but appears to have plenty of volume for chem/phys sample. Attempt #2 will go towards BMI.
1434 Attempt #3, methanol released
1443 Sample on board, similar to #1 and #2, success.
1455 Thawing all samples. Second and third attempt will go into BMI. Will sieve attempt #1 through 5mm sieves.
Samples collected @ DM047
Sed Primary: DM047-SE-1-101819 @ 1334
DM047-BMI-1-101819 @ 1434
1530 Samples processed, decoming equipment.
1547 Heading to video recon DM031
1601 Commence video recon attempts. Perform total of 5 sediment video captures around MCS polygon. Landed freeze grab sampler w/ vibracore each time w/ no penetration. From video it appears to possibly match target strata but upon landing sampler it is apparent that riverbottom is armored gravel + cobbles and is not sampleable. Ledgy surfaces observed in portions of polygon.
1626 Heading to Boat launch
1633 At boat launch, log GPS control point.
1638 Unloading
1645 Relinquish DME036 split sample to Jacobs
1655 Depart boat launch for warehouse.

10.18.19

Scale: 1 square = _____

Rite in the Rain

Page 83

10-18-2019

1735 Back @ warehouse
1740 Call Marilyn (Jacobs) to discuss recon attempts @ DME032 (performed yesterday) and @ DME031 today. She agreed that, based on recon, the material is not samplable and that no further attempts are necessary.

10.18.19

Scale: 1 square =

0800 Crew at Northport Boat launch.

Weather

overcast, 50°F chance of afternoon showers

0805 RV Cayuse, RV Tieton and safety boats conducting health+ safety tailgate See form for list of attendees.

0820 Loading/Launching boats.

0852 RV Cayuse crew on vessel.
AECOM: A. Palmieri (Geo), S. Holmes (Notes), R. Driver (Ardy).
Gravity: M. Duffield (Captain), E. Sloan (Deckhand)
Jacobs/EPA: M. Gauthier.

0900 Heading to DM038. Freeze grab sampler on boat.

0909 At upper eddy. Decon and prepping freeze grab sampler. DM038 is alternate for DM014. 175 lbs on sampler

0930 Attempt #1. Target facies of mixed coarse w/ sand observed in video. Initiate methanol in sampler.

0938 Pulling sampler on deck. Sample accepted. Begin processing/thawing

1038 Cast time for Attempt for BMI (Attempt #2).

1049 Sampler on deck. less volume than attempt #1. W.I.4 thaw/process and make additional grab.

1111 DM038 attempt #3. Methanol released.

1120 Sample on deck, successful grab. same material as #1 and 2. Begin thawing.

1145 Combining attempt #2 and 3 for BMI sample. Makes 1.1 gal. Rinse and dispose few cobbles in sample. Add ethanol.

Samples collected at DM038
Sed Primary: DM038-SE-1-101919 @ 0930
BMI Primary: DM038-BMI-1-101919 @ 1111
Rinsate (from freeze grab sampler): DM038-BMI-4-101919 @ 1210

1210 Collected rinsate blank from decontaminated freeze grab sampler stainless steel bottom using DI water. Filled metals jar.
Note: All jars filled from sediment sample due to sufficient volume of sand.

1230 M. Gauthier transferring to nearshore boat.

1241 Heading to Northport Boat launch.

1250 At boat launch, begin unloading vessel.

10.19.19

Page 85

1315 Depart Northport boat launch.

1401 Arrive warehouse.

Sediment sampling Complete. End of Logbook.

10-19-19

Scale: 1 square = _____

#5

Ingalls -

Sediment

Rite in the Rain®

ALL-WEATHER

UNIVERSAL

№ 373-MX

Evans A01, 16-Sept-2019, Phase 3 Sediment Study
15:26 Departure from Evans C.G. Upper Columbia Rivers
AEcom: M. Stegner, M. McCoog, B. Fletcher, ~~J. Pretare~~ (BF 9/16/19), S. Couch, S. McDaniel, ~~K. Lundmark~~ (BF 9/16/19)
Jacobs: J. Johnson; ERM: K. Lundmark
Gravity: S. Hinz, E. Rigby (vessel: Ingalls)
15:32 J. Pretare and CMA Crew transferred to Yeti vessel
Weather: Overcast, some sun breaks, some light drizzle, 62°F
(H/S Briefing prior to boarding)
(Notetaker: B. Fletcher)
16:10 Arrive EV048, Target stratum sampleable sand.
Video recon to determine if Hamon will be suitable.
16:25 Decon Hamon grab bucket/scoop and lid, spoons, scoops
16:32 Safety near miss: winch dropped Hamon with some force onto its metal base. Suspected air in hydraulic line.
16:33 Deployed Hamon into water - EV048-1
16:44 Closed scoop, Depth 96.2 ft
Easting 424638.71
Northing 5392930.60
16:50 Captain decided to abort sample to troubleshoot the hydraulic system at shore. Bucket contained black sand.
17:05 Landed vessel on shore. Captain talked to a rep and decided to install a dual counterbalance valve onto hydraulic winch apparatus for safety.
17:10 Disembarked Ingalls so captain could go get the part.
18:20 Returned to warehouse. Safety debrief.
18:45 Safety near-miss documented by M. McCoog and S. Couch.
19:17 End of day
~~19:17~~ (BF 9/16/19)

BF 9/16/19

Scale: 1 square =
Rite in the Rain

20 - September - 2019 Phase 3 Sediment Study
Upper Columbia River
Evans AOI

0730 Arrive Evans C.G. with Ingalls, Yeti, and both support boat crews. Safety tailgate.
Attendees Ingalls:
AECOM: B. Fletcher ~~(AE)~~ (BF) (Notetaker)
M. McCoog, M. Stegner
Jacobs: M. Faethiur
Gravity: S. Hinz (Captain); E. Sloan (deckhand)
0830 Depart Evans C.G. on Ingalls
0831 Control point collected: E 425066.96
N 5394272.32
0842 Arrive EV014 Target Stratum: Sampleable sand
Target Facies: Mixed fine sand
0845 Harmon in water for video recon. Difficult to see facies on video.
0857 EV014-SE-1 Rejected for poor recovery
0906 EV014-2 Rejected for poor recovery
Note: small pumphouse of riverwater on shore to W.
0928 Video recon
0935 EV014-3 Rejected for no recovery
0944 Decision to move to alternate location EV003
EV003 is in the same facies & elevation class <1220 ft
0953 On Station EV003
1002 EV003-SE-1-092019 Accepted and collected.
Seemingly ideal mFs sample
1030 Cleared for cultural; AVS collected
Dumped into lexian tub, cleared for cultural
Cobbles = Ø, Gravels = 9.0kg, Fines = 14.5kg
1121 Attempt 2 EV003-CHEM-2 Accepted!
1203 Attempt 3 EV003-3-CHEM Accepted
(GPS naming convention)
Total mass of sediment <5mm = 45.7kg (3 attempts)
Total mass of gravel = 34.5 kg
Ø Cobbles
1242 Finished filling sampling jars (6) and buckets (5gal+2.5gal)
Decon lexian tubs
Weather: Partly cloudy/sunny, light wind, 60s
5gal 4.7 gal
2.5gal 1.84 gal

Continue →

Scale: 1 square = _____

20-Sept-2019 Phase 3 Sediment Study, UCR
Ingalls vessel

1308 BMI sample retrieved from EV003, Attempt 4 accepted.
EV003-BMI-1-092019 collected into 5-gal bucket.
1335 Too much material for one BMI bucket, so scooped 1/2 into a second bucket. Added 1:1 of ethanol to both buckets. Taped and agitated.
1400 Completed EV003, 6 jars, (1) 2.5 gal + (1) 5 gal + 2 BMI buckets.
All lexian tubs, utensils, and Hamon bucket/clam Decon'ed
1407 Depart EV003 to EV026
1422 Arrived EV026
(Note: EV003 was Alternate for EV014)
1431 EV026-SE-1-092019 Attempt 1 accepted.
AVS jar filled.
1458 Attempt 2 was immediately rejected because Hamon lid was clipped in an open position
1506 Attempt 3 rejected for very poor recovery (1 tsp)
Attempt 4 rejected for very poor recovery
1525 Attemp t 5 accepted but still not enough material to sample.
1547 Attempt 6 accepted but still not enough material
1609 (BF) Attempt 7 rejected for very poor recovery
~~160918~~ Attempt 8 rejected for poor recovery
1629 Attempt 9 accepted. Filled remaining 5 jars and
2.5 gal filled w/ 1.22 gal
5 gal filled w/ 1.6 gal
1707 Attempt 10 for BMI sample rejected for no recovery
1714 Attempt 11 for BMI accepted
Siphoned through sieve. Added 1:1 ethanol to bucket.
1735 EV026-BMI-1-092019 collected, taped, and agitated.
1739 Departed EV026 for Evans C.G.
Decon lexian tubs, 5mm sieve, spoons, spatula, Hamon in transit
1753 Arrived Evans C.G. to unload.
1830 Arrived at warehouse.

9/20/19

Scale: 1 square = _____

21 - September - 2019 Phase 3 Sediment Study UCR Evans AOI

Weather: Light clouds, A+ sunny, 50s to upper 60s

0730 Safety tailgate

0836 Depart Evans campground on Ingalls vessel

0838 Control Point collected E 425068.17
N 5394274.03

Ingalls crew:
AECOM - Brian Fletcher (Notetaker)
Michaela McCloog (~~Archeologist~~ BT) (Geologist)
Michele Stegner (Archeologist)
Gravity - Shawn Hinz (Captain)
Ed Sloan (Deckhand)
Jacobs - Marilyn Gauthier (EPA observer)

0853 Arrived on station EV027
Taped a secondary dive light (flashlight) to Hamon to try to improve underwater camera visibility!
Calibrated depth gauge (Set surface water = 0)

0901 EV027-1 rejected for overflowing material in sampler. Secondary light abandoned/removed as it was affecting the primary, low-light, camera.

0919 EV027-2-CHEM Accepted.

0925 EV027-SE-1-092119 AVS collected.
Note: GPS depths were recorded in Feet. Changed to meters today. ← yesterday

0953 EV027-3-CHEM Accepted. Sieved and added to attempt 2.

1020 EV027-4-CHEM Accepted. Sieved and added to attempt 2,3
EPA split: EV027-SE-3-092119 collected. Observed by M.G. AECOM keeping custody of bioassay bucket.

1056 Decontaminated lexian tubs, scoops, spatula, table.

1110 EV027-5-BM1 Accepted but then rejected because siphoned water did not go through 250 µm sieve.

1121 EV027-6-BM1 Accepted for BM1 collection. EV027-BM1-1-092119

~~12~~ 1141 Depart EV027 for EV059

1152 Arrive at EV059

1158 EV059-1 rejected for high turbidity and low recovery

1214 EV059-2 rejected for no recovery

1220 EV059-3 rejected for no recovery

1225 Departed EV059 for EV060

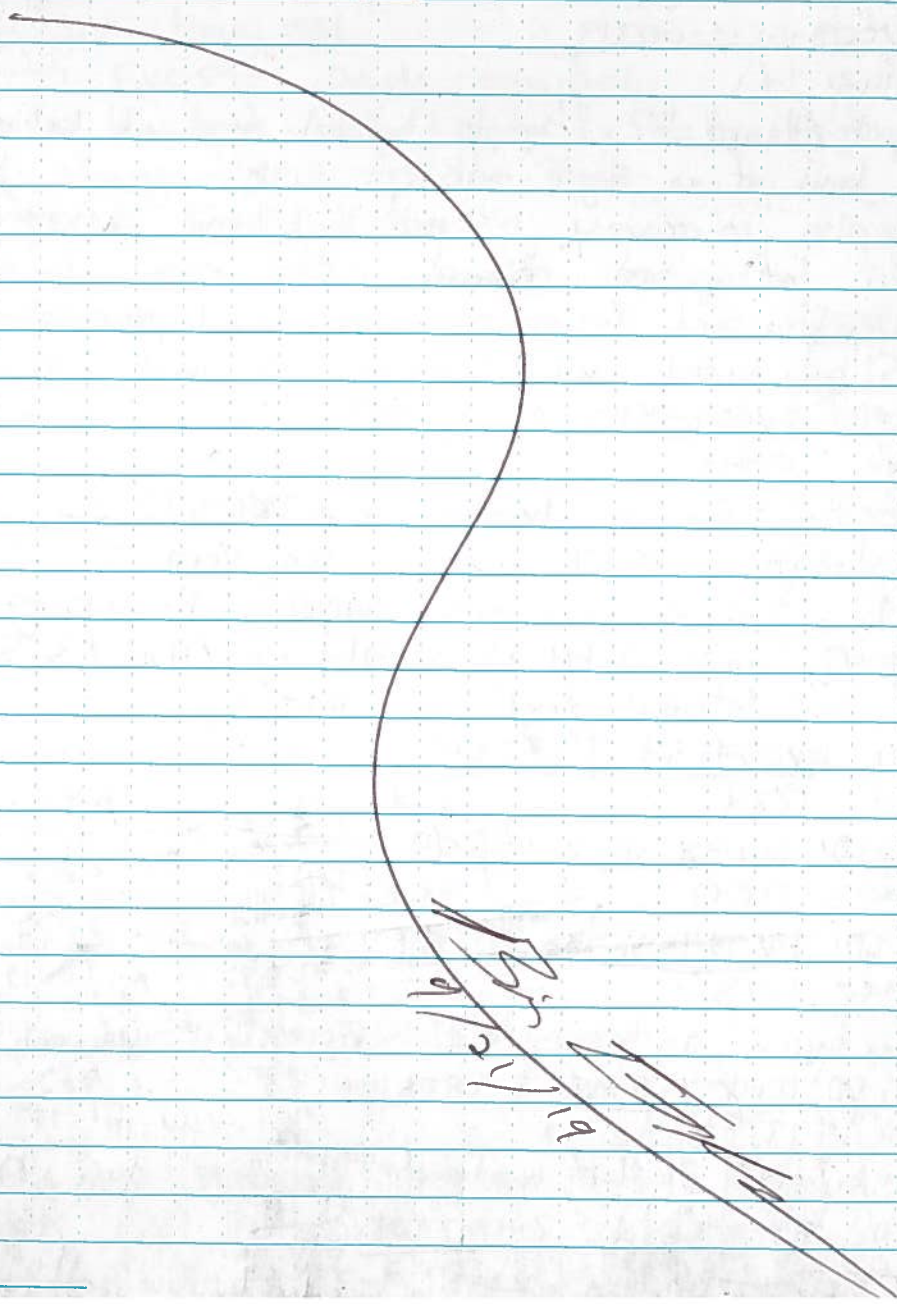
1228 Arrived EV060

next →

Scale: 1 square =

21-Sept-2019 Phase 3 Sediment Study
UCR, Evans AOI

1234	EV060-1	rejected for no recovery/penetration
1242	EV060-2	rejected for low penetration/recovery
1252	EV060-3	Accepted.
1255	EV060-SE-1-092119	AVS collected.
1314	EV060-4	Accepted. Added to attempt #3 (BF)
1325	EV060-5	Accepted. Added to " #3,4 (-CHEM) Scooped into the remaining 5 jars, + 2 gal & 5 gal buckets.
1402	EV060-6-BM1	Accepted. Collected into two 5-gal buckets due to large amount of material. Added 1:1 ethanol.
1425	Decontaminated Ekman tubs and scoopers	
1431	EV060-SE-4-092119 (at time 1225)	Blank collected.
1444	Depart EV060 for Evans C.G.	
1450	Arrive Evans C.G.	



Scale: 1 square = _____

Rite in the Rain

WEATHER: PARTLY CLOUDY UPPER 50's TO 60's

0815 - CONDUCT ASE TAILGATE MEETING, take extra time to familiarize new persons w/ vessel.
Personnel on RV Ingalls for today
AECOM: C. Pearson, M. Stegner, S. Holmes
Gaulity: J. Schut (Deckhand), P. Jenkins (Captain)
Epa/Jacobs: M. Gauthier.

0900 RV Ingalls departing dock for station EV008
0910 PJ provides vessel orientation.
0920 Arrived at station EV008
0925 Decon Van Veen sampler w/ Alconox scrub and 2X river rinse.
0943 Attempt # 1 w/ VV. Successful grab, fine-med SAND w/ abundant silica glass. Collect Phys/Chem/Bioassay all from first grab. No sieving.
ID: EV008-SE-1-092319
Time: 0943
1046 Unsuccessful grab attempt #2. Sampler had only a minisculc level of recovery, appeared to land at an angle.
1058 Attempt #3 - also no recovery. Will move back toward EV007
1105 Sampler controller battery needs replaced
1121 Attempt #4. In Sand facies as mapped, will process BMI sample. Fill 2 5 gal buckets w/ 2 gal sed. each.
Sample ID: EV008-BMI-1-092319
Time: 0943
1210 Finish processing sample, heading to EV037
1224 Arrived at station EV037, Decon Van Veen.
1228 Attempt # 1, Success, fine-med. SAND. Processing for phys/chem/bioassay and EPA chem split + ms/MSD (3 8oz metal jars), in addition to internal DUP for chem/phys
Prim. Sample ID: EV037-SE-1-092319
Prim. Sample time: 1228
SE Dup sample ID: EV037-SE-2-092319
time: 1300
EPA SE Split ID: EV037-SE-3-092319 collected 3x volume (ms/msD)
time: 1228
1332 Attempt #2, success, similar to #1. Processing primary BMI sample.
Prim. Sample ID: EV037-BMI-1-092319
time: 1228
1359 Attempt #3, success, similar material. Processing dup BMI
BMI DUP ID: EV037-BMI-2-092319, @ 1359 sample time

9-23-19

Scale: 1 square =

1425 Leaving station to decon.
1440 Heading to Evans dock to get more ethanol.
1447 At dock, get ethanol and extra BMI buckets from van.
1456 Departing dock for station EVO57. Only need BMI as the chem/phys/bioassay previously collected.
1506 At station EVO57
1510 Attempt #2. Appears to be target facies (mud). Collect BMI.
Sample ID: EVO57-BMI-1-092319
time: 1510
1538 Departing station for EVO54 Decon Van Veen.
1550 At station EVO54.
1551 Attempt #2. Success, mud as mapped. Process BMI sample as chem/phys/bioassay already collected.
Sample ID: EVO54-BMI-1-092319
time: 1551
1615 Leaving EVO54, Decon sampler.
1626 Decide to head back to boat dock. Docking sampler, securing and storing items for ride back
1635 Heading to Evans dock
1642 Back at Evans dock, unloading samples.
1700 CP, MS, SM leaving Evans for warehouse. M. Gauthier takes 3 split jars into her custody.
1715 At warehouse, unload samples, refill ethanol, etc.

Stuart Hahn 9-23-19

Scale: 1 square = _____

Rite in the Rain

0725 Stu Holmes (logbook), Michelle Stegner, Cliff Pearson at Evans. Unloading Van.

0735 RV Ingalls at dock. Pete

0740 Jacobs and CMA personell arriving
Weather: 50°F, Sunny. High of 69°F

0747 Al Thatcher at boat launch, starting Health and Safety tailgate (see tailgate form for list of attendees). Will adjust activities if sudden change in weather

0805 Team Ingalls loading onto boat:
AECOM: Stu Holmes (Bio), Cliff Pearsen (Geo), Michelle Stegner (Archy).
Gravity: Pete Jenkins (captain); Jeff Schut (deckhand).
Jacobs/EPA: Marilyn Gauthier.

0810 Heading to station EV002. Need sampling tried + TX EPA split.

0820 At station. Van Veen sampler is decomed. Loaded w/ 250 lbs lead.

0831 Attempt #1. Target facies is Sand. Material is fine-med sand w/ trace gravel (<1%), collecting in Lexan to composite, need ~9 gal due to TX split.

0850 first grab produced ample volume, do not need to attempt another for chem/phys/bioassay.
Sample ID (primary): EV002-SE-1-092419
time: 0831
Sample ID (TX split): EV002-SE-3-092419
time: 0831

0913 Attempt #2. Move sand. Processing BMI sample.
Sample ID: EV002-BMI-1-092419
time: 0831

0938 Sample collected. 3.5 gal sed. Bucket filled w/ ethanol. Leaving station to decon sampler.

0942 Heading to station EV044

0957 Arrived at station EV044 (mapped as Mud facies).

1001 Attempt #1. Matches target strata (predominately mud). Processing for chem/phys/bioassay and EPA TX split. Homogenizing w/ stainless steel blending attachment to power drill.
Sample ID (primary): EV044-SE-1-092419
time: 1001
Sample ID (TX split): EV044-SE-3-092419
time: 1001

1047 Attempt #2. Same material as #1. Processing BMI sample.
Sample ID: EV044-BMI-1-092419 collected in 2 5 gal buckets
time: 1001

9-24-19

9-24-19 Phase 3 Sediment Study, UCR P.9

1128 Departing station. Decon sampler.
1134 At station EV048
1137 Attempt # 1. Matches target facies of sand. Processing for chem/phys/bioassay sample.
Sample ID: EV048-SE-1-092419
time: 1137
1217 Attempt #2. Success, matches target facies. Process BMI
Sample ID: EV048-BMI-1-092419
time: ~~1137~~ SH 9-24-19 1217
Sample split into two BMI buckets to enable additional ethanol
1253 Departing station. Decon Van Veen.
1258 Arrived at station EV051
1300 Attempt #1. Target facies is Sand. Successful grab. Appears to be target facies. Motoring w/ sample aboard to Evans Dock to meet Denise Yee. She will take some of our collected samples to warehouse and provide additional BMI buckets.
1312 At Evans Dock. Load collected samples into Denise Yee's car. She gives us empty bioassay buckets.
1325 Breaking for lunch.
1335 Processing EV051 chem/phys/bioassay sample
Sample ID: EV051-SE-1-092419
time: 1300
1356 Leaving Evans Dock, to EV051 for BMI sample.
1406 Back at EV051
1410 Attempt #2. Sand. Processing BMI sample
Sample ID: EV051-BMI-1-092419
time: 1300
1437 Leaving station. Decon Van Veen.
1439 Heading to EV055, alternate for EV058.
1441 SH notes that EV055 is not in same elev. class as EV058. Change target to EV062 (sand).
1448 At station EV062
1449 Attempt video recon. Observe large gravel / small cobble w/ little sand.
1449 Grab attempt #1, rock in jaws, lost fines. Many small cobbles.
1506 Grab attempt #2. Jaws closed, but 3.5" mud w/ vegetation (wrong facies).
1521 Attempt video recon. Observe large gravel/small cobble w/ little sand.
1528 Troubleshooting camera line, it is poking out of umbilical.
1540 Heading to shore at Evans Dock. Gravity needs to perform preventative maintenance and refuel.
1545 At Evans Dock. Performing GPS control point.

Scale: 1 square = _____ Stuart Helmer 9-24-19

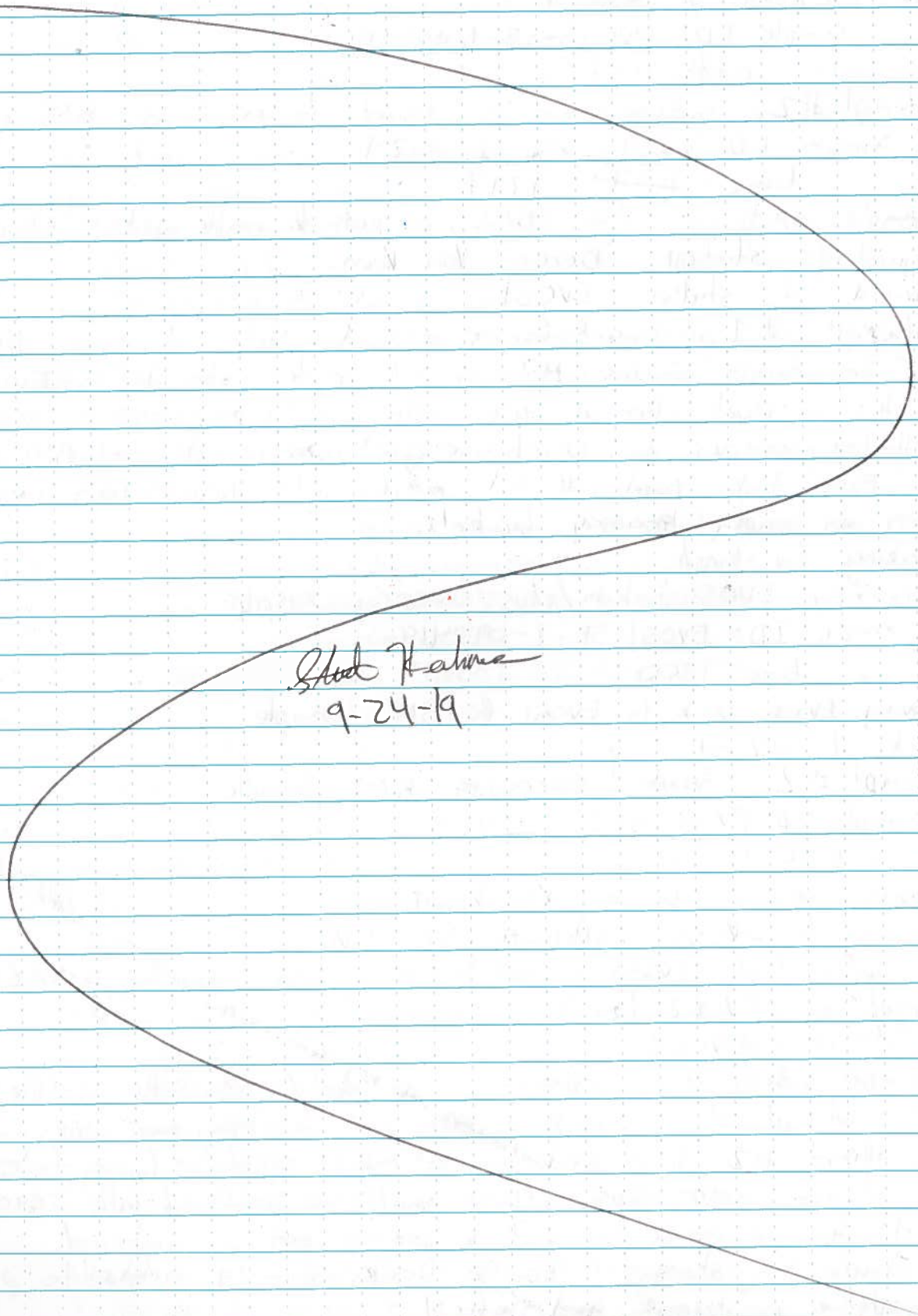
Rite in the Rain

9-24-19 Phase 3 Sediment Study, UCR P.10

1555 Unloading boat.

1602 SH, MS, CP leaving Evans for warehouse.

1620 Crew at warehouse. Unload + prep for next day.



Shad Kahma
9-24-19

Scale: 1 square =

9-25-19 Phase 3 Sediment Study, UCR

0715 Stu Holmes (logbook), Michelle Stegner, Cliff Pearson at Evans campground. Brendan Dowling at parking lot, he is rep. for Ecology. Michelle providing cultural sensitivity training.

0735 Health and safety tailgate w/ all Evans boat crews. See tailgate form for entire list of attendees. Be careful loading from dock as morning temps decrease.

0755 Team RV Ingalls in water:
AECOM: S. Holmes, C Pearson (Geo), M. Stegner (Archy).
Gravity: P. Jenkins (captain), Jeff Schutt (deckhand).
Jacobs/EPA: Marilyn Gauthier
Ecology: Brendan Dowling

0807 Arrived at station EV065. sampler is decon'ed w/ alconox → river rinse x2. Using Van Veen w/ 250 lbs lead added.

0816 Attempt #2 (#1 ~~was~~ previously att. w/ Hexmon). Matches target facies of sampleable sand. Collecting sed duplicate.
Sample ID (Primary): EV065-SE-1-092519
time: 0816
Sample ID (Duplicate): EV065-SE-2-092519
time: 0855

~~0857~~

0857 Attempt #3. Success, similar material. Processing BMI sample
Sample ID (Primary): EV065-BMI-1-092519
time: 0816

0921 Leaving station, decon Van Veen.

0923 Heading to EV066 (alt for EV067).

0925 At station EV066 (Alt for 067)

0928 Attempt # 1. Matches target facies (sand). Processing chem/phys/bioassay sample. Video recorded using HD60 Video recorde video also recorded at station EV065 w/ 2nd attempt.
Sample ID: EV066-SE-1-092519
time: 0928

1006 Attempt #2. Same as 1. Processing BMI sample.
Sample ID: EV066-BMI-092519
time: 0928

1035 Departing station. Decon Van Veen.

1045 At station EV069

1049 Attempt # 1. Target facies of sand observed. Processing for chem/phys/bioassay and EPA TX split samples
Sample ID (primary): EV069-SE-1-092519
Sample ID (EPA TX split): EV069-SE-3-092519
time: 1049

Stuart Holmes 9-25-19

Scale: 1 square = _____

Rite in the Rain

9-25-19 Phase 3 Sediment Study, UCR

1128 Attempt #2. Same as #1. Process for BMI sample.
Sample ID (primary): EV069-BMI-1-092519
time: 1049

1158 Attempt #3. Success. Processing for BMI Dup.
Sample ID (dup): EV069-BMI-2-092519
time: 1215

1217 Finished processing sample. Heading to Evans dock to unload collected samples and recieve additional ethanol from Dave Lewis.

1220 At dock. Transfer samples to Dave Lewis.

1232 Breaking for lunch.

1257 Heading to station EV074

1308 Sampler deconned. At station.

1310 Attempt #1. Unsuccessful. Cobbles in sampler w/ washed out fines.

1319 Attempt #2. Unsuccessful. Must be thin layer of sand on top of cobbles

1324 Sediment video. Appears same as first 2 attempts. No grab. Very unlikely that there is material that can be collected in this facies polygon above 1220 ft that.

1332 Leaving station. Heading to station EV046.

1402 At station. cannot get boat close enough to safely inhabit narrow sand polygon near shore. Michelle Stegner on phone w/ Jenny P. Jenny has spoken w/ QAPP lead Kerin L. and indicated we should collect additional sampleable sand locations regardless of elevation class. We have collected 18 out of 21 sampleable sand samples. The three remaining primary locations (EV062, EV058 and EV046) have been ruled out from previous attempts / video recon. We are being told to go to another station w/ Van Veen.

1435 At station EV071. Will attempt as alternate for EV062

1442 Attempt #1. Cobble stuck in jaws. Moving west for second attempt to find sand.

1453 Attempt #2. Successful grab, it is sand. Processing for chem/phys/bioassay sample.
Sample ID: EV071-SE-1-092519
time: 1453

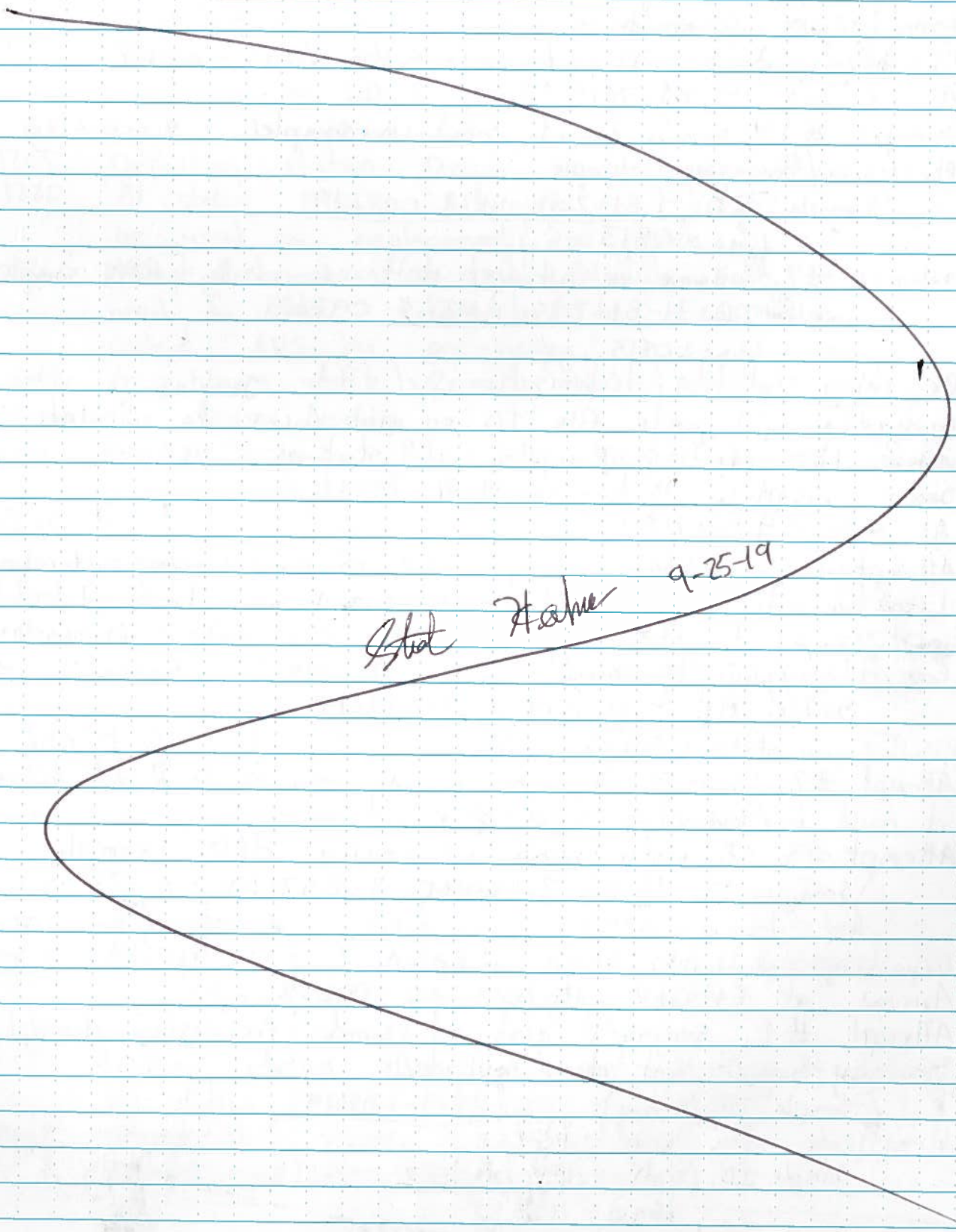
1529 Attempt #3. Successful grab. Sand. Processing for BMI
Sample ID: EV071-BMI-1-092519
time: 1453

Stat Holmes 9-25-19

Scale: 1 square = _____

9-25-19 Phase 3 Sediment Study, UCR

1550 Done processing sample. Heading to Evans dock.
1558 At Evans dock. Pete logged control point for GPS during equipment change-out at 1225.
1610 Unloading equipment.
1615 AECOM personnel heading to warehouse.
1637 At warehouse.



Scale: 1 square = _____

9-26-19 Phase 3 Sediment Study, UCR

0730 S. Holmes (logbook), M. Stegner (archy), Cliff Pearson (Geo) at Evans Boat Launch.
Weather: Light Rain, 58°F, clearing up throughout day.

0735 Conduct safety tailgate w/ team Yeti and team Ingalls. See tailgate form for entire list of attendees. Be aware of slippery surfaces on docks and boats.

0755 Team Ingalls on boat

0805 Departing dock. Decontaminate Van Veen sampler

0810 At station 4-B1-2019

0813 Attempt #1. Sand is target. Sand in sampler. Processing phys/chem/bioassay sample.
Sample ID: 4-B1-2019-SE-1-092619
time: 0813

0850 Attempt #2. Same as attempt #1. Processing BMI sample.
Sample ID: 4-B1-2019-BMI-1-092619
time: 0813

0920 Departing station. Conversation w/ Pete Jenkins re: video captures. Will write file ID on grab form to correlate videos to specific attempts at stations.

0930 Decon sampler. Heading to 4-B6-2019.

0935 At station 4-B6-2019.

0942 Attempt #1. Sampler initially landed on boulder/uneven surface and tilted on side. Pete moved sampler up and over ~1m. It landed evenly on sand. Close jaws. Sample is good. Processing for chem/phys/bioassay.
Sample ID: 4-B6-2019-SE-1-092619
time: 0942

1018 Attempt #2. Jaws slightly open, allowing water to drain out before it could be siphoned to retain biota.

1027 Attempt #3. Successful grab. Processing BMI sample.
Sample ID: 4-B6-2019-BMI-1-092619
time: 0942

1050 Departing station. Decon sampler.

1058 Arrived at EV001. Alternate for EV058.

1103 Attempt #1. Successful grab of sand. Processing chem/phys/bioassay sample and chem duplicate
Sample ID (Primary): EV001-SE-1-092619
time: 1103
Sample ID (dup): EV001-SE-2-092619
time: 1133

Scale: 1 square =

9-26-19

9/26/19 Phase 3 Sediment Study, UCR

1130 Discussion w/ M. Gauthier. Revising station EV071 to be alternate for EV053, NOT EV062.

Team Ingalls:

AECOM: S. Holmes, M. Stegner, G. Pearson

Gravity: P. Jenkins (Captain), J. Schut (Deckhand).

Jacobs/EPA: M. Gauthier

Weather: Sun, 60's No more rain forecasted for rest of day

1142 Attempt #2. Same as #1. Processing for BMI sample.

Sample ID: EV001-BMI-1-092619

time: 1103

1205 Departing station. Decon sampler while heading to EV052

1220 At station EV052. Alternate for EV062 – will need to be used as replacement PW split.

1226 Attempt #1. Successful grab. Primarily sand w/ ~5 gravel. Will need to sieve. Taking boat to Evans dock while we collect AVS jar pre-sieving.

1240 At Evans dock. Remove collected buckets from boat, give to Dave Lewis.

1248 Begin sieving. Pre sieve weight measured @ 43.9 kg. Gravels measured @ 1.3 kg.

1250 Text from Jenny Pretare. Acknowledges preparation of facies elevation alternate change request, which has been discussed on board w/ M. Gauthier. Since there are no suitable alternates for >1220 ft locations EV058, EV062, and EV046, we are collecting alternates at three locations <1220 ft to replace them.

1337 Finish processing sample. Heading back to EV052 for BMI grab.

Sample ID: EV052-SE-1-092619

time: 1226

1348 Back at station EV052

1358 Attempt #2. Stick in jaws, sample rejected.

1405 Attempt #3. Successful grab. Sand. Processing BMI sample.

Sample ID: EV052-BMI-1-092619

time: 1226

1429 Leaving station. Decon sampler. Heading to EV072.

1444 At station EV072. Alternate for EV046.

1449 Attempt #1. Success, sand. Processing for phys/chem/bioassay primary and chem duplicate samples.

Scale: 1 square = _____

Stat Holmes 9-26-19

Rite in the Rain

9-26-19

Phase 3 Sediment Study, UCR

1449 Sample ID (Primary): EV072-SE-1-092619
time: 1449
Sample ID (Dup,Sed): EV072-SE-2-092619
time: 1520

1521 Attempt #2. Same as #1. Processing BMI sample.
Sample ID: EV072-BMI-1-092619
time: 1449

1545 Leaving station for Evans Dock. Decon the Van Veen to prep for rinsate.

1554 At dock, metals poly bottle has been removed from boat w/ split lid. All parties agree to convene at Gravity dock in Kettle Falls for rinsate collection

1612 Departing for warehouse.

1629 At warehouse. SH grabbing rinsate bottle. SH to Kettle Falls marina to meet. M. Gauthier and Pete and Jeff S. (Gravity) to collect rinsate.

1640 At Kettle Falls Marina. M. Gauthier present. Van Veen aboard RV Ingalls is again deconned. Prep rinsate

1650 Collected EV072-BMI-4-092619

1656 Heading to warehouse.

1708 SH at warehouse.

Ethan Hahn 9-26-19

Scale: 1 square =

9-27-19 Phase 3 Sediment Study, UCR

0720 Stu Holmes (logbook), Michelle Stegner, Cliff Pearson at Evans campground. Unloading gear.

0733 Conducting safety Tailgate meeting w/ Evans crew (team Yeti, team Ingalls, and CNI safety vessels). Watch out for change in weather in afternoon. Expecting wind and rain.
Current Conditions: 50°F, Clear

0750 Team RV Ingalls on vessel.
AECOM: S. Holmes (notes), C. Pearson (Geo), M. Stegner (Archi).
Gravity: P. Jenkins (Captain), J. Schut (Deckhand).

0755 Gravity setting up freeze grab sampler. We are using the more simple, non-vibracore version, no hammer.

0815 Discussing as group freeze core procedures and methods M. Gauthier (Jacobs / ERA) is aboard as oversight.

0833 Heading to EV049

0855 At station EV049. Loading sampler w/ dry ice. Decon bottom.

0906 Attempt #5 (first w/ freeze grab today). River bottom appears to match target facies.

0918 Bubbles weaken. Pull sample onto deck. No recovery except trace residual sand adhering to sampler spikes.

0925 Reloading sampler w/ dry ice and methanol.

0944 Attempt #6. Video shows mostly sand. Big cloud as sampler penetrates. All recovered material on sampler is fine-coarse sand, w/ abundant silica glass. Does not match target facies of mCs.

1010 After examing and characterizing material as incorrect facies, decide to make another attempt and not use material.

1020 Gravity personell indicate that the material may be suitable to sample, suggest calling James at ERM

1030 SH phone call w/ James at ERM. He indicates that if we recover sampleable material w/in mapped mCs polygon we should go ahead and collect it. If there is some evidence of course material on video feed and we are in pocket of sand, it is OK to collect.

1045 call w/ Anthony Palmieri (AECOM). He was under impression that we would have needed to have course material in collected grab indicative of target mCs facies. Is talking w/ Kevin and James at ERM and Jenny Pretare.

1059 Recieved confirmation from JP that the methodology according to Kevin (ERM) is to ID target facies as best as possible through video, collect whatever we get attached to freeze grab.

Stu Holmes 9-27-19

Scale: 1 square = _____

Rite in the Rain

1101 Attempt #7 (cast time of 1051). Good penetration, probable gravel observed on video. Wait ~10 mins for freezing.

1143 Sample brought onto deck. Some gravel observed in recovered sample. Begin thawing process using hot water in lexan tub, sample in large stainless steel bowl w/ foil on top. Sample weighed to be 2.5 kg. Enough mass to achieve minimums for each analysis.

1144 Attempt #8, for BMI. No recovery, rejected.

1221 Attempt #9, for BMI. Full penetration. Accepting sample, begin thawing process. Entrain excess material from lexan tub using ethanol, pour contents into 5-gal BMI bucket. No gravel or debris in sample. EV049-BMI-1-092719

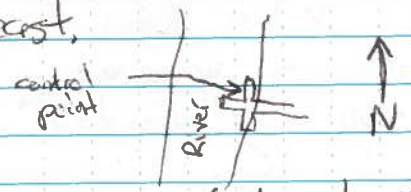
1310 BMI sample processed, leaving station. Decon freeze grab sampler.

1322 At shore, breaking for lunch.

1347 Heading to station EV042.

1352 At station EV042

1353 Pete Jenkins has noted the control point at Evans Dock is being shifted as of today. It is more reliable for him to get it with the boat nosed up on upriver side of dock, facing east.



1406 Attempt #2 w/ freeze grab (attempt #1 on 9-14). No penetration/no recovery. Legs of sampler landing on large cobbles.

1410 Searching mCS polygon w/ video. Seeing large boulders and ledgey surfaces indicative of bedrock. Some fines accumulating in thin crust on top.

1419 Recorded sediment video/photo. Only seeing large cobbles, bedrock with thin crust of sand. Cannot land sampler.

1428 Leaving station EV042, 3 total attempts made and cannot collect sample.

1430 Decon sampler.

1433 At station EV034. Loading freeze grab w/ dry ice, methanol, seating gasket.

1453 Attempt #1. Wait ten minutes. Bring up to deck. 3 large gravel/small cobble adhered to sampler. No fines. Nothing to process as sample.

Scale: 1 square =_____

Stuart Harkum 9-27-19

9-27-19 Phase 3 Sediment Study, UCR P. 19

1517 Attempt #2. Same as attempt 1.

1520 Performing video recon, record sediment video (see location form for details). More of same unsampleable material, no sand pockets. Need to attempt alternate

1528 Departing station. Discuss plans, incoming weather.

1542 Heading to Evans Dock.

1555 Off boat, AECOM heading to warehouse.

1612 At warehouse. Unload samples.

Stuart Hafner
9-27-19

Scale: 1 square = _____

Rite in the Rain

0730 Stu Holmes (logbook), Michelle Stegner, Cliff Pearson at Evans campground.

0733 Loading equipment onto RV Ingalls.

0745 Conducting health + safety tailgate w/ Yeti and Ingalls crew. See tailgate form for full list of attendees.

Team RV Ingalls:

AECOM: Stu Holmes (notes), M. Stegner (archy), C. Pearson (geo).

Gravity: P. Jenkins (Captain), J. Schut (deckhand).

Jacobs/EM: M. Gauthier (oversight).

0758 Crew on board. Controller for camera cord is in boat today due to rainy weather.

Weather: 40°F, Rain.

0805 Departing dock for station EVOI5.

0823 Arrived at station EVOI5. Preparing sampler w/ dry ice. It has already been decontaminated w/ alconox and a 2x river rinse

0835 Decide to first do sediment video w/ out arming sampler

0842 Log sediment video. Appears to be facies we are targeting (mixed coarse w/ fines). No large cobbles or boulders. Bring up sampler to arm w/ methanol and dry ice.

0856 Attempt # 1. No cloud of fines as sampler hit bottom. Penetration appears less than full.

0908 Sampler retrieved w5 gravels adhered to spikes, no fines. Will not collect material from this grab.

0924 Attempt #2. Probed 4m radius, landed best on third try w/in this attempt. Waiting ten minutes for freezing.

0936 Sample on board Same as attempt # 1 with some very fine gravel on a spike. Nothing <2mm. Video still appeared as correct facies. Nothing to collect.

0943 Performed a second video recon in up-river section of polygon. Still appears to be mCs. Will make attempt #3.

1005 Attempt #3. Search around for area allowing best penetration. Wait 10 mins. to bring up freeze grab.

1015 Sample on board, no recovery. Video still matching target facies. Some cobbles. Penetration of this material difficult.

1020 Departing station.

1023 Gravity troubleshooting freeze grab. Difficult seating gasket when rain is freezing to sampler.

Scale: 1 square = _____

Stu Holmes 9-28-19

1031 Heading to station EV022.

1038 At station EV022.

1050 Perform video reconnaissance near target for EV022. Large boulders and cobbles present. Fly camera to area closer to mfs polygon. Log another video recon (SV-2) at this location which looks more sandy, absent of cobble/boulder but does have gravel in appropriate quantity for mCs. Will attempt to sample.

1108 Attempt #1. No recovery. Facies appeared correct on video. Not getting sufficient penetration.

1134 Performing video recon #3, exploring mapped polygon. Cobbles and occasional boulders, with some patches of gravel w/ sand. Log point for SV-3 where we see one of these gravel w/ apparent sand patches.

1200 Attempt #2. Cannot relocate area suitable for attempting to land. More intermittent boulders and cobbles. Land sampler, wait 10 mins. Appears to have nestled into some sand around large gravels. Will see what is recovered.

1212 Pull up sample. There is some gravel w/ small amount of sand on spike. Will see if fines weigh 10 g.

1225 Heading to shore to thaw sample, eat lunch, w/ porewater, measure mass collected in metals jar to be 27.0 g using calibrated ABECOM Tuff-Weight. There is a frozen conglomerate gravel size chunk that may be aggregated sand.

Sample ID: EV022-SE-1-092819

time: 1200

1300 Heading to EV016.

1315 At station. Per J. Preture, will perform video recon as long as weather permits at alternate locs.

1323 Logged EV016-SV-1. See loc. form. Unsampleable

1325 Logged EV016-SV-2. See loc. form. Unsampleable

1336 Logged EV016-SV-3. Not samplesable. Boulders in area.

1338 Logged EV016-SV-4. Patch of sand, sampling possible.

1345 Departed station EV016 to recon EV011

1350 At station EV011.

1355 Logged EV011-SV-1. Cobbles in video that would prevent sampling

1356 Logged EV011-SV-2. Some more open areas of apparent sand, no cobble.

1400 Prepping sampler w/ dry ice to make attempt.

1419 Attempt #1. Difficulty finding sand from EV011-SV-2. Land after a few tries in generally sandy area w/ gravel and few cobbles.

Scale: 1 square = _____

Chris Kahrer 9-28-19

Rite in the Rain

wait 10 mins for freezing

1430 Sample on deck. Recovered mixture of gravel w/ some sand.

1436 Sample removed from freeze grab. Thawing in stainless steel bowl

1440 Discuss if collect BMI sample. Supply of dry ice has mostly been used/sublimated. Not enough to load sampler w/.

1454 Have packed up, leaving station EVOII for Evans dock.

1507 At dock. Gravity indicates they have collected control point in the morning from control point location established 9-28-19.

1517 AECOM off boat, heading to warehouse. Will continue to thaw sample and collect whatever we get there.

1543 AECOM at warehouse. M. Gauthier present. Proceed w/ thawing/disaggregating collected material from EVOII. Had enough volume for filling metals jar to target mass for EPA 6020A, E0I0C, Total mercury and TOC. Did not fill SEM-AVS due to long thawing process. Reached min. mass for grain-size, and organic chemicals. Did not fill Backscatter electron microscopy jar as did not have min. mass requirement listed, and M. Gauthier suggestion that only 10% of samples are selected for this analysis.

sample ID: EVOII-SE-1-092819

time: 1419.

1650 Finishing up sample processing.

Stud Hahn
9-28-19

Scale: 1 square =

Freeze Grab Sampling

0800- Arrive at Evans Campground
0808- Andy Clodfelter (Logbook), Nicky Moody, Anisa Becker, Stepp Herd-
Loading equipment onto RV Ingalls
Conducting Health + Safety tailgate w/ Yeti + Ingalls crew
See tailgate form for full list of attendees.
Team RV Ingalls
AECOM: Andy Clodfelter (notes), Nicky Moody (geo), Anisa Becker (arch)
Ingalls: Pete Jenkins (captain), J Schut (deckhand)
Ecological Risk Inc. at Ingalls: EPA: Bradley Sample (oversight)
0830- Waiting for crew to bring dry ice - delayed until 10, crew will deliver
0842- Begin tailgate meeting
Nicky M. spoke w/ Jenny P. about removing gravels/cobbles during BMI samples; will discuss w/ Brad if that occurs
Tailgate meeting - discuss cold weather safety and
Safe driving conditions - deer + car hazards
Cold stress - mustang suit available - 40° to 50°F later today
Temp at 40°F currently
0910- Crew on board. Safety meeting on Ingalls.
0925- Depart for EV036 - Training on video/still photography.
0942 - Arrive at EV036. Preparing Sampler. Decon equipment with alconox and 2x river rinse.
1000- Pete reports control point check at 0800 prior to AECOM arriving.
Control point at 0753.
1012- Conduct initial sediment imagery without arming sampler
1014- took image at point when sampler on bottom
photo showed mix of sand and cobbles, potentially samplable
GPS target name - EV036-SV-1; 10.2 m depth.
photo number 101407A
1028- Depart to EV031 (may) to take imagery - may need SE and BMI at this station.
1032- Arrive at Site EV031.
1034- Deploy sampler to take imagery
Took image of white board and sampler prior to deployment
EV031, Time = 1036
1038- took image of predominant substrate - cobble + boulders
Coarse - boulder/cobble, not suitable for facies.
EV-031-SV-1, depth = 25.5 m.
1049- took another image of substrate - cobble w/ some boulders
not suitable for facies
EV-031-SV-2, depth - 23.4 m.
1103- took a Third image of substrate - course - cobble w/ some boulder/gravel
EV-031-SV-3, depth = 26.8m

Scale: 1 square = _____ 9/30/19

Rite in the Rain

1104- took video of substrate at EV031 - coarse + not suitable facies Time = 10 seconds, 110415A
1109 - Departed site EV031
1113 - Arrived site EV028
1114 - Took photo of sign EV028 with sampler
1116 - Deploy Sampler for reconnaissance photo
1117 - Image taken - 111739A, EV028-SV-1
1118 - Video taken 111854A, "
1122 Imagery / video taken (15secs) - 112200, EV028-SV3 112209A (video)
1123 - Image taken - 112310A, EV028 SV4
1130 Depart site EV028
1146 - Arrive at site EV022
1152 - EV022 image of placard + sampler, pic # 115246A
1153 - Deploy Sampler for imagery
1155 - Image taken - 115516A, EV022-SV 4
1215 - Lunch, waiting on dry ice to arrive to begin sampling
1235 - Dry Ice arrived. Begin preparing for sampling at EV022-BMI sample site.
Decon sampler, prepare freeze grab sampler.
1246 - Took photo of sign EV022 and sampler - 124626A cast at 1247.
1252 - Took image + video when dropped sampler. TWO attempts hit rocks and were instantly retrieved. EV022-3-BMI
1302 - Retrieving sampler from bottom.
1303 - Sampler brought on deck.
1307 - Applied hot water to Thaw Sample. - Sample accepted.
1310 Sample met criteria but volume was low ~4"
1322 - Decon + Deploy sampler
1324 - Dropped sampler on bottom -
1325 - Took image / video - EV022-4-BMI - Accepted sample
1336 - Retrieving sample + applied hot water to Thaw sample
1348 - Decon + prep sampler for EV022-5-BMI
1356 - Dropped Sampler + took image. EV022-5 BMI
1408 - Retrieve sampler - apply hot water to Thaw. Sample accepted but low volume ~4"
1420 - Prepare sampler for EV022-6-BMI
1426 - Deploy sampler / 1430 - Drop sampler, took image / video good deployment - higher presence of sand visible
Image / video taken at EV022-6 BMI gps point.
Thawing out Sample. EV022-6-BMI
1442 - Retrieving sampler EV022-6-BMI.
Thawing Sample - Another low volume sample ~4"

Scale: 1 square =

Ed Bluth - 9/24/19

1454 - 3 large cobbles collected Through previous attempts were rinsed w/ Methanol + DI water + rinse water was retained. Cobbles were disposed of.
1510 - prep attempt for attempt #7 (#5 attempt of day).
1518 - deployed; 1526 - sampler dropped in sandy top layer - few cobbles seen in image.
1526 - created labels for bucket BMI sample.
Label time equals time when 1st attempt of day was processed at 1307.
1532 - Retrieving sample, brought sample on deck at 1534 EV022-7-BMI, applied hot water to raw sample.
1545 - start heading back to Evans dock.
Photos/videos 1532/1533 taken of EV022-7-BMI being lifted to surface.
- photo 152037A = EV022-7-BMI
- photo/video - 143025A/143058A = EV022-6-BMI.
1610 - finish decon'ing equipment, compositing sediment
1615 - Return to Evans dock.
1630 - Depart Evans. Head to warehouse.

16:50 - Arrive at warehouse

X _____ Andy Clodfelter

Rite in the Rain

0645 - AECOM crew arrived at warehouse
Preparing forms, getting dry/wet ice, planning for day
Temp ~ 35° F at Evans
0735 - Arrive at Evans dock - stopped for coffee - loaded equipment on vessel.
On site personnel: AECOM - Andy Goldfeder (captain), Nicky Moody, Anisa Shagufteh-Bedker, Jennifer Kay
AG, NM, AS-B on wagalls, J. Kay on jetty
0745 - Tailgate meeting - lot of new people, careful about train crossing into Evans, slippery spots, hand off equipment
Gravity - Pete Jenkins (captain), Jeff Schut
Ecological Risk Inc: Brad Sample (oversight)
See tailgate form for full list of attendees incl. CNI
0800 - Crew boarded Inpalls - organizing equipment and planning for day.
0810 - Depart dock. Head toward site EVO-11
Slight delay due to gps issues on vessel - difficulties getting heading, head back to dock to troubleshoot
0820 - Return to dock.
** Reminder - get 2 EPA ~~split~~ dupe jars, rinsate, DI Bottle
0853 - Control point taken - electronics troubleshooted successfully.
0855 - Depart Dock. Head to EVO-11.
0905 - Arrived on site EVO-11
Prep sampler for deployment - BMI sample
0917 - Took image of placard + sampler - 091716A photo
0923 - Deployed sampler
0926 - Dropped sampler - large plume of sand generated.
092649A, 092704A (video)
good drop, decent penetration on sampler - some cobbles w/ sand
0935 - took another cleaner image of sampler on bottom: 093457A
0938 - Vessel operator dealing with fuse issue on ignition?
1015 - Pete still troubleshooting - sample likely compromised.
1025 - Anchor deployed on boat to hold position as power was turned off. Pete continuing to troubleshoot.
1052 - Troubleshooting complete. Retrieving sample.
Took video of retrieval 105352A.
1056 - Sampler retrieved on deck - no sample recovered
large plume observed during retrieval as sample material lost
1058 - redeploying ac preparing sampler for ~~at~~ next deployment
1111 - Deployed Sampler - EVO-11-3
1112 - Dropped Sampler on river bottom

Andy Goldfeder 10/1/19

Scale: 1 square = _____

1113 - photos taken at deployment - 111331A, 111422A
associated with EV011-3-BM1 gps point
photos taken when sampler at river bottom.
1123 - Retrieve sampler - video of sampler retrieval - 112331A
1124 - Sampler on deck - looks like good sample. best sample collected in past 2 days (most volume)
Thawing out sample.
*Crayfish noted crawling on river bottom adjacent to sampler prior to retrieval
1138 - Begin preparing sampler for next deployment
Decon sampler + apply dry ice.
1148 - Deploy sampler
1151 - Dropped sampler on river bottom -
images - 114933A (prior to drop), 114938A (video prior to drop)
115135A (image when plume cleared)
1154 ~~Begin thawing sample~~ at
1202 - Retrieve EV011-4-BM1 - good retrieval - material on 3 of 4 spikes
most material collected so far from a sample
video of retrieval - 120213A.
1204 - Thaw sample after sampler placed in deck (EV011-4-BM1)
1216 - Removing sediment from ~~sam~~ at sieve of EV011-3-BM1.
1224 - characterized sediment from EV011-3-BM1
1235 characterized sediment from EV011-4-BM1
1243 - Compositing sample into 1 gallon bucket - EV011-4-BM1
1254 Label sample bucket ~~+ seal bucket~~ EV011-BM1-1-100119 at dock for water to settle.
1255 Depart site. will measure sediment volume after water settles.
1303 - Arrive at EV036, prepare sampler for deployment
decon sampler, add dry ice, methanol
1311 - took image of placard + Sampler at EV036-1
image 131159A
1314 - deploy sampler, dropped sampler on river bottom
131532A, 131623A
1325 - observed sculpin(s)? moving in vicinity of sampler when on bottom (multiple small benthic fish seen)
1326 - Retrieve sampler - 1327 - placed on deck
video of retrieval - 132612A
Begin dethaw/processing sample EV036-5-BM1
1352 - Retrieved sample from sampler + placed in metal bowl
1353 - Prepare sampler for deployment - EV036-6-BM1
decon sampler, apply dry ice + methanol
1401 - Deploy sampler - down on bottom at 1404

Scale: 1 square = _____

Judy Clarke 10/1/19

Rite in the Rain

1405 - Image of sampler on bottom - 140518A, 140709A
1415 - retrieve sampler, bring on board deck
Sample is accepted, meets minimum criteria.
~~1450~~ Continuing to Thaw EV036-6-BMI.
1450 - Nicky talks to Jenny P about sampling plan for today.
1455 - ~~pre~~ Head to site EV-028
Freeze grab is decontaminated + ~~ready for sampling~~ at
Adding dry ice to Sampler
* Brad S. contacted Jeff J. (JAcobs) about potentially sampling BMI over a 2-day period. Jeff gave his approval. Shaun R. indicated it would "probably be ok"
1509 - Deploy Sampler - freeze grab EV-028-1-BMI
1518 - Dropped sampler on bottom - image 151829A
cobble, boulder, gravel substrate. not ideal.
profiled area for about 6-8 minutes and did not find more suitable-samplable substrate
1530 - Retrieve sampler, 1532 - sampler on deck
no recovery of sediment likely due to poor substrate + long flyover time before dropping sampler.
1537 - Conduct additional video reconnaissance due to inability to locate suitable facies.
1559 - Head back to Evans dock. No success locating Suitable facies during video reconnaissance - at EV028-SV5 and EV028-SV6.
1610 - Return to Evans dock, load van with equipment
1700 - Arrive at warehouse and unload equipment
QA/QC forms, plan for tomorrow, finish up processing
Leave warehouse

cross off N/A added 10/2/19

10/2/19

* Note:
1450 - Composited final sample attempt into EV036-BMI-1-100119.
Also, we received notice from Jenny P. on 10/2 that this field sample should be a duplicate sample. Thus, the correct label should be EV036-BMI-2-100119. The correct label was changed on the 5 gallon bucket on ~~10/2~~ at 1620 on 10/2 before the sample was placed in the refrigerated truck. Also changed sample names on field forms and in log book.

John Chatfield
10-1-19

Scale: 1 square =

0730- AECOM crew arrives at Evans Dock
0700- AECOM crew arrive at warehouse, pick up supplies
0740- Temp - 32° @ Evans; cold, mostly cloudy
Loading vessels with gear
AECOM staff: Andy Lodhi Hilter (logbook), Nicky Moody, Anisa Sheppard-Bellamy, Jennie Ray
AC, NM, AS-B on Ingalls; J.R on Yeti
Gravity staff: Pete Jenkins (captain), Jeff Schut
ERL staff: Brad Sample (oversight)
Discuss sampling plan w/ group
See tailgate list for full list of attendees on site
0745- Tailgate meeting - stretching session, driving safety
0805- Depart Dock - Pete requests we be more careful about tracking sediment into the cabin
Heading to EV-039. (0800 - all crew on board)
will conduct video reconnaissance to inspect sediment
0814- Sampler (freeze grab) decontaminated
0818- Image taken w/ placard + sampler on station
Image # 081840A
0823- prepare sampler for deployment + deploy sampler
0826- took image/video - boulder/cobble - wrong facies
moved to different location
0829- Bedrock observed at EV-039-SV-2
Image/video numbers recorded on sample location form
0842 0845- Took 3 more images/videos (SV-1 to SV-5)
0845- EV039-SV-5 26.5 m
424546.98 Boulders/cobble
5392307.79 T= 0845:36
*not correct stratum at this site
w/ Brad Pete heard from Marilyn that "we do not need to perform "heroic" efforts at the mixed coarse sites because this is a secondary stratum and there are no need to complete & complete sediment samples here.
0853- Leaving site EV-039. Heading to EV-020
0902- Arrive at site EV-020.
Preparing for video recon.
Took image of placard + sampler - 090251A (Lesard date should be corrected to 10/2)
0908- preparing sampler for deployment based on mixed coarse sediment documented during video reconnaissance.

Pete Jenkins 10/2/19

0916 - deploying freeze grab sampler for deployment
0917 - dropped sampler - hard, embedded material
Image taken - 091801A @ EV-020-1 gps point
0928 - retrieve sampler
cobble frozen to sampler, some fines frozen to prong
0935 - Examining sample - removing ice chunks
mostly cobble, gravel, some fines so will hold
sample to be held, hand pulling out cobbles / large gravel
0940 - preparing sampler for attempt #2
0950 - Deploying sampler - EV-020-2
0952 - Dropped sampler - embedded gravel, cobble,
small plume when sampler dropped + wiggled sampler.
1000 - characterized EV-020-1 -
gravelly cobbles w/ some sand, slag observed, ~20% sand
so held to composite with next sample.
1003 - retrieving EV-020-2 sample; 1005 - brought on deck
limited material on 2/4 prongs of sampler
cobble, gravel, with some fines attached.
1010 - Processing / Thawing sample.
similar material to previous sample - EV-020-1
one small snail observed - slight difference. cobbly gravel w/ some slag-like material
1017 - preparing to deploy sampler for EV-020-3
1025 - Deploy freeze grab sampler
1026 - Drop sampler, take image 1027 19A
1037 - Retrieve sample EV-020-3
1038 - Sampler brought to deck - material attached to
all 4 prongs - limited volume.
1045 - perform initial characterization -
1047 - prepare to deploy sampler for EV-020-4
1053 - Sampler deployed
1054 - Sampler dropped - hardpan substrate, small plume
oriented when dropped Image 105536A.
Strata in video/imagery appears to be suitable but
sampler having difficulty collecting large volumes or
penetrating into the river bottom due to
high embeddedness.
1105 - retrieve Sampler. Small amount of sediment collected
on all 4 prongs.
Sample collected on prongs but sampler not
penetrating deep enough to freeze bottom of sampler material.

Andy Rodick 10/2/19

Scale: 1 square = _____

1107 – Sampler brought on deck.
1109 – Thawing process commenced.
large, thin ice chunk disposed of.
Characterized EV-020-4
1123 – Prepare Sampler for deployment - EV-020-5
decon / add orifice, methanol
1131 – Deploy Sampler
1132 – Drop Sampler on river bottom – gravel, cobbles, sand
Image # 113319A – Hardpan material – difficulty
getting sampler to sink in, small plume observed.
1144 – commence Sampler retrieval
1145 – retrieved sampler on deck.
material adhered to 3 of 4 prongs – no
material attached to bottom of sampler.
Very limited recovery.
1147 – add hot water – Thaw sample.
remove loose ice from sample
1155 – characterize sample EV-020-5
metal bin = 17.77 oz or 1.2 lbs 202.6 g jar
1215 – 5.5 kg mass = greater than 5 mm size
Processing SE sample for EV-020
0.4 kg < 5 mm
obtained over 10 g of sediment / water material
→ 100 g total : Sample ID: EV020-SE-1-100219 ST=
10/2/19 0935
1250 – 7% sediment < 5 mm by kg
Nicky Moody called Jenny Ketare and discussed
this location. Visually it appeared to be correct
stratum in video. However, after composition 5
attempts, recovered material has less than 20% sand
per SOP, no BMI sample will be collected.
* Note: Brad agreed with this approach.
1255 – Depart EV-020
1300 – Arrive at site EV-016
1307 – prepare EV-016-1 for deployment
1309 – image of placard + sampler – # 130910A
1312 – deploy Sampler – video recon. during deployment
1316 – drop Sampler, Stratum not suitable – cobble, bedrock, gravel
image: 131724A very few sand patches
video: 131423A some sandy material interspersed or
on top of cobble, boulders
mostly cobble material

Scale: 1 square = _____

10/2/19 Phase 3 Sediment Study, UCR

1332 - Prepare sampler for deployment
add device/methanol

1342 - deploy sampler

1348 - Retrieve sampler. Not suitable strata.
Took video #134721A at EV016-2. This is location where sampler was dropped and then immediately retrieved because strata composed of boulders/cobbles. Substrate was VERY hard when sampler was dropped. No suitable strata found during 6 minute flyover with sampler.
Took images: 134807A, 134811A. These images were taken at EV016-SV5.
Decided to abandon site due to unsamplable conditions.

1415 - weekly rinsate sample collected
Evaluated equipment: freeze grab + stainless steel bowl
These items were decontaminated and rinsate collected.
Sample ID: EV020-SE-4-100219. ST=1415
Analyzed for total TAL metals.

1430 - Nicky M. discussed sampling status with Jenny P.

1443 - Depart beach where rinsate was collected
Jenny P. told Nicky M. that we collected a duplicate sample at EV036-BMI. Will need to change logbook, sample label, field forms.

1505 - Return to dock
Sign out health + safety forms

1550 - Return to warehouse, offload sample, device, forms
Plan for tomorrow

1634 - EPA SPLIT - EV020
Homogenizing primary sample. Placed sample into decontaminated stainless steel bowl, mixing sample with a clean spoon. Placed approx 50 g into split jar.
Placed ~~remaining~~ additional material into primary jar. Continuing to mix material and place sediment into both jars.
water in bowl was swished around the bowl to include all fines.
83 g to EPA split jar. EV020-SE-3-100219 ST=0935
Rest of material + water placed into primary sediment jar
225 g into primary sediment jar. EV0-SE-1-100219
AMSA took photos of split process.
83
225
308 g = total mass of sediment + water of both samples

Robin Clarke 10/2/19

Scale: 1 square = _____

10/2/19 Phase 3 Sediment Study, UCR
1650 - Micky reviewing field forms / planning for tomorrow.
1700 - Brad, Sample, Jeff leave house
1725 - left home house

Cindy Crumbaker
10/2/19

Scale: 1 square =

10/3/19 Phase 3 Sediment Study, UCR - Freeze Grab

0715 - AECOM staff arrive at warehouse
pick up dry ice, forms, supplies

0750 - AECOM staff arrive at China Bend boat launch
plan stations to sample today
Weather: 42°F in Northport, wind 0 mph, overcast
AECOM staff: Andy Clodfelter (logbook), Nicky Moody, Anissa Sheppherd-Becker
Gravity staff: Pete Jenkins (captain), Jeff Schut
ERI staff: Brad Sample
Safety boat staff recorded on tailgate form.

0805 - Tailgate meeting - watch for deer - caution getting on/off boats at China Bend ramp
Load equipment onto vehicles - park van at China Bend parking lot

0825 - All personnel on board vessel
Pete dealing with some hydraulic issues at site - troubleshooting.

0838 - Depart Dock - head to CB035

0844 - Arrive at site CB035
Preparing sampler for video recon.
Took image w/ phone of sampler on site #0850348

0900 - Deploy sampler for recon.
Sampler is deconned + ready ~~when~~ as to go.

0908 - Retrieve sampler - prepare for sampling, add dry ice/methanol
Video recon shows suitable facies - Sand w/ mixed coarse coarser sand material than Evans - typical of more riverine environment.
Video recon: 090542A; image recon: 090548A

0922 - Deploy sampler - CB035-1-CHEM (gps point)

0923 - drop sampler - small plume observed during drop - still fairly hard material but sand on top layer. surrounding islands of cobble/gravel observed with sand areas ~~throughout~~

0934 - Retrieve sampler CB035-1-CHEM (gps point)

0936 - Sampler on deck - video of retrieval - 093450A.

0940 - start processing
3 of 4 probes had sandy material adhered to it
minor accumulation of sediment on 4th probe
Sample held for compositing due to low volume

0943 - Preparing sampler for next deployment - dry ice/methanol

0951 - Deploy sampler - CB035-2-

0958 - Drop sampler - video during flyover: 095255A
image at sample site: 095413A

1000 - Characterized sediment from CB035-1

Scale: 1 square = _____

10/3/19

1002 - Amisa took photos of crew + Ingalls from safety boat
1004 - Retrieve sampler - CB035-2 ; 1005 - sampler on deck
good sample - sands collected under sampler and on all 4 prongs.
1015 - request video recon. location for 9/30 from Josie
Begin preparing sample labeled jars
<5mm put into AVS jar = 552.8 grams 2135g jar alone
1030 - Collected sample CB035-SE-1-100319 10/3/19, 0940 ST
This sample analyzed for SEM-AVS; placed on ice @1035
(set note at end.)
1040 - Prepare Sampler for deployment - CB035-3
Bradley - EPA observer confirmed that location CB035-3 will be used for EPA SED + Porewater Split - based on productivity - instead of CB005.
1043 - Deploy Sampler - CB035-3
2.1 kg - measured sediment in sps bowl (for Nicky's records)
1044 - Dropped on bottom.
1054 - Retrieve Sampler - CB035-3
good sample - sediment flush to bottom of sampler - pea gravel
3 of 4 prongs full of sediment
1105 - Draining out Sample Drinking tare: 213.9g
1122 - labeled sample bottles Dup tare 213.1g
preparing to homogenize samples
AVS primary weight: 799.8g = 585.9g
Dup weight: 796.7g = 583.6g
Create Samples CB035-SE-1-100319 SEF/AVS ST 10/3/19 0940
CB035-SE-2-100319 SEF/AVS ST 10/3/19 0945
1140 - processing remainder of sample for placement in other sample jars.
4.2 kg - 3.3 = 0.9 kg of 5mm to 3" gravel
6.7 - 2.8 = 3.9 kg + sef/avs jars = 5.0 kg
2.8 fines
1210 - Completed primary and duplicate samples for all physical/chemical parameters - Metals/mercury/TOC, grain size, organic chemicals, and SEM.
CB035-SE-1-100319, CB035-SE-2-100319
Brad obtained EPA SE Split sample.
CB035-SE-3DUP-100319 ST: 0945
CB035-SE-3-100319 ST: 0940
1215 - Prepare Sampler for CB035-4-BM1
1223 - Deploy Sampler.

Andy Clarke 10/3/19

Scale: 1 square = _____

Rite in the Rain

10/3/19 Phase 3 Sediment Study, YCR

1224- dropped sampler on bottom - close proximity to other 2 sample sites - image # 122527A

1235- retrieve sampler. CB035-4-BM1 sample half of bottom of sampler contains sediment as well as 3 of 4 prongs - sampler not flat on bottom.

1246- begin dethaw process - sample has bark, small woody debris macroinvertebrate observed. CB035-4-BM1 sample. Begin prep of next BM1 sample, CB035-5-BM1

1253 - Deploy Sampler

1256 Drop sampler on river bottom - image # 125609A -

1307- Retrieve Sampler + brought to deck - Captain witnessed cobble fall off sampler when retrieved to deck - most of sampler contains similar sandy material - stuck to bottom of sampler + prongs.

1310- Thawing sampler - CB035-5-BM1 sample Characterized Sample + composited into BM1 bucket

1336- Prep sampler for next attempt - CB035-6-BM1 After 2 attempts, total volume approx 0.9 gallons need another sample to meet minimum requirement.

1346- Deploy sampler. CB035-6-BM1

1348- Sampler dropped on river bottom Tire observed near sampling site Small plume generated by sampler drop but river bottom very hard - wiggled sampler + sank in slightly sandy material on top of cobbles - 2 bald eagles observed at site.

1400- retrieve sampler observed 2 cobbles fall off as sampler was retrieved

1402- brought sampler on deck - CB035-6-BM1 material captured on bottom of sampler + on prongs are cobble stuck in middle, mostly fines/sand. cobble washed off into BM1 bucket + tossed overboard.

1420. Characterize Sediment Composite into BM1 sample. 100319 ST 10/3/19 1235
Sample completed: CB035-BM1-1-100319
Total volume: ~1 gallon
added ethanol to approx 2-2.5 gallons.

1435- Arrived at site CB035 - start preparing sampler for deployment - add dry ice + ethanol - Sampler have been decontaminated.

Scale: 1 square =

10/3/19 Phase 3 Sediment Study, 4CR

1446 - deploy Sampler - CB-038-1.

1454 - dropped sampler into sediment - after video reconn. showed unsuitable strata - heavy cobbles

Video: 144738A
Image: 144922A
Video: 145025A
Image: 145050A
Image: 145104A
Video: 145111A
Video: 145219A
Image: 145319A
Video: 145322A

1503: Image: 145343A

Video recon. showed unsuitable strata at locations CB038-SV1, -SV2, -SV3. More suitable substrate for sampling gravel at CB038-SV-4. Will target that site.

1503 - Retrieved sampler + brought on deck. No sample likely due to long flyover time before dropping sampler.

1505 - Prepared sampler for deployment

1513 - Deployed sampler.

1514 - Dropped sampler on river bottom - hard material! Very small plume generated, gravel, cobble.

1525 - Retrieved Sampler. Some gravels adhered to bottom of sampler + on prongs but not many fines apparent.

1530 - Training out sample.

1540 - Characterize sample - CB038-SV5 - 4305597.0 5407166.31 Depth = 20.9 Some cobble, gravel F=1549 Image = 154916A Video: 154950A

1545 - Start video recon.

1557 - end video recon.

Some potential samplable material at SV-6

CB038-SV6 - 4305417.99 5407167.13 Depth = 21.2 T = 1557 Sand, gravel Image = 155633A

1605 - prepare Sampler for deployment

1610 - deploy Sampler -

1612 - dropped Sampler -> Image # 161231A to show video/image grabbed. Gravel, cobble, some sand. Small plume when sampler dropped but very hard material. Sand material more predominant closer to shoreline but no cobbles present in this area. - Sampler was tilted when dropped + crew straightened out. May have landed on a rock but uncertain.

Retrieved Sampler.

10/3/19

Scale: 1 square = _____

Rite in the Rain

1622 - Retrieve sampler.
1624 - Sampler placed on deck CB038-2 sample.
*Note: The 1030 SEM/AVS sample was not retained for analysis because we needed to ~~perform~~ collect a duplicate sample. Thus, this sample was composited into the stainless steel bowl with the other sediment for analysis of other parameters.
1638 - Return to China Bend dock.
1643 - Decide to reject samples CB038-1 and CB038-2 due to low percent composition of fine grained material. Not suitable strata for sampling.
Crew decontaminated & cleaning up equipment
CB035-SE-1-100319 @0940 by NM
1700 - Left China Bend site
1745 - Arrived at warehouse. Drop off equipment, dry ice, forms, plan for tomorrow.
1800 - Leave warehouse

Rob Clutter
10/3/19

Scale: 1 square = _____

10/4/19 Phase 3 Sediment Study, UCR - Freeze Grab Page 39

0645- Recon staff arrives at warehouse, pick up dry ice, supplies

0740 Arrive at China Bend Boat Launch

Temp = 40°F in Northport, 0 wind, overcast

Recon staff: Andy Cledfelter (Logbook), Nicky Moody, Anissa Shepherd-Bricker

Crowley Staff: Pete Jenkins (Captain), Jeff Schut

Ecl staff: Brad Sample

Safety boat staff recorded on tailgate form

0755 - Tailgate meeting - cold stress potential, next week potential for rain - freeze grab deck hand hazards - dry ice handling ! wear PPE at all times !

Stop work at 330pm today to allow gravity to haul boat

0807 - Load equipment onto boats

0815 - Board vessel Ingalls

0817 - Depart dock; head to CB037 (alt. loc. for CB-038) RM 722.1

0827 - Arrive at site CB-037

0820 Took control point, edge of dock, starboard pushknee # CB-CP-041019 (Captains took point)

0829- freeze grab decontaminated

0833 - Took image of placard + sampler at CB-037

Image # 083350A

Preparing sampler for deployment

0839 - Deploy sampler for video reconnaisance

Took initial video - # 083951A

Took more video

0849 - Retrieve sampler.

Initially predominantly cobble, but last video/image showed potentially samplable material (more fines)

CB037-SVS

430479.04, 5407144.17 20.9m, gravel T=0848

0856. Preparing sampler for deployment Image: 084825A

0900 - deploy sampler - CB-037-1

0902 drop sampler - cemented gravels - very hard material - small plume when shifted sampler to drive into substrate

0903 deploy sampler again - Image # 090410A

0915 - Retrieve sampler, 0916 - brought on deck

no sample collected - Sampler may have been partially set on boulder, ineffective chemical reaction?

0920 - Prepare for next deployment - CB-037-2

0933 - Deploy sampler -

0934 - Drop Sampler - CB-037-2 - Image # 093458A

Scale: 1 square = _____

Rite in the Rain

0934- Sampler dropped into cemented gravels, very hard substrate, very little plume generated during repositioning to sink into substrate, may have landed on a cobble.
0945- Retrieve sampler - no sample collected - cemented gravels - not adequate penetration.
0952- Depart site - Head to CB-036
0958- Take image of placard + sampler on site #095818A
Took images + video - Reconnaissance
1003- Retrieve sampler to arm for deployment.
1005- Prepare sampler / Add dry ice / methanol
1014 Deploy sampler CB-036-1 ~~Alternate for CB-038~~ Second
Drop sampler - picked up due to hard cobbles
1016- Drop sampler - hard material - landed flat + appeared to sink in slightly - good drop. - cobbles w/ ~~sand on top~~ gravels and no plume observed during drop.
Image # 101636A
1028- Retrieve sampler. 2 cobbles observed during retrieval - no additional material retrieved on sampler (fell off during ascension)
1029- Sampler placed on deck.
Preparing for second deployment CB-036-2
1054- Deploy Sampler
1055- 1st drop - cemented gravels - extreme hardpan material
1056- 2nd drop - " " " " "
1057- 3rd drop - more plume during drop - more sand material on top of cobbles than previous sites
1107- Retrieve sampler - CB-036-2
Took video of retrieval - great grab! #video 110743A
1110- Training Sample - material collected below sample + (Sampling time) between prongs
1120- Decon plastic bins + screens for characterization
1130- ~~Prepare to deploy sampler for deployment CB-036-3~~ ac
765.3g - 213.5g = 551.8g of SEM/AVS material
1145- Characterize sediment + weigh sediment categories collect sediment + fill SEM AVS jar -
Fill remaining jars - Total metals + TOC, grain size, organics + PSEM. Total mass = 5.8kg; 26% sand by weight
Sample ID: CB036-SE-1-100419 ST 1110
1208- Prepare for deployment, ~~CB-036-3-BMT~~ AC
1218- Deploy Sampler.
1220- Dropped a few times on River bottom

Scale: 1 square = _____

10/4/19

1222 - Picked up + dropped again - # 122303A
kept hitting hard pan sediment material -
1225 - retrieved as sampler moved off river bottom.
1228 - sampler on deck. no sample collected.
1235 - preparing sampler for deployment CB-036-4
1240 - Deploy Sampler
1241 - Dropped sampler on river bottom - CB-036-4-BM1
Images: 124144A, 124308A (same location)
1252 - Retrieved sample.
1254 (ST) - Sampler brought on deck - video of retrieval Sample - 125258A
about 1/2 of sampler has material attached + bottom.
1310 - prepare sampler for deployment - CB-036-5-BM1
1317 - Deploy sampler
1318 - Dropped sampler on river bottom - Image # 131906A
1329 - Retrieve sampler, 1330 - brought sampler on deck.
few cobbles, ~1/4 of sampler surface bottom contains sediment, some wood debris - CB-036-5-BM1 sample.
1340 - Sediment characterized + composited into BM1 bucket.
Preparing for next deployment CB-036-6-BM1
1346 - Sampler deployed
1348 Sampler dropped on river bottom - + Image 134824A
dropped right next to CB-036-5 - observed this sampling site in image.
Star video shows correct strata/facies.
1358 Sampler retrieved
1358 - took video of retrieval - 135842A
few cobbles attached to sampler - sediment on 2 prongs + small amount on bottom of sampler.
1402 - Thawing out sample
Sediment Characterization performed
composited CB-036-6-BM1 into bucket
1412 - prepare sampler for next deployment
1420 - Deploy Sampler.
1421 - Dropped sampler on river bottom - CB036-7-BM1 sample
Image on bottom: #142203A
gravel/cobble - very hard substrate, very small plume of silt generated when sampler repositioned on bottom
1431 - Retrieve sampler - 1432 - sampler on deck
1 sampler prong contained sediment and few cobbles adhered to sampler. Very little material.
1440 - Sediment characterization of CB036-7-BM1

Scale: 1 square = _____

10/4/19 Phase 3 Sediment Study, UCR

1440- WX conditions: Partly sunny, 51°F in Northport, 4 mph wind, small waves, few spotty showers earlier.
— 3 cobbles Thrown out - discarded from CB036-7-BM1
1448- preparing for next sampling attempt.
1454- deploy sampler.
1456- drop sampler on river bottom - few drops required due to hard, rocky substrate - sand on top of cobble Image #145648A
1506- retrieve sampler, 1507 - brought sampler on deck. Sediment collected on 2 prongs and portion of the bottom side of sampler - sample # CB036-8-BM1
1510- prepare sampler for last BM1 deployment - attempt #9 or #7 for BMI.
1522- Deploy sampler
1522 - Drop sampler - decent spot - sand on cobbles. plume when sampler dropped. Image # 152258A
1533- Retrieve sampler, brought on deck @ 1534. Bottom of ~~sediment~~ sampler covered w/ mixed coarse material. good sample grab. # CB036-9-BM1
1535- Thinning out sample.
QC/QA data.
1545 offload gps data + SD card.
Return to China Bend dock.
1605- Composited CB036-9-BM1 into 5-gallon BM1 bucket. Final sample BM1: CB036-BM1-1-100419 ST 1254
1610- Boat Inventory conducted.
1620- load equipment into vehicles
Depart vessel
1630- Depart boat ramp
1705- Arrive at warehouse, organize supplies
Leave warehouse

10/4/19

3 OCT Sept 2019 Phase 3 Sediment Study, UCR
Ingalls - Sediment Sampling

0645 AECOM team arrived Kettle Falls Warehouse
0730 Arrive Dan's place to pick up observer
0740 Arrived China Bend boat launch, loaded equipment & supplies onto Ingalls
0811 Tailgater Safety Briefing at boat launch
Personnel on Ingalls today
AECOM: Linda Hoffard, Michelle Strayer, Michaela McCreary
Gravity: Peter Jenkins, Jeff Schmidt
JACOBS for EPA: Elle Amzinger
CWI: Erin Weitherman Steve Buchman
0830 Loaded personnel onto boat, boat safety briefing, equipment setup and checks, run through of process
0917 Departed boat launch
Took control point at end of dock at boat launch
CB-CP-
0927 JS (Gravity) deployed (LH100sim) free-fall grab equipment
0939 Arrived CB032, ~~deployed camera~~ took photo of photo board under camera IMG# 09334A
0934 Deployed camera for video recon
First point was cobble - CB032-SV-1
2nd point was cobble and boulder - CB032-SV-2
Photo did not work so no photos of these 2 locations
0948 Dropped camera
0950 Took photo of facies - cobble CB032-SV-3 IMG 10119A
0951 Took photo of facies - 90% cobble, 10% sand CB032-SV-4 IMG# 10071 4A
0955 Retrieved camera
CB032 did not find target facies, will go to alternate, target is CB034.
1002 Arrived CB034, took photo of photo board under camera - Img 10355A
1005 Deployed camera, took photo of facies - cobble
1012 Took photo CB034-SV-4 IMG# 09503A
1017 Retrieved camera, finished note taking
Did not capture photos of CB034-SV-1, SV-2, SV-3
1027 Arrived CB044, Took photo of photo board Img # 10310 9A

Scale: 1 square = _____

Rite in the Rain

03 Oct 2019 Phase 3 Sediment Study
Ingalls - Sediment

1033 Deployed camera
1035 Took photo of facies IMG# 103456A at CB0416-SV-1 - mostly cobble, some sand, moved to another location that looks like sand with some course. Retrived camera. Will navigate to this Sandy patch for freeze grab CB0416-SV-2,
1038
1040 MW + JS filling sampler with dry ice.
1042 ~~Deployed sampler~~ Attach freeze grab to frame.
1042 Add methanol to sampler
1048 Deployed freeze grab sampler - facies looks like mixed coarse.
1051 Started 10 minute countdown
1057 Deconned sampling bowls and other equipment
1100 Retrieved sampler CB0416-SE-1-100819, sand attached to freeze grab spikes and 1 cobble!
1107 ~~Trawling sample~~
1115 ~~Departed CB0416-2-CHEM location~~ Anchoring
1117 ~~Deployed Sampler~~ (@ 4100819)
1137 Prepare freeze grab to deploy for another sample - CB0416-2-CHEM
1141 Attach freeze grab to sampler frame
1147 Pour methanol into Sampler
1149 Deployed freeze grab
1152 Set 10 min timer
1157 Took photos 115734, 115743A same location
1202 10 minutes is up, retreiving sample at bfs CB0416-2-CHEM, lost one football-sized cobble during retrieval. Sample is mixed coarse - matches target facies
1211 Sample CB0416-SE-1-100819 Sediment characterization for grabs CB0416-1-CHEm and ~~Sample~~ CB0416-2-CHEm
1247 Filling sample jars - CB0416-SE-1-100819
1256 Completed physical/chemical sample.
1300 Preparing freeze grab for deployment, add methanol to sampler
1308 Deploy sampler at CB0416-3-CHEm

Scale: 1 square =

1310 Sample begin at CB046-3-BMI
10 minute timer started
Took photo img# 131313A of freeze grab on bed
1321 Retrieving sampler, lost 1 cobble during retrieval
1323 Detached freeze grab from sampler frame.
Sample matches target Facies MCS, transfer to bowls.
1340 Prepare freeze grab for deployment for another grab
~~1340~~ grab. (2# 100g ice), add methanol to sampler.
1347 Deployed sampler at CB046-4-BMI
1349 Sample begin time at CB046-4-BMI, started 10min timer.
1400 Retrieving freeze grab sample, detached freeze grab and transferred to bowls for thawing.
1414 Prepared freeze grab for another grab CB046-5-BMI
~~1421~~
~~1424~~ Deployed sampler
1422 Sample begin at CB046-5-BMI
Took photo of sampler on bed IMG# 142315A & IMG#142433A
1423 Retrieved sampler, matches target MCS facies.
1446 Retrieving anchors
Sediment characterization for CB046-3-BMI and CB046-4-BMI and put into 5-gallon Sample bucket
1500 Pulled to shore to complete sample processing.
1503 Decanted Sample bowls
Sediment characterization for CB046-5-BMI
1521 Placed in 5-gallon bucket & measured total volume
1534 Arrived back at China Bend boat launch.

10-08-19

Scale: 1 square = _____

Rite in the Rain

9 Oct 2019 Phase 3 Sediment Study, UCR
Ingalls - Sediment Sampling

* Notetaker: Linda Howard

0830 Arrived China Bend Boat Launch, Loaded equip & personnel
0900 Daily Tailgate Meeting: Cold temps, hunting season, school buses & mail carriers on roads.

Personnel on boat today:
AECOM: Michelle Steigner, Linda Holward, Michaela McCoog
Gravity: Peter Jenkins, Jeff Schut
CNI: Eric Weatherman, Steve Bachman
Jacobs/EPA: Ella Antinger

0915 Set up Hamon sampler
~~Departed boat launch, headed to CB006~~ (GH.100919)
1000 Captain logged control point at end of dock at boat launch
Departed boat launch, headed to CB006
1010 Arrived CB006, deployed sampler, water depth ≈ 5m
Viewed bed thru camera, facies = sand target Facies
1012 Sample collected, retrieving sampler
1015 Sampler on deck, GPS Name CB006-1-CHEM
1020 Moved to shore for sample processing
1022 Emptied sampler into Lexion tub
1024 Sediment characterization, cult resources check, will make 2nd attempt for composite.
1031 1035 Deployed sampler for attempt #2 CB006-2-CHEM
~~1031~~ Sample collected, Photo taken IMG# 103503.A
1037 Sampler back on deck
1038 Emptied sample into Lexion tub
Sediment characterization and cult resources check.
All sand so no sieving and weighing needed.
Transferred sample to containers
1054 Deployed sampler for attempt #3 CB006-3-BMI
1100 Sample collected, Retrieving sampler, moved to shore
1104 Sediment characterization and cult. resources check; transfer to BMI buckets, add ethanol preservative,
Completed sample CB006-SE-1-100919 &
1127 (GH.100919) ~~CB010-5~~ CB006-BMI-1-100919
1130 Deconned Hamon sampler.
1131 Departed shore, headed to CB012
1135 Arrived CB012
1136 Deployed sampler

Inga II S – Sediment Sampling

(JH 10.9.19)

1138 Sample collected at ~~EB00~~ CB012-1-CHEM

1142 Sampler back on deck, collected AVS sample

1146 Emptied into Lexion tub, cult resources check

1154 ~~Completed processing CB012-1-CHEM~~ holding for composite

1201 Cast time for CB012-2-CHEM

1203 Sample collected

1206 Sampler back on deck

1215 Sediment characterization, cult resources check, transfer sample to containers.
5 gallon bucket filled four inches from top = 4.7 gal
2.5 gal bucket filled 25" from top = 2.0 gal

1225 Cast time for attempt # 3 CB012-3-BMI

1228 Sample collected, retrieve sampler.

1230 Sampler back on deck, tranferring sample to BMI buckets, completed processing.

1249 ~~Departing~~ Arriving CB014, lunch break

1310 Cast time for attempt #1 CB014-1
Took photo of sampler on bed IMG# 13113314
Note, could not see bottom – loss of resolution on camera.

1317 Sampler back on deck, sample rejected due to overfilling of sampler. Plan to come back with Van Veen at this location. NO sample collected at this stime. Switching from sand to mixed fines

1327 Discarged sediment back into river.

1329 Arrived CB007, deconned sampler

1336 Cast time for CB007-1-CHEM

1338 collected sample, took photo IMG# 133758A, sieved grab, sediment characterization and cultural resources check.

~~1352~~ 1354 Cast time for CB007-2-CHEM
JH 10.9.19

1358 Collected sample, emptied into Lexion tub, sieved with 5 mm Sieve, cultural resources check, sediment characterization. Will need another grab.

1411 Cast time for CB007-3-CHEM, Rejected

1417 Cast time for CB007-4-CHEM

Scale: 1 square =

Rite in the Rain

1420 Sampler back on deck, grab is empty, rejected
1428 Cast time for CB007-5-CHEM, IMG# 142859A
1430 Sampler back on deck, grab empty, rejected
1437 Cast time for CB007-06, grab empty, rejected
Decision to collect minimum required for sample. Will not make additional attempts for physical/chem/bioassay samples
1440 Processing sample CB007-SE-1-100919
1500 Deconned sample processing equipment.
1509 Left shore to make another attempt for BMI
1513 Cast time for CB007-7-BMI, IMG# 151448A of bottom,
1534 processed BMI sample on shore, deconned sampler and processing equipment.
1539 Heading to CB018 - sand, deconning sampler, removed extra 150 lbs from
Departed CB007
1542 Arrived CB018
1546 Cast time CB018-1-CHEM, Photo on bottom IMG# 154839A
1552 Sampler back on deck, meets acceptance criteria, collected AVS sample, & sediment characteritation.
1600 Cast time for Attempt 2 - CB018-2-CHEM
1607
1608 Cast time for Attempt 3 - CB018-3-CHEM, accepted processed composite sample CB018-SE-1-100919
1633 Departed CB018, finished for today, deconned sample processing equipment. Heading back to boat launch.
1645 Arrived back at China Bend Boat Launch

10.9.19
Linda M. Howard

Scale: 1 square =

10 Oct 2019 Phase 3 Sediment Study, UCR
Ingalls - Sediment Sampling

0830 Arrived China Beach boat launch

0900 Tailgate safety meeting in parking lot

Personnel on boat today
AECOM: Linda Howard, Michelle Steigner, Michaela McCoog
Gravity: Peter Jenkins, Jeff Schut
JACOBS/EPA: Ellie Anzinger
CCT: Aren Orsen

0915 Boat safety briefing on boat

0930 Captain took control point at end of boat launch dock.
0936 Departed boat launch, headed to
0940 Deployed Hamon sampler
0946 Arrived JS001 Water depth = 15.2m
0957 Cast time for JS001 = time when Hamon is closed to make grab, IM6# 095744A ~~attempt~~ JS001-1-CHEM
0959 Sampler back on deck, ~~sample~~ rejected due to sampler overfilled.
1006 Adjusting sampler legs to reduce potential for overfilling sampler in soft sand & removed 300 lbs
1010 Dumped attempt #1 grab back into river.
1013 Cast time for attempt #2 JS001-2-CHEM, rejected due to grab being empty
1022 Cast time for attempt #3 JS001-3-CHEM, accepted
~~1022~~ 1034 Sediment characterization, collected AVS, Cult resources check. Will need additional grab(s).
Sample JS001-SE-1-101019 time is 1022 from attempt 3 since this is first accepted sample.
1044 Attempt 4 Cast time for JS001-4-CHEM
~~1044~~ 1046 Sampler back on deck, grab accepted. matches target facies - sand
1049 Emptied grab into Lexion tub, Cult resources check and sediment characterization. Will need additional grab(s)
1102 Cast time for attempt 5 - JS001-5-CHEM, rejected due to sampler overfilling making adjustments to Sampler - lengthening legs and adding 100lbs.

Scale: 1 square = _____

Rite in the Rain

10-10-19

Skipped page

Scale: 1 square =

10 Oct 2019 Phase 3 Sediment Study, UCR
Ingalls – Sediment Sampling

1128 Cast time for Attempt 6 – JS001-6-CHEM
IMG# 112812 A of sampler closing.
1134 Samples back on deck, Grab accepted, emptied into Lexion tub for composite sample processing.
Collected for all analyses + EPA Tx split
JS001-SE-1-101019 + JS001-SE-3-101019
1158 Deconned sample processing equipment.
Cast time for Attempt 7 – JS001-7-BMI, IMG# 120356A of sampler closing.
1206 Sampler bucket on deck, draining ~~out~~ water to capture benthic macroinvertebrates, processed BMI bucket
1224 Finished processing sample JS001-BMI-1-101019
Cleaning workspace, decanning equip.
Discussed plan: will attempt JS002
1232 Arrived JS002
1234 Cast time for JS002-1-CHEM
1243 Elle Anzinger confirmed with ~~Shawn Rourke~~ Shawn Rourke + Marilyn Gauthier that the judgmental locations do not require splits. Will hold onto EPA Tx split collected at JS001.
1248 Cast time for Attempt 8 – JS002-2-CHEM, Rejected
~~1248~~ due to not meeting minimum penetration depth. Was only ~ 2 inches of penetration.
1300 making adjustments to Hamon sampler to accomodate firmer sediment: moved pontoons all the way up so sampler penetration depth is now 6".
~~1313~~ 1318 (all 10-10-19) Cast time for Attempt 4 – JS002-4-CHEM, rejected due to sampler being overfilled.
Michaela called Anthony Palmeri to discuss reoccurring over penetration. Decision to keep trying at JS002 today.
1326 making additional adjustments to sampler – moved pontoons down
1335 Cast time for Attempt 5 – JS002-5-CHEM, accepted.
1355
1407 Cast time for Attempt 6 – JS002-6-BMI CHEM (all 10-10-19), accepted, Processed sample JS002-BMI-1-101019
1426 Finished at JS002

Scale: 1 square =

10 OCT 2019 Phase 3 Sediment Study, UCR
Ingalls - Sediment Sampling

~~(KH 10-10-19)~~

1450 Arrived ~~CB039~~, CB031 → CB031-SV-1

1455 on large boulder, IMG# 145512A, moved around small to ~~find~~ avoid boulders, IMG# 145721A ~~CB031-SV-2~~ (KH)

1457 Cast time CB031-1, Rejected - less than teaspoon of sand.

1515 Added 200 lbs & removed pontoons on sampler.

1527 CB031-SV-~~2~~3 IMG# 152754A Coordinates: ~~429831.25~~ 429830.32, 5407258.49

1529 Cast time for CB031-2-CHEM, Rejected - did not penetrate to min depth.

Depth 23.20

1539 ~~Michaela consulting with~~ Departing CB031 - does not match target facies of mfs.

1548 Arrived CB039.

1553 Cast time for CB039-1-CHEM. Hamon did not close.

1554 Opened and reclosed. Still did not close. Finally closed but lifted itself up and did not recover anything. Rejected due to no recovery on grab

1557 Cast time for CB039-2-CHEM. Took ≈ 1 minute for Hamon to close. Rejected - recovered only 3 pieces of gravel and a tablespoon of sand. Will return to CB039 tomorrow. Looks like target facies ~~vcrs~~ mfs, but were not able to get recovery today.

1609 Finished at CB039.

1617 Arrived back at China Bend boat launch.

Linda M Hamon
10-10-19

Scale: 1 square = _____

11 OCT 2019 Phase 3, Sediment Study, UCR
(Ingalls - Sediment Sampling)

0745 Arrived China Bend Boat Launch, unloaded day's supplies.
0800 Picked Elle A. (EPA) up from Dan's place & return to boat launch
0815 Daily tailgate meeting at boat launch parking lot. Cold, ice.

Personnel on boat today:
AECOM: Linda Howard, Michaela McCoog, Michelle Stegner
Gravity: Jeff Schut, Peter Jenkins
EPA/Jacobs: Elle Anzinger
CNI: Erick Weatherman, Steve Bachman

0836 Departed boat launch. Headed to CB039
0845 Arrived CB039
* * Safety obs: hardhat, safety glasses on deck * *
CB039-SV-1, took IMG# 085520A, moving around appears to be cobble & large cobble.
CB039-SV-2, took IMG# 085751A, cobble
0858 ~~Retrieved~~ Raised sampler and camera and looked around for target stratum!
0900 Cast time CB039-3-CHEM, Rejected → less than minimum sample penetration - 1" of sandy gravel. Hamon has total 600 lbs on it
0911 Cast time CB039-4-CHEM, accepted, will need additional grabs. 600 lbs on Hamon
0926 Cast time CB039-5-CHEM, rejected < min penetration of M-C SAND. 600 lbs on Hamon
0934 Cast time CB039-6-CHEM, rejected < min. penetration.
(2410-11-19) ~~Cast time~~ ~~CB039-7-CHEM~~, IMG# 094551A, cobble, some gravel
Video Survey CB039-SV-3
0949 Retrieved Hamon sampler.
1003 Deployed Hamon sampler
1005 Cast time CB039-7-CHEM, accepted, processed composite sample ID: CB039-SE-1-101119, includes Attempts 4+7 filled 2.5 gal bioassay bucket to 5" from top = 1.22 gal
1037 Decanned sample processing equipment, going for BMI.
1040 Deployed Hamon sampler
~~1042~~ 1044 Cast time CB039-8-BMI, Note Hamon did not close so moved slightly and closed again; Rejected < min penetration, recovered only about 2 cups of sand.
1049 Cast time ~~CB039-9-BMI~~, Hamon just walked when closing. raised up and opened for another cast.
(2# 10-11-19 not counted as an attempt)

Scale: 1 square = _____

Rite in the Rain

(Ingalls – Sediment Sampling)

(CB1010-1-19) to

1051 Cast time ~~CB039-9-BM1~~, CB039-9-101119

1102 Going to cease at CB039 for now, will return for BM1 later, Deconned Hamon and sample processing equipment, will head to CB047.

1108 Arrived CB047

1113 Cast time ~~CB047-1-CHEM~~, rejected, poor recovery, < 1".

1118 Deployed Hamon.

1119 Cast time CB047-2-CHEM, rejected, poor recovery, 2.5" of sand and gravel.

1123 Deployed Hamon

1124 Cast time CB047-3-CHEM, accepted, sieved and set aside for composite.

1154 Deployed Hamon

1158 Cast time CB047-4-CHEM, accepted, sieved and set aside for composite.

1211 Deployed Hamon

1213 Cast time CB047-5-CHEM, accepted, sieved and set aside for composite

1231 Deployed HAMON

1232 Cast time CB047-6-CHEM, rejected <2.5" recovery

1236 Cast time CB047-7-CHEM, rejected, no recovery

1241 Cast time CB047-8-CHEM, accepted, sieved and composite of Attempts # 3, 4, 5 & 8 processed. for sample ID: CB047-SE-1-101119 & EPA splits; CB047-SE-3-101119

1324 Deployed Hamon.

1325 Cast time CB047-9-BM1, processed, deconned Hamon and sample processing equipment.

1345 Departed CB047, Headed to CB016

1354 Arrived CB016

1356 Deployed Hamon. Water depth = 21m.

1358 Cast time CB016-1-CHEM. Hamon took ~2 min. to close, rejected grab due to overpenetration.

1407 Removed 150 lbs for From Hamon.

1414 Deployed Hamon.

1417 Cast time CB016-2-CHEM, Rejected poor recovery <1"

1422 Cast time CB016-3-CHEM, accepted, removed cobbles by hand and sieved fines. Hold for composite.

1443 Deployed Hamon

1446 Cast time CB016-4-CHEM, rejected – poor recovery <1" sand and gravel

1452 Deployed Hamon

Scale: 1 square = _____

(JH 10-11-19)

1454 Cast time ~~CB0116-5-CHEM~~, Hamon walked. Will reopen and recast.
1456 cast time CB0116-5-CHEM, rejected
1501 deployed Hamon
1502 cast time CB0116-6-CHEM, no recovery
1505 cast time CB0116-7-CHEM, no recovery.
1511 Will use Attempt #3 for SAMPLE CB0116-SE-1-101119. Do not have enough for a full 5-gal Bioassay bucket. Processed sample.
1529 Deployed Hamon
1531 Cast time CB0116-8-BMI, rejected, no recovery
1536 Cast time CB0116-9-BMI, accepted, processed sample
1551 Departing CB0116.
1553 Arrived CB0118. Collected CHEM sample ~~yesterday~~ on 10-9-19; will attempt BMI sample today. (JH 101119)
1556 Deployed Hamon.
1557 Cast time CB0118-4-BMI, rejected over penetration (sand)
1607 Cast time CB0118-5-BMI, accepted
1610 Finished processing Sample CB0118-BMI-1-101119.
1642 Arrived China Beach boat launch

Lindsay Howard
10-11-19

Scale: 1 square = _____

12 oct 2019 Phase 3 Sediment Study, UCR
Ingalls – Sediment Sampling

0800 Arrived at china Beach boat launch, unloaded vehicles

0815 Pickup up Elle Anzinger from Dan's place + return to boat launch.

0830 Tailgate meeting in parking lot. Saturday, hunting season, may be more boat traffic, fatigue.

Personnel on boat today
AECOM: Linda Howard, Michelle Stagnar, Michaela McCoog
Gravity: Peter Jenkins, Jeff Sabat
EPA/Jacobs: Elle Anzinger
CNI: Erick Weatherman, Steve Bachman

0840 Departed boat launch. Headed to CB039. Did not get control yet because another boat was moored at the end of the dock.

0848 Arrived CB039. Deployed Hamon.

0856 Cast time CB039-10-BMI, Rejected due to poor recovery ~2".

0902 Cast time CB039-11, Rejected due to poor recovery ~2.5". Added 100 lbs to Hamon.

0911 Cast time CB039-12, Rejected, Poor recovery ~1.5"

0918 Cast time CB039-13, Rejected, poor recovery <1" - a few pieces of gravel.

~~0924~~

0924 Cast time ~~CB039-14~~, Rejected, saw cobble in video image, so did not retrieve. Did not record as Attempt.

0927 Cast time CB039-14, Recovery is 2". Will hold for now. If we do not get good recovery on the next couple of attempts then we will use "attempts with less than min. recovery per FSP. Michaela consulted with Anthony Palmeri.

0940 Added spikes to Hamon

0946 Cast time CB039-15, Rejected, Poor recovery <1"

0952 Cast time CB039-16, Recovery ≈ 2", ~~to be noted~~

1020 Departed CB039. Heading to CB008

1030 Arrived CB008

1034 Cast CB008-1, Rejected, no recovery, only water.

1040 Cast CB008-2, Rejected, no recovery, only water

1046 Lowered Hamon but saw boulders. Took video point CB008-SV-1 IMG# 104631A

Scale: 1 square = _____

Ingalls - Sediment Sampling

1049 Cast time CB0008-3/4, Rejected, no recovery.
Facies doesn't match target MFs. Will head to CB0009
1102 Depart CB0008
1112 Arrived CB0009
1116 CB0009-SV-1, took IM6# 111630A
1118 CB0009-SV-2, took IM6# 111758A
1120 CB0009-SV-3, took IM6# 112005A
1123 CB0009-1-CHEM, accepted, sieved and set asided for composite.
1152 CB0009-2, Rejected, only a couple pieces of gravel in sampler.
1156 CB0009-3, Rejected, no recovery.
1201 CB0009-4, Accepted, sieved and held for composite
1224 CB0009-5, No recovery
1230 ~~CB0009-6, door~~ did not close, will move some and ~~recast.~~ recast.
1232 ~~CB009~~-6, Rejected, <1" recovery
1237 CB0009-7, accepted, sieved, and composited (25% sediment in sample) CB0009-SE-1-10219
1302 Deconned sample processing equipment
1314 Close Hamon but could see that there was no recovery
1316 Moved and closed again, but no recovery
~~Sand~~ MFs present between cobbles & boulders, but difficult to grab.
1320 ~~CB0009-SV-4~~, IM6# 132019A
CB0009-8, Rejected, no recovery + door clipped in wrong position & did not close
1335 moved and lowered Hamon again, but all cobble.
1336 CB0009-SV-4, IM6# 133640A cobble
1338 Cast time CB0009-9, # NO Recovery
1350
1353 CB0009-10-BM1, accepted, processed.
~~2~~ 1420 Departed CB009
1422 Arrived CB0010
1425 Cast time CB0010-1-CHEM, accepted
1448 No recovery, so will recast
1450 Door didn't close, will recast
1454 Cast time CB0010-2. Sampler walked.

Scale: 1 square = _____

Rite in the Rain

Ingalls - Sediment Sampling

1455 cast time CB0109-3 Rejected, over penetrated.

1502 cast time CB0109-4-CHEM, accepted

Processed Sample CB0109-SE-1-101219, sediment = 75% of composite sample.

Processed EPA splits: CB0109-SE-3-101219 and CB0109~~-TX~~-3-101219 SE DJS 10/14/19

* Safety observation - use proper lifting technique - don't lift and twist; get help.

1538 Lowered Hamon and closed, but sampler walked. Also, lid is on the wrong hook, pulled up and corrected

Cast time CB0109-5, no recovery

1543 Cast time CB0109-6-BMI, accepted, processed sample CB0109-BMI-1-101219

1600 Departed CB0109

1606 Captain took control point at end of dock at boat launch.

1607 EPA Observer Elle Anzinger took the split for CB0109-SE-3-101219 (MS)

Linda M Hammond

10-12-19

Scale: 1 square = _____

14 October 2019 Phase 3 Sediment Study UCR; Ingalls sediment sampling

0645 Shira DeGroot (SHD), Michelle Steigner (MS) & Michela McCoog (MM) leave for site.
0718 Arrive on site.
0800 Drop off cars at secondary point
0825 Health and safety orientation. Includes AECOM, Gravity, CNI Jacobs, Tribe (Spokane), Teck. Additional boat orientation by CNI.
0903 Control point, leaving dock
0924 Set up at CB02 2
0929 Deploy Van Veen at CB02 2. MM on deck, SHD on notes, MS on archeology.
0930 See field form for CB02 2-1
Rejected, gravel preventing jaws of Van Veen from closing, caused loss of sediment.
0940 Cast at CB02 2-2. Rejected due to gravel in jaws of sampler.
0949 Cast at CB02 2-3. Rejected due to gravel in jaws of sampler.
0954 Change length of legs on sampler to reduce penetration, will perhaps address ~~problems with~~ rejection due to 10-14-2019 underlying gravel.
1002 Cast at CB02 2-4. Rejected due to gravel in jaws of sampler.
1010 Moving to alternate. Gravel/cobble content was approximately 30%, sand content ~~below~~ SHD 10-14-2019 indicates incorrect facies
1014 Set up at CB02 0. Decon sampler.
1019 Cast at CB02 0-1-CHEM. Accepted sample. Process, log, & collect sample CB02 0-SE-1-101419.
1115 Begin decon.
1118 Cast at CB02 0-2-BMI Collect sample CB02 0-BMI-1-101419
SHD 10-14-19 ~~changed~~ time for consistency with lead notes
1140 In-water rinse.
1144 Cast at CB02 0-3-BMI Collect sample CB02 0-BMI-2-101419
1215 Complete CB02 0.
1227 ~~Cast at CB~~ Decon prior to CB02 1
~~1238 Cast at CB021-1-CHEM. Collect sample CB021-SE-1-101419~~ SHD 10-14-19
SHD CB021-SE-1-101419.
~~1328 Cast at CB021~~
1232 Cast at CB02 1-1. Reject sample due to gravel in jaw of sampler
1237 Cast at CB02 1-2-CHEM. Collect sample CB021-SE-1-101419.
1328 Cast at CB02 1-3-BMI. Collect sample CB02 1-BMI-1-101419. Filled two 5-gallon buckets.

Scale: 1 square = _____

Rite in the Rain

1345 Note that safety boat, with Teck and CNI left around 12:30. Porewater and their ~~sampler~~ SD safety boat ~~left~~ SD are still nearby

1350 Finish decon at CBØ21. Move to CBØ24

1357 Cast at CBØ24-1-CHEM. Collect sample CBØ24-SE-1-101419.

1425 Move to next, CBØ24-2. Begin river rinse while MM & MS collect sample.

1440 Cast at CBØ24-2-BMI. Collect sample CBØ24-BMI-1-101419.

1507 Finish sample collection. Decon Van Veen samplers. Discuss plan for rest of week and samplers needed

1519 Move to CBØ27.

1520 Cast at CBØ27-1. Insufficient sample depth, rejected sample

1530 Cast at CBØ27-2-CHEM. Large, steep slope, unable to sample, Van Veen fell over. Re-set and redo attempt 2.

1538 CVI safety boat back. Transporting Teck.

1540 Teck reviewing sample collection on shore; collected sample. Collect sample CBØ27-SE-1-101419.

1615 Head back to dock.

SV
10-14-19

Scale: 1 square = _____

15 October 2019 Phase 3 Sediment Study, UCR
Ingalls - Sediment Sampling ~~2~~ SHD
Captain = Hank Jenkins

0800 Arrive on site
0830 Tailgate H&S meeting. Included Shira De Groot (SHD), Michaela McCoog (MM), Michelle Steigner (MS). Also Gravity, CNI, Jacobs, AECOM porewater & AECOM H&S observers.
SHD 10-16-19

0841 Control point taken. Move to CB027.
0852 Cast at CB027-3-BMI. Accepted. Collect sample CB027-BMI-1-101519.
0921 Move to CB029.
0928 Cast at CB029-1. Rejected due to small cobble stuck in jaws of sampler.

0932 Cast at CB029-2. Rejected due to gravel stuck in sampler jaws. Material was mud with rounded gravels and small cobbles
0940 Cast at CB029-3-CHEM. Accepted. Collect sample CB029-SE-1-101519. Also collect EPA split for bioassay CB029-SE-3-101519. Sample was reviewed Marilyn (Jacobs) before placing in container and while placing in container.
1015 Move back to CB029.
1018 Cast at CB029-4-BMI. Rejected due to sample disturbance/loss. Potentially due to slope.
1024 Cast at CB029-5-BMI. Accepted. Collect sample CB029-BMI-1-101519.
Will collect BMI dup on CB029.
1050 Cast at CB029-6-BMI. Accepted. Collect duplicate sample CB029-BMI-2-101519.
1106 Finish sample collection, begin decon. Stop at dock
1128 Move to CB044.
1137 Cast at CB044-1. Video cast. CB044-SV-1, & CB044-SV-2 collected. Rejected. Incorrect stratum, move to new place in ~~Polygon~~ SHD sample area. Decision confirmed by Jacobs.
1149 Cast at CB044-2-CHEM. Accepted. Collect sample CB044-SE-1-101519.
1225 Move back to CB044.
1228 Cast at CB044-3-BMI. Accepted. Collect sample CB044-BMI-1-101519. Collected bull van veen surface area, rather than right half to get correct volume

Scale: 1 square = _____

Rite in the Rain

Ingalls - sediment sampling

1255 Complete CB0144, move to CB0114. Add 200 lb of Weight to sampler. Decon sampler while moving.

1312 Cast at CB0114-2-CHEM.
On 10/9, made attempt 1 SD but rejected
Accepted. Collect primary, duplicate, and EPA split at this station.
Collected: ~~CB014-1~~ SHD CB014-SE-1-101519, CB014-SE-2-101519, CB014-SE-3-101519.
Time for CB014-SE-2-101519 was 1317.

1356 River rinse at CB0114

1358 Cast at CB0114-3-BMI. Accepted. Collect sample CB014-BMI-1-101519.

1418 Leave CB0114. Move to ~~3-RB~~ 3-R7-2019. Decon sampler while moving

1428 Cast at 3-R7-2019-1. Rejected due to Van Veen sampler not closing on video.

1431 Cast at ~~3~~-R7-2019-2-CHEM. Accepted. Collect sample ~~CB0~~ SHD 3-R7-2019-SE-1-101519.

1505 Finish collecting sample. River rinse

1509 Cast at 3-R7-2019-3. Rejected because gravel in sampler jaws

1515 Cast at 3-R7-2019-4-BMI. Accepted. Collect sample 3-R7-2019-BMI-1-101519.

1534 Finish sample collection, begin decon. Move to 3-RB-2019 to recon.

1548 Depth is 40 m. Too dark for recon. Stop for day & discuss plan for tomorrow. Decision to switch to Hamon sampler for tomorrow.

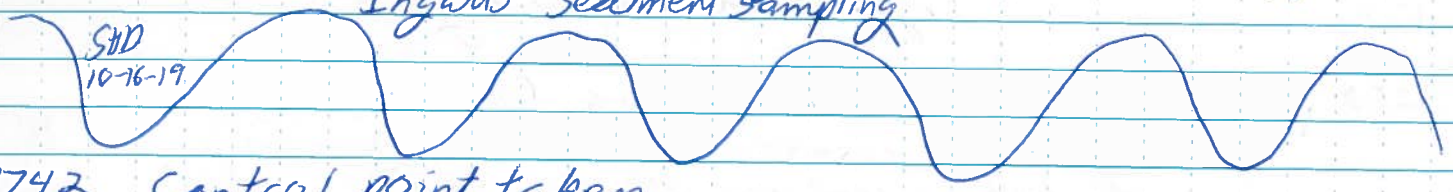
1600 Head back to dock.

SHD
10-15-2019

Scale: 1 square = _____

16 October 2019 Phase 3 Sediment Study, UCR pg 1

Ingalls - Sediment Sampling



0742 Control point taken

0815 H+S tailgate. Included AECOM Gravity, CVI, Jacobs.

0820 AECOM employees on sediment boat (Ingalls) = Shira DeGrood (SHD), Michelle Steigner (MS), Michaela McCoog (MM). ~~SSO~~ Captain is Pete Jenkins

0830 Move to 3-R8-2019. Decon hamon sampler.

0840 Begin sample collection. Low to no visability on camera due to depth/low

0843 Cast at 3-R8-2019-1. Rejected. Plywood caught in sampler jaws and less than 1-inch penetration.

0901 Cast at 3-R8-2019-2. Rejected, No sediment collected.

0908 Cast at 3-R8-2019-3. Rejected, No sediment collected.

0924 Cast at 3-R8-2019-4. Rejected. No sediment collected.

0934 Cast at 3-R8-2019-5. Rejected. Sample was mostly gravel, less than 20% fines.

0954 Cast at 3-R8-2019-6-CHEM. Accepted. Included in sample 3-R8-2019-SE-1-101619.

1023 Cast at 3-R8-2019-7. Rejected. No sediment collected.

1033 Cast at 3-R8-2019-8. Rejected. No sediment collected.

1100 Cast at 3-R8-2019-9. Rejected, no sediment collected.

1116 Cast at 3-R8-2019-10-BMI. Accepted. Collected sample 3-R8-2019-BMI-1-101619. Achieved minimum quantity for BMI sample.

1142 Leave ~~38~~ SHD 3-R8-2019. Begin decon.

1149 Cast CB015. Closed grab. Grab walked. Opened grab to find new location. Alt for CB-008.

1153 Cast CB-015. landed, video showed cobbles. Did not close. wrong stratum.

1205 Didn't close properly. End of Attempt 1 CB015-1

1209 Cast CB-015-2. Rejected due to low penetration depth.

1214 Cast CB-015-3. Rejected due to low penetration depth. Video showed cobbles with thin layer of sand on top. Wrong strata

1220 Leave CB-015. Begin decon.

1230 Move to CB-042. Alternate for CB-008

1235 Cast at CB-042-~~3~~ SV-1, took picture instead, Incorrect facies.

1237 Cast at CB-042-1. Rejected due to incorrect facies.

Scale: 1 square = _____

Ingalls - Sediment Sampling

1250 Cast at CB-042, take pictures CB-042-SV-2 and CB-042-SV-3. Leave site ~~Move to dock for restroom~~ STBD

1302 Move to CB-030. Alternate for CB-008.

1309 Cast at CB-030-1, see rocks. take photo CB-030-SV-1 & CB-030-SV-2. Incorrect facies

1312 Collect sample at CB-030-1. Rejected, no recovery.

1317 Cast at CB-030. Incorrect facies. Take photo CB-030-SV-3

1322 Pull up sampler and decon.

1338 Move to CB-002. Alt for CB-008.

1346 Cast at CB-002-1. Rejected due to over penetration. Remove weight from Hamon and cast again.

1353 Cast at CB-002-2. UCHEM Accepted. Collect sample ~~CB-030-SE-1-101619~~ STBD CB002-SE-1-101619.

1409 Cast at CB-002-3. UCHEM Accepted. Composite as ~~CB-030-SE-1-101619~~ STBD CB002-SE-1-101619.

1431 Cast at CB002-4-BMI. Accepted. Sample as CB002-BMI-1-101619.

1450 Finish CB002. Begin decon

Finished all samples possible with hamon, rest require freeze. Demobe for day.

1545 Back at warehouse.

SD
10-16-2018

Scale: 1 square =

17 October 2019 Phase 3 Sediment Study, UCR
Ingalls - Sediment sampling
Captain = Pete Jenkins
AECOM Crew = Shira DeGrood, Michaela McCoog, Michelle Steigner

0830 Tailgate H+S meeting: Includes AECOM, gravity, CNI, Jacobs EPA, CMA.

0840 Set up on Ingalls. Changing equipment and setting up for freeze grabs.
Marilyn (Jacobs) and Robert (EPA) on ~~site~~ vessel for oversight.
Control point taken at approximately 0740. Pete will check soon.

0910 Move to CBOSO. Run camera at approx. 20m below water

0918 Take photo CBOSO-SV-1. Continue camera, see cobbles

0921 Take photo CBOSO-SV-2. Continue camera, see cobbles

0924 Take photo CBOSO-SV-3. Depth = 20.6m

0926 Take photo CBOSO-SV-4. Depth = 19.8m

0929 Take Photo CBOSO-SV-5. Depth 21.8 M

0940 Due to coarse material, moving to CBOS4.

0954 Send camera down at CBOS4.

0954 Collect photo CBOS4-SV-1. Depth = ~20m. Cobble to fine gravel. No sand evident.

0957 Collect photo CBOS4-SV-2. Depth = 21.7m

1000 Collect photo CBOS4-SV-3. Some fine gravels present.

1002 Collect photo CBOS4-SV-4. Some fine gravels, but not fines

1004 Collect photo CBOS4-SV-5 and took second photo at same spot

1008 Collect photo CBOS4-SV-6 SV-5 ~~SV-6~~

1010 Collect photo CBOS4-SV-7.
Collect photo CBOS4-SV-8
CBOS4-SV-9 - Cobbles
CBOS4-SV-10 gravel to cobbles
CBOS4-SV-11, gravels

1025 Deck sampler. Move to CBOS6

1045 Cast at CBOS6, looking at camera

1046 Collect photo CBOS6-SV-1. Cobbles with fines in interstitial spaces

1048 Collect photo CBOS6-SV-2. Cobbles with gravels & fines

1050 Collect photo CBOS6-SV-3. Cobbles, dusting of sand

1056 Collect photo CBOS6-SV-4. Cobbles, some fines on top

1100 Decision to attempt sample at CBOS6-SV-4 location. Set up freeze sampler.

1115 Cast at CBOS6-1. No recovery

Scale: 1 square = _____

(cont.) Ingalls - Sediment sampling

Jacobs expressed that they agree we did ~~best possible~~ sincere effort SHIP effort

1133 Move to new section of CBOS6 polygon, send down camera. See greater percent fines, attempt sample.

1146 ~~Cast~~ SHIP Cast at CBOS6-2-CHEM Alt for CB032.

1156 Pull up sampler. Defrost and remove sediment. Accepted. Include in sample CBOS6-SE-1-101719.

1231 Cast at CBOS6-3-CHEM.

1236 SHIP 41 Pull up sampler. Accepted. Include in sample CBOS6-SE-1-101719.

1328 Cast at CBOS6-~~B~~ SHIP-4-CHEM.

1338 Pull up sampler. Accepted. Include in sample ~~Cop~~ SHIP CBOS6-SE-1-101719.

1404 Cast at CBOS6-5-BMI.

1414 Pull up sampler. Accepted. Include in sample CBOS6-BMI-1-101719.

1450 Cast at CBOS6-6-BMI

1500 Pull up sampler. Accepted. Include in sample CBOS6-BMI-1-101719

1540 Finishing sample collection for CBOS6. Move back to dock. Finish sample processing at dock.

1610 Finish sample processing & pack up

1830 At warehouse

SD

10-17-2019

18 October 2019 Phase 3 Sediment sampling, UCR
Ingalls - sediment sampling

AECOM: M Stegner, M. McCoog, S. DeGroot
Gravity: P. Jenkins, C. kellogg
EPA: M. Gauthier (MEB 11/26/19)

0753 SHG ~~Tasty~~ Control point taken
0800 Tailgate H+S meeting
0825 On SHG ~~Bad~~ boat, move to CB005
0858 Cast at CB005-1-CHEM.
0908 Up sampler. Sample accepted. Include in sample CB005-SE-1-101819.
0925 SHG Cast at CB005-2-~~CHEM~~.
0935 Pull up sampler. Rejected. No recovery. Boat is moving a lot due to wind + current. Pulling up sampler is difficult.
~~0925~~ 0949 SHG Cast at CB005-3-CHEM.
0959 Pull up sampler. Accepted. Include in sample CB005-SE-1-101819.
1037 Cast at CB005-4-~~CHEM~~ BMI.
1047 Pull up sampler. Accepted. Collect sample CB005-BMI-1-101819.
1115 Collect rinsate blank of stainless steel scoop. CB005-SE-4-101819.
1120 Move to CB040, leave CB005.
1138 Video shot, cobbles. CB040-SV-1
1141 Video captured, cobbles. CB040-SV-2
1145 With camera found probable area. Brought camera up and will load freeze grab.
1150 Prep to sample at CB040. Alternate for ~~SG~~ SHG CB050
1204 Cast at CB040-1-CHEM
1214 Pull up sampler. Accepted. Include in sample CB040-SE-1-101819.
1235 Cast at CB040-2-chem.
1245 Pull up sampler. Accepted. Include in sample.
1309 Cast at CB040-3-CHEM.
1319 Pull up sampler. Accepted. Include in sample.
1351 Cast at CB040-4-CHEM.
1401 Pull up sampler. Accepted. Include in sample.
1415 Cast at CB040-5-BMI.
1425 Pull up sampler. Accepted. Include in CB040-BMI-1-101819.
1447 Cast at CB040-6-BMI.
1457 Pull up sampler. Accepted. Include in sample.
1523 Cast at CB040-7-BMI.
1533 Pull up sampler. Accepted. Include in sample.
1550 Finish at CB040. Move back to ~~go~~ dock SHG

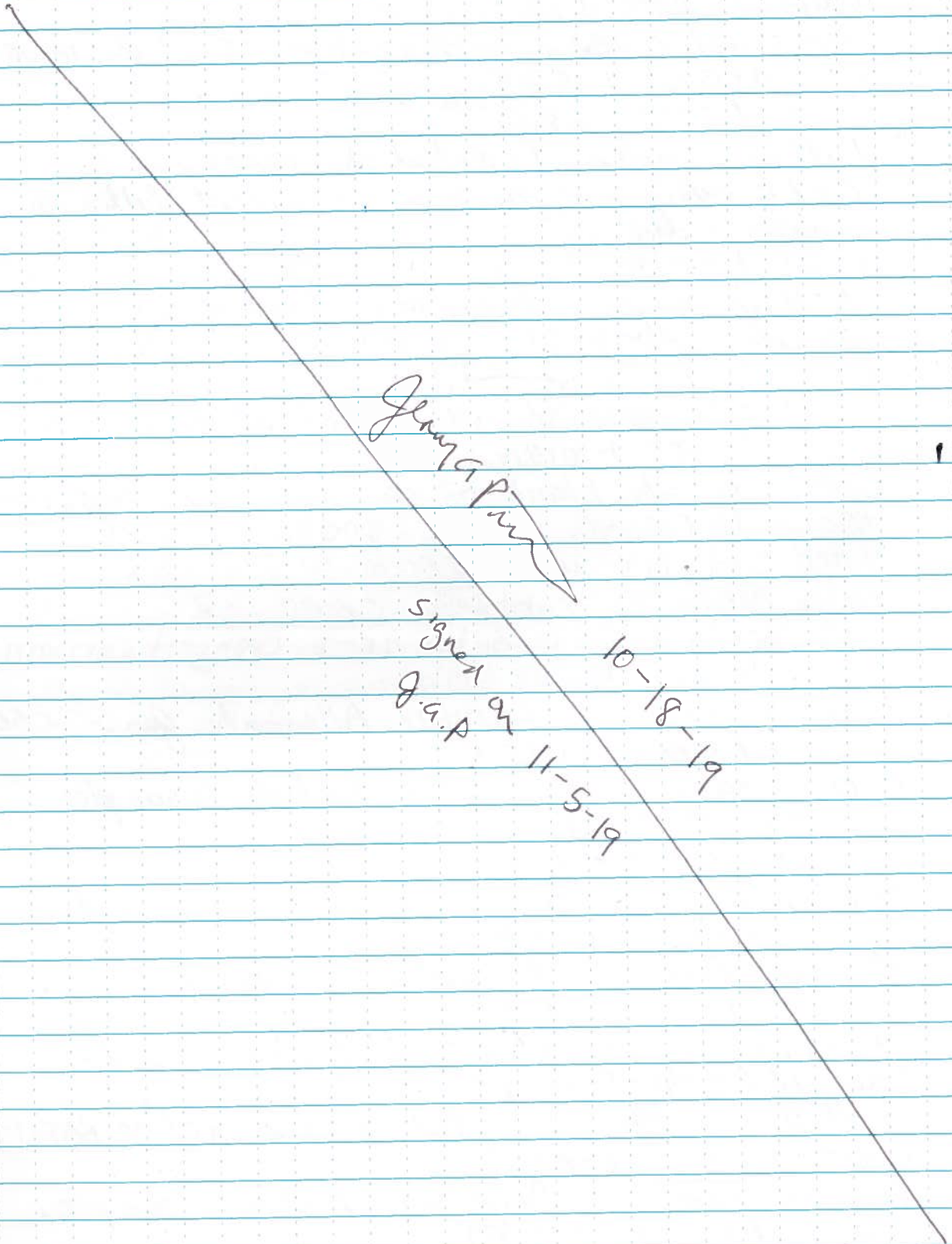
Scale: 1 square = _____

Rite in the Rain

18 October (continued) 16 — Phase 3 Sediment Study, UCR — pg 2

Ingalls - sediment sampling

1650 Back at warehouse



Scale: 1 square = _____

#3

Tieton - PW

Rite in the Rain®

ALL-WEATHER

UNIVERSAL

№ 373-MX

MADE IN TACOMA
— SINCE 1916 —
Rite in the Rain®
— DEFYING MOTHER NATURE —

Name

AECOM

Jennifer Pretare, PhD
Senior Biologist
Project Manager

AECOM
1111 3rd Avenue
Suite 1600
Seattle, WA 98101

206 438 2700 tel
206 438 2175 direct
510 681 6401 mobile
866 496 5288 fax
jennifer.pretare@aecom.com

aecom.com

Address

Phone

Email

Projects 2019 Phase 3 Sediment Study
Upper Columbia River
Logbook #3

MADE USA RITE GREEN Archival paper
RiteintheRain.com

16 Sept 2019 Phase 3 Sediment Study p.1

Weather: overcast, light rain, 57°

~~1500~~ (ZH 9-16-19) at Northport Boat Launch

1400 Personnel on RV Tieton for today
AECOM: Linda Howard
Gravity: John Schaffer, Chad Furwlie
CMA: Bart Chadwick, Jess Moon
CNI: Josh Weatherman
EPA/Jacobs: Rachel Zajac-Fay
Visitors: None

~~1515 H/S Briefing~~

1430
~~1530~~ Load gear & staff onto RV Tieton, depart for (ZH 9-16-19) Deadman's Eddy AOI (DME)

1515 H/S Briefing on boat: Linda Howard & John Schaefer

1548 Arrived DME, organize workspace, sample equipment set up

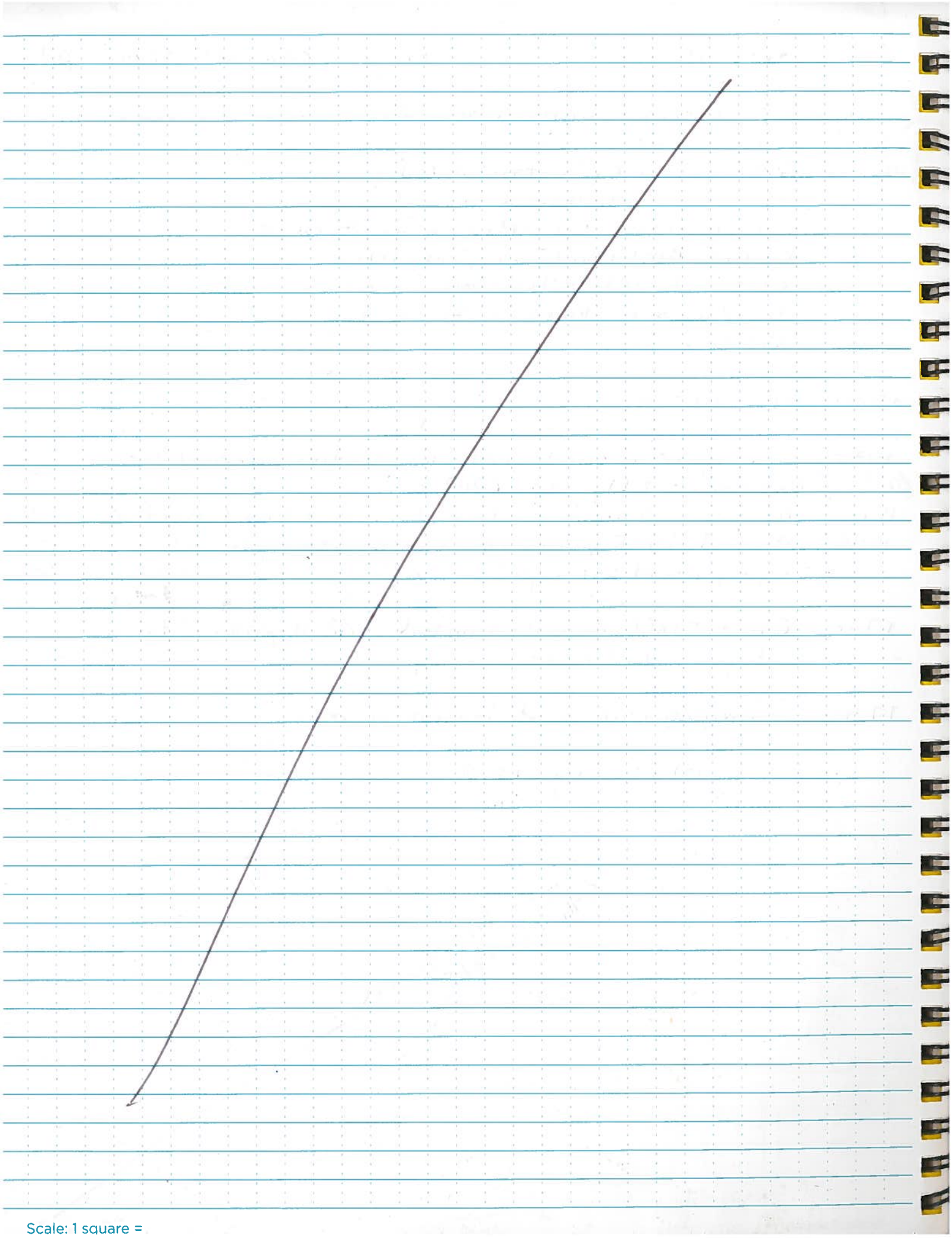
1700 CMA Staff decontaminated Trident probe: tubing, fittings, and probe.

1745 Completed decon of Trident probe.

End of Day: 1815

Linda Howard 9-16-19 1815

Scale: 1 square =



Scale: 1 square =

~~Page~~

17 Sept 2019 — Phase 3 Sediment Study — ~~P1~~ PAH2
PW Sampling RV Tieton

Weather: partly cloudy, 59°F, light breeze

Personell on RV Tieton today
AECOM: Linda Howard
Gravity: John Schaefer, Chad Furnlie
CMA: Bart Chadwick, Joss Moore
EPA / Jacobs: Rachel Zajac-Fay
Visitors: none

1330 H/S briefing at boat launch
1340 Load gear & personel onto Tieton, depart for Deadman's Eddy
1400 Arrive DM026. Target station is sampleable sand
1400 Bart Chadwick performed calibration check on sensors: conductivity, ph, ORP - myron
dissolved oxygen sensor
Glovebox oxygen sensor
~~Trident Conductivity Sensors~~ (LH. 9-17-19)
1415 Decontamination of surface water line by Joss Moore
1455 Linda Howard completed disc filter preparation

1535 Beginning purge
1600 End purge, Flush disc filters with 10mL of DI water, clean gloveboy
1605 L. Howard put clean bottle set and filters inside gloveboy, turned on nitrogen gas. Oxygen meter ~~set~~ (LH 9-17-19) bottomed at 28.0
1638 CMA turned on peristalic pump; porewater began arriving in glove box. Flushed the first 300 ml into waste bucket.
DO was detected. The ORP was therefore sulfide
~~Act~~ LH 9/17/19.
Sample bottle will not be filled.
Filled sample bottles in this order:
DM026-PW-1-091719 metals
Field split - DM026-PW-3-091719
DOC
Toc
Sulfate

1742 Sampling complete.

Scale: 1 square =

17 Sept 2019 continued
Phase 3 Sediment Study, NCR
PW Sampling RV Tieton

1745 Turn off nitrogen, open glove box, put Field split in 1 gallon size Ziploc and put into cooler with ice. Put 4 bottles into cooler with ice
1811 Depart for boat launch
1830 Arrive Northport boat launch
1845 Handed of EPA Field split to Rachel Z (Jacobs/EPA)

End of day
~~1830~~ 1845
(LH 091719)

Linda M. Hummel
09/17/19

18 Sept. 2019 — LCR Phase 3 Sediment Study
Porewater Sampling
RV Tieton

Weather: light rain

Personnel on Tieton today
AECOM: Linda Howard
Gravity: John Schaefer, Chad Furwine (LH 091719)
CMA: ~~Chad~~ Bart Chadwick, Joss Moore
EPA: Rachel Zajac-Fay
Visitors: None

0700 Project team health & safety briefing at Kettle Falls warehouse

0900 Northport Boat Launch health & safety briefing for Tieton, Cayuse, and CN1 Boat teams heading to DME; changing water levels, woody debris.

0930 Launch boats, load equipment & personnel onto boat.

0945 L. Howard & J. Schaefer completed float plan, texted to D. Hose, discussed target sample location → DM022
CMA repairing camera lense which got foggy yesterday.

1017 Departed boat launch
L. Howard texted corrected float plan to D. Hose.

1023 Arrived DME, anchoring at DM022

1027 CMA Reattaching camera to Trident drive frame

1030 Tested camera, viewed on laptop. Image still foggy.
Discussed that because we know we are in sand today should not be an issue, but will need to resolve.

1041 CMA Recalibrated oxygen sensor in ambient air (Photo 102-0011)

1047 Oxygen sensor calibrated to 20.9% + (Photo 102-0012)
Finished anchoring at DM022 (within 3 feet)
Coordinates (UTM):

1058 Weather: Steady rain

1100 CMA setting up to decon Trident probe: fittings, tubing, and probe
L. Howard took photos of glovebox set up with alconox, distilled water, and DI water for purging porewater & surface water lines Photo 102-0013 & 102-0014
1110 Began running alconox through tubing.
1130 Completed decon of Trident probe
J. Moore putting ~~bead pack~~ on probe
Prepare for purging porewater & surface line
1145 Deploying Trident drive frame

1149 Driveframe settled on bed. View image on screen & confirmed stratum as sand, began purge of lines.
1158 J. Moore replaced vinyl gloves in glove box
1208 L. Howard precleaned 2 disc filters. CMA review water quality parameters: - Conductivity 1.642
- Temp 13.8°
- TDS 93.8D ~~PP~~ (LH. 09-18-19)
- pH 6.98
- ORP ~~0.54~~ 253
(LH. 09-18-19)

1212 Purging on PW and surface water lines completed with 300mL of DI.
1228 L. Howard decontaminated glovebox & put sample bottles & filters in glovebox. No sulfide sample because Oxygen was present.
1246 L. Howard began filling sample bottles in this order
DM022-PW-1-091819 metals
DM022-PW-2-091819 metals
DM022-PW-1-091819 DOC
TOC
Sulfate
↓
1329 Sampling complete
1344 L. Howard labeled sample bottles, placed inside 1-gallon ziploc bag and placed in ice cooler, completed sample data form, sample location form
1400 CMA completed calibration checks. All equipment calibrated successfully.

Scale: 1 square = _____

1400 CMA decontaminating Trident probe.

1431 ~~Metals, Toc, sulfate~~

Discussion with Kevin/ERM regarding equipment rinsate blank process and which sample bottles to fill. Per Kevin, today fill metals, Toc, and Sulfate bottles and he will confirm. Second question was whether to conduct equipment rinsate blank with or without bead packs Per Kevin, without bead pack.

1450 L. Howard collected equipment rinsate blanks in the following order: metals, Toc, Sulfate } DM022-PW-4-091819

1500 L. Howard labeled equipment rinsate blank sample bottles, placed inside 1-gallon ziploc bag, and placed in ice cooler.

L. Howard corrected label on DM022-PW-1-091819 Sulfate bottle. Was incorrectly labeled as Sulfide.

J. Moore reassembled Trident probe. Sampling complete.

1503 Discussed needs for tomorrow:

Resupply DI + nitrogen
Resupply 150 ms conductivity standar for cal checks
Nitrile gloves
Sample bottle kits

Follow up for tomorrow:

Confirm analytes for equipment blanks with Kevin/ERM

Fix: Camera
1 gallon, 2-gallon, + quart size ziploc bags

1523 Finished cleaning up workspace.

1534 Departing DM022.

1553 Arrived at DM023 for recon only. Substrate is same as DM022 but flat → sampleable sand.

1546 Arrived at DM015 for recon only. Sand w/ milfoil

1554 ~~1556~~ Arrived at DM010 for recon only. Sand

(LH 091819) Arrived at DM016 for recon only. Sand w/ wood debris

Arrived at DM018 for recon only. Sand

1607 Arrived at DM02 for recon, but over 7.5m deep + can't see bed.

Scale: 1 square = _____

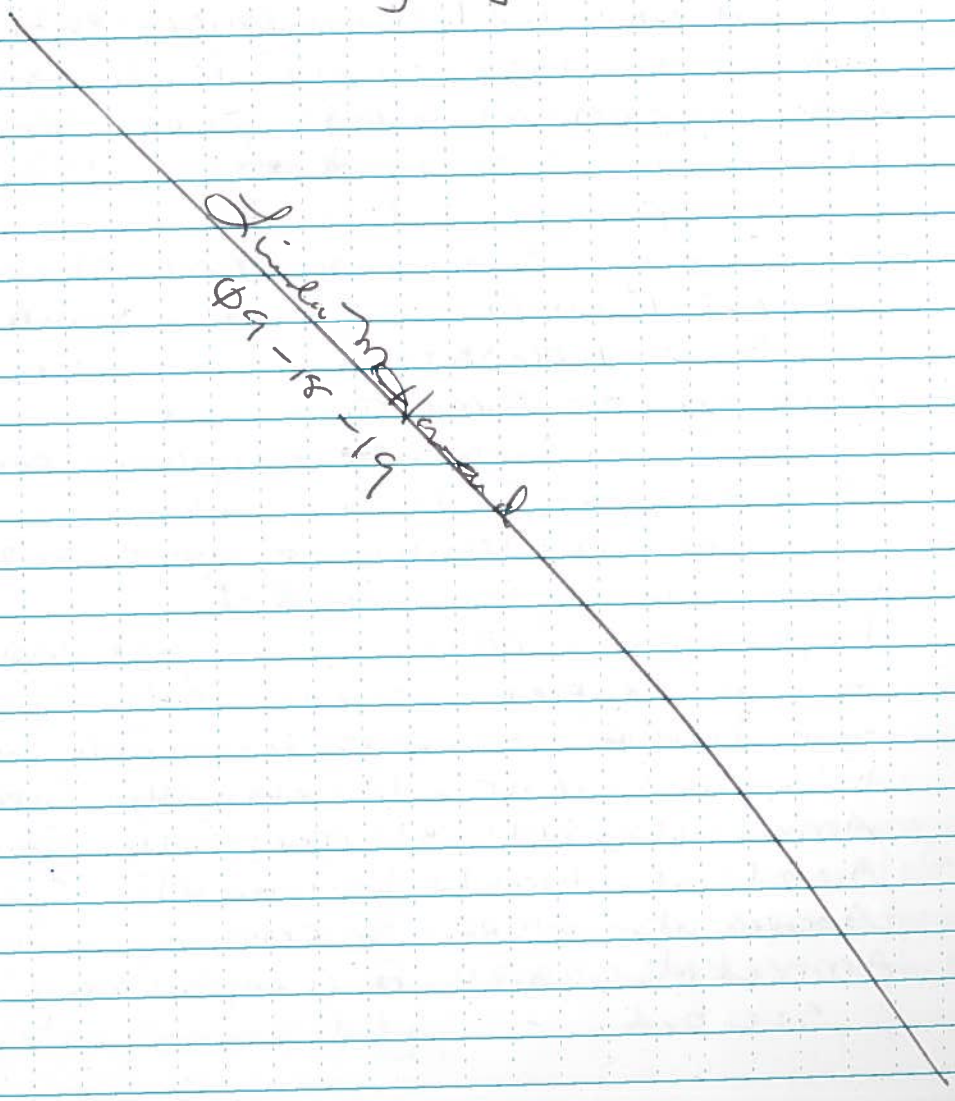
09-18-19 UCR Phase 3 Sediment Study
Continued Porewater Sampling - RV Tiecton

1613 - Beached temporarily. Per C. Furalie we will head back to Northport boat launch
- J Pretare called to say that the Tiecton porewater sampling crew can set our own start time tomorrow and conduct our own Safety briefing.

Safety observations/near misses
- B. Chadwick bumping head on cabin doorway
- L-Howard spilled acid preservative on nitrile gloved hand
- Everyone needs to drink more water

1619 - Headed back to boat launch
1630 Back at Northport boat launch.

End of sampling day



Scale: 1 square = _____

19 Sept 2019 UCR Phase 3 Sediment Study
Porewater sampling - RV Tieton

0700 Arrive North port boat launch
0710 Tailgate meeting, discussed:
fit for duty, dark earlier in morning - traffic hazards, need safety kit in vehicles, check in plans, hydration, awareness during anchor deployment and retrieval.

Weather: overcast, 54°F

Personnel on Tieton today:
AECOM: Linda Howard
CMA: Bart Chadwick, Joss Moore
Gravity John Schaefer, Chad Furulie
EPA/Jacobs: Rachel Zajac-Fay
Visitors: none

0730 L. Howard texted float plan to Dave Hose
0750 Tieton brought to boat launch for loading of equipment and personnel.
0800 All equipment and personnel on boat.
CMA checking camera. Image looks good outside of water.

Target sample location DMΦ23 then DMΦ8
0800 Gravity charged out winch guide mechanism
0815 Departed boat launch for DMΦ23.

NOTE: Have warehouse make copies of CMA data sheet and bring back to CMA for next day.

			Depth
0825	Arrived at DMΦ23	UTM Coordinates: 446259.24	1.3M
0830	Finished anchoring at DMΦ23	5421167.06	
0838	~~Deployed Trident probe (driveframe)~~ (SN. Φ91919)		

Set Trident driveframe on wooden box (Photo 102-0019)
Set up equipment connecting to probe (Photos 102-0020 to 0024)
0900 Purged waterline 300 mL - J. Moore
L. Howard pre-cleaned disc filters.
J. Moore and L. Howard replaced gloves on glove box
0915 Finished purge of porewater line.

Scale: 1 square = _____

Rite in the Rain

19 Sept 2019 continued

0915 CMA doing water quality parameters
0927 L. Howard cleaned glove box with distilled water then DI water, placed sample bottles and filters in side glovebox.
0945 Sample collection began - pore water began filling bottle
Collected samples in the following order:
DM023-PW-1-091919 Metals
DM023-PW-1-091919 DOC
DM023-PW-2-091919 DOC
DM023-PW-1-091919 TOC
Sulfate
↓
1037 Finished collecting sample
L. Howard labeled sample bottles, placed inside 1-gallon ziploc bag, placed inside ice cooler.
1035 Retrieved Trident probe, J. Moore did basic cleanup of probe.
B. Chadwick performed calibration checks
1048 J. Moore began decon of Trident probe
1048 B. Chadwick completed calibration checks. All equipmented calibrated successfully.
1117 Completed decon of probe, ~~departed DM023~~ (HH091919)
1128 Left DM023
1135 Arrived at DM008 - target sampleabe sand
Note: near edge of boulder/cobble polygon
1136 Dropping anchor at DM008
1145 Anchoring
1200 Deployed trident probe. Sand viewed on laptop screen from camera image, but probe not all the way in, so will tap in. Took about 12 taps to drive probe in to target depth.
1220 (LH091919(a)) ~~Poo~~ L. Howard cleaned glove box, began purge of porewater line - 16 mL / minute
Pore water has a yellow tinge.
1240 L. Howard placed sample bottles + filters inside glovebox.
CMA took water quality measurements.
DO present; so no SULFIDE sample.

Scale: 1 square =

1242 L. Howard put hands in glovebox

~~1248~~ Began sampling ~~**~~ Sample time is when pore water begins flowing into bottle

1302 (LH 091919)

CMA conducted water quality check.

(LH 091919) Continued sampling

102 1341 Completed sampling

1400 CMA retrieved Trident driveframe, began decon of Trident probe.

1415 Discussed next steps among vessel crew and sampling team. We have already reconned everything in this area and not enough time for another sample, so will head back to Northport boat launch after decon of equipment is completed.

1439 Completed decon of Trident probe and move driveframe to deck.

1451 ~~Dd.~~ → Departed station DM 008

End of sampling day

Linda M. Howard

09-19-19

Scale: 1 square = _____

Rite in the Rain

20 SEP 2019 UCR Phase 3 Sediment Study
Porewater Sampling
RV Tieton

0700 Vessel and sample crew arrived/met at North port boat launch
0715 Daily tailgate safety held with RV Tieton and RV Cayuse and CNI safety boat teams together. S. Holmes completed tailgate meeting form.
0730 RV Tieton discussed workplan and completed float plan for today.
0800 Load equipment and personnel on boats
0807 L. Howard texted float plan to Dave Hose. Target sample locations are DM015 and DM014

NOTE L. Howard forgot Tieton thumb drive. Will use CMA thumb drive today.
FOLLOW UP Also, CMA data file for DM008 did not get saved to thumb drive yesterday. Will copy to thumb drive today.

0815 J. Moore replaced gloves on glovebox.
0840 Arrived at ~~DM014 Coordinate~~ (JH 09-20-19) DM 015
~~Water depth~~ (JH 09-20-19)
L. Howard pre cleaned 2 disc filters for DOC analysis, add sample bottle for Sulfate duplicate to sample bottle kit. J. Moore de-con glove box.
0851 Anchored on sample location. Move slightly to get out of Milfoil area.
0904 Deployed trident driveframe, viewed image on screen, stratum is sand with sparse Milfoil. Took one tap to drive probe into substrate.
(JH 09-20-19)
Coordinates ~~DM001~~ DM015: 446157.61
5421231.67
Water depth: 1.5 m
0905 Began 300mL purge of porewater line. Turned on porewater pump
0946 Began sampling at DM015

Scale: 1 square =

20 SEP 2019 continued LCR Phase 3 Sediment Study
PW - RV Tieton

0946 Collected sample DM015-PW-1-092019 and DM015-PW-2-092019 for Sulfate in the Following order: Metals
DOC
TOC
Sulfate
Sulfate (duplicate)

Finished sampling

1040 Retreived Trident probe and began decon of probe.

L. Howard labeled sample bottles, placed inside 1 gallon ziploc and placed in ice cooler; filled out sample data form, photo log and sample location form.

1124 Completed decon of Trident probe, retrieved anchors,

1140 departed DM015. Enroute to DM014.

1207 Arrived DM014. Deployed Trident probe/ Anchors started slipping so had to retrive probe.

1228 Anchored outside of DM014 to discuss problems with anchoring. Deep water and fast current. Will look around polygon for potential location to anchor safely.

1239 Decision to leave DM014 for now and go to DM018. Will discuss returning to DM014 later.

1243 Arrived ~~DM014~~ DM018 (LH09 2019) and began anchoring.

1254 L. Howard precleaned 2 disc filters for DOC analysis.

1257 Coordinates for ~~DM014~~ (LH09 2019) are: 4460210.49
DM018 5421136.00

Water depth: 1.8

Note: the polygons for DM018 and DM016 overlap. Sample location for DM018 is 14.5 meters upstream of target location, within the DM018 polygon but outside of the DM016 polygon.

Scale: 1 square = _____

20 SEP 2019 LCR Phase 3 Sediment Study - Porewater Sampling - RV Tieton.

~~0700~~ 1300 Deployed probe, overshot probe, raised back up Then pushed back in again.

Question on whether there is an issue with disturbing the porewater once the probe is inserted, pulled out, and pushed back in again.

Decision pulled probe out and moved boat over a couple of feet. Pushed probe in but over shot again. Pushed probe in again. Final depth is about 0.5 inch deeper than we normally set it

1328 Began 300 mL purge of porewater line.

1338 Began sampling at DM018 in the following order
DM018 - PW-1-09192019 metals
DOC
TOC
Sulfate

1411 Finished sampling

1423 Retrieved Trident probe, decon probe, J. Schaefer saved RV Tieton GPS data onto CMA thumbdrive "UCR1", gave to CMA to saved data

1435 CMA gave L. Howard Daily Calibration checks data form.
CMA Finished decon of Trident probe

Note
DM028 & 29
1m 10m
high current

SUPPLY NEEDS: Sample kits
Drinking water
Large nitrile gloves

1527 Anchors up and departing sample location, B. Chadwick gave L. Howard CMA thumb drive "UCR 1" with CMA data added.

End of Sampling

Linda M Howard
9-20-19

Scale: 1 square =

21 SEP 2019 UCR Phase 3 Sediment Study
Porewater Sampling – RV Tieton

0700 Arrive Northport Boat Launch

0715 Tieton and Cayuse combine daily tailgate H+S briefing:
Sturgeon fisherman in our sampling area today

0730 Load equipment + personnel onto boats

0800 Personnel on Tieton today:
AECOM: Linda Howard
Gravity: John Schaefer, Chad Furulie
CMA: Bart Chadwick, Joss Moore
EPA/Jacobs: Rachel Zajac-fay

Gravity + CMA making adjustment to Trident driveframe carriage so that when probe is pushed into sediment it is not overpushed.

Our target sample locations today are:
am010 + DM002, will go to DM002 first
DM010 is an EPA split for metals

L. Howard gave CMA their thumb drive back from yesterday.

0827 Departed boat launch for DM002

0844 J. Moore replaced vinyl gloves in glovebox, L. Howard deconned glovebox and set up for 300mL purge of porewater.

0859 Arrived on sample location DM002.
Coordinates are: 445969.69
5421210.87

Water depth is: 11.8 meters (JH 09219)

0914 Deployed Trident driveframe → Facies is ~~gravel~~ small cobble (coarse)
→ does not match target facies of sampleable sand. Also on steep slope.

Rite in the Rain

0928 Discussed target sediment facies mismatch. Nearby alternate sample location DM001 is in same strong current and anticipate it would also be small cobble (coarse). Will go to next primary sample location for now → DM010.

0936 Left DM002.

0943 Arrived DM010 Coordinates are: 44 61 13.59
54 21 21 2.46
Water depth 0.80 meters

Target sediment facies: Sampleable sand
Veridifed facies : Sampleable sand

0946 Began 300 mL purge of porewater line

1013 Finish the purge of 300 mL

1030 Sampled DM010-PW-1-092119 in the following order: metals
metals → EPA split DM010-PW-3-092119
DOC
TOC
Sulfate

NOTE R. Zajac-Fay determined that this EPA split should have been MS MSD. She consulted J. Johnson (EPA|Jacobs) and decision is to move the MS MSD to another EPA split location.

1104 Completed sampling, labeled sample bottles, placed inside 1 gallon ziploc and in icebox.

1123 CMA starting daily calibration checks; retrieved Trident probe.
(1140 092119) B. Chudwick recalibrate the oxygen sensor on the glovebox to 20.9% Oxygen

1142 Purged Trident probe, CMA gave L. Howard cal check Deconned data Form.

1204 Finished decon of Trident probe and pulling anchors.

1205 Depart DM010, J Moore replaced vinyl gloves in glovebox, L. Howard deconned glovebox, set up for 300 mL purge and pre-cleaned 2 disc filters for DOC.

Scale: 1 square =

21 SEP 2019 continued — LCR Phase 3 Sediment Study Porewater Sampling - RV Tiefton

1226 Arrived DM016, Coordinates: 446171.01
5421158.45
Water depth: 4.3 m
J. Moore deployed Geotech filter sampling

1308 Sampled DM016-PW-1-092119 in the following order:
Metals
DOC
TOC
Sulfate

1338 Finished sample - L. Howard labeled bottles, placed inside 1 gallon ziploc bags and placed inside ice cooler.
Safety NEAR MISS: Spilled metals bottle with preservative (nitric acid) inside glove box. Was wearing nitrile gloves under vinyl. Glovebox was closed. Cleaned up with Kimwipes and discarded in plastic bag. Later cleaned with distilled water.

Plan to go back DM002 and recon in area for sampleable sand.

1426 Departed DM016.

SUPPLY NEEDS: - metals sample bottles
* will need 3 bottles for MS MSD EPA splits. So make sure to metals bottles are in boat
- sample bottle labels

Inventory: 7 complete sample bottle kits
2 kits without metals bottle
NEED: 2 metals bottles for kits
to metals bottles for EPA splits.

1445 Pulled over to beach, organized workspace and equip to offload.

1525 Headed back to boat launch

Linda M Howard
09/21/19

Scale: 1 square = _____

24 Sep 2019 — UCR Phase 3 Sediment Study
Porewater Sampling - RV Tieton

0800 Arrive at Syringa Boat Launch

0815 Tieton and Cayuse combine for H+S meeting: Driving to & from job site and boat to boat transfers. Wind can be strong at times.

0845 Load equipment on boat and depart at boat launch

0945 Depart Boat Launch for Ref015

000 Personell on board today: Anders Utter (AECOM)
John Shaefer & Chad Furulie (Gravity)
Rachel Zajac-Fay (EPA/Jacobs)
Chris Smith & Alan Sias (CMA)

Gravity & CMA adjusting trident probe & boat decks for sampling

Todays sample location targets are Arrow Lake Ref013, Ref014, Ref015

045 A. Utter decanned glove box and set up for 300 mL purge of porewater

1110 Arrived at sample location Ref015 target stratum: sand/mud
Coordinates are: 435190.69
5466559.24
water depth is: 20.7 m

1126 Deployed trident probe frame Facies is sand/mud → matches target facies
Target facies - sand/mud
Verified facies - sand/mud
* Note mud but elements of sand

1134 Began Purge of PW line 300 mL

1152 Finish Purge of PW line

1211 Sampled ~~Ref015-1-PW~~ (AM 7/24/19) Ref015-PW-1

order: metals
DOC
TOC
Sulfate

1235 Finished Sampling ~~Ref015-1-PW~~ (AM 9/24/19) Ref015-PW-1

Scale: 1 square =

1247 completed labels, placed samples inside 1 gal zip lock and into iw cooler

1250 CMA starting daily calibration checks, retrived trident probe. A. Sims calibrated oxygen sensor on glove box to 21%
Begin decon of trident probe and pulling up anchors

1255 Depart Ref015, head to Ref014

1305 Arrive at station: Ref014 target stratum: sand/mud
coordinates are: E 435276.22 verified stratum: sand/mud
N 5466530.84
water depth (meters): 15.7 m

Anchors secured in place and set at sample location

1314 A. Utter begins to decon glove box with Lab D.I. water; kim wipes; prepares box for next location which includes - clean 2 filters with 1 mL D.I. for DOC
Finished decon of probe and glove box

1330 Deployed trident probe target stratum: sand/mud
verified stratum: sand/mud

1335 overpenetrated, going to lift probe out of riverbed move over very slightly, and re-drive probe

1340 lifted probe out, re-drive ~1 foot away and successfully landed probe within 0-6 in

1345 Began Purge of 300 mL of PW line
Finish Purge of 300 mL of PW line

1408 Sampled ~~Ref014-1-PW~~ AU 9-24-19 Ref014-PW-1
Sampled Dissolved metals bottle of Dup ~~Ref014-2-PW~~ AU 9-24-19 Ref014-PW-2

1447 Finished Sampling Ref014-PW-1
Ref014-PW-2

Scale: 1 square =

24 Sep 2019
continued

UCR Phase 3 Sediment Study
Porewater Sampling - RV Tiet on

1503 Finished labeling samples & placed in 1 gal zip lock bag in cooler

1505 CMA retrived Trident probe and began decon of probe
- RV Cayuse Rafted up to our boat

1520 RV Cayuse leaves

1525 Disconnecting Trident Probe from A-frame for safe keeping over night
Pulling Anchors up
Finish decon of Trident probe (A. Sims)

1530 A. Utter decons glove box

539 Depart RF14 heading back to boat launch

600 Arrive at boat launch bring equipment/samples off boats

1605 Head offsite to hotel

Andrew Utter
9-24-2019

25 Sep 2019

UCR Phase 3 Sediment Study
Porewater Sampling : RV Tieton

0700 Arrive at Syringa boat launch

0715 Tieton & Cayuse combine for H&S meeting: Field team member getting sick, driving to & from site.

0730 Load equipment onto boat

0745 Depart boat launch for sample locations: Ref 16, 17, 18
Personel on boat today: AECOM - Anders Utter
Gravity - John Schaefer, Chad Furulie
EPA - Rachel Zajac-Fay
CMA - Chris Smith, Al Sims

Todays sample location targets are: Ref 016.
Ref 017
Ref 018

A. Utter decon glove box, purge filters w/ 100 mL DI H_2O and set up for sampling

0840 Arrive at sample location: Ref 016
coordinates are: E 418672.76
N 5492198.33
Water depth (meters): 18.6 m

0937 Decon and calibration check of trident probe complete

Deployed Trident probe frame — Target Facies - Sand/Mud
Verified Facies - Sand/mud

0945 Begin Purge of 300 mL of PW line — Oxygen Sensor calibrated to 20.8 %
Finish Purge of 300 mL of PW line — by A. Sims (CMA)

1028 Sampled Ref016-PW-1 — order: metals
DOC
TOC
Sulfate

1056 Finished sampling Ref016-PW-1

1100 Completed labels placed samples in 1-gallon zip lock bag and in cooler

Scale: 1 square = _____

25 Sep 2019
continued

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tietan

1105 CMA retrived trident probe and began decon process
Anchors being pulled up to make to next location

1110 A. Utter decon'ed glove box and prepared filters + bottles for next sample location

1120 Depart Sample location Ref016 heading to Ref017

1135 Arrive at Sample location: Ref017
Coordinates are: E 418634.20
N 5492296.54
Water depth (meters): 24.60 mm

138 Deploy trident probe frame Target facies: Sand/Mud
Verified facies: Sand/Mud

1145 Began Purge of 300 mL of PW line
1210 Finish Purge of 300 mL of PW line

1220 Sampled Ref017-PW-1 order: Metals
DOC
TOC
Sulfate

250 Finish Sampling Ref017-PW-1

300 Complete labels, placed samples in 1-gal ziplock in cooler

303 CMA retrived trident probe and began decon process

305 A. Utter Decon glove box and prepared filters + bottles for next sample location

306 Anchors being pulled up to make to next location

315 Depart sample location Ref017 heading to Ref018

Note: We need some
dissolved metals
bottles for 2 kits
- Plus sampling forms
✓ - DI water from store

Scale: 1 square =

25 Sep 2019
continued

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tiefon

1320 Arrive at Sample location: Ref018
Coordinates are: E418597.49
N 5492360.11
water depth (meters): 24.6m

1344 Deploy trident probe frame: Target Facies: Sand/Mud
-applying legs b/c of sloped surface Verified Facies:

~~Begin Purge of 300 mL~~ AW 9/25/19

1350 1st attempt over penetration (>98% sand)
2nd attempt landed on cobble — majority of area is sand with minimal scattered cobble, stratum still concluded to be sand

3rd attempt over penetration
4th attempt hit sand, within 0-6 in, successful attempt

1420 Begin Purge of 300mL of PW line
1440 Finish Purge of 300mL of PW line

1442 Sampled Ref018-PW-1 & Ref018-PW-3 * small filter popped off, secured to tubing w/ zip tie

1524 Finished sampling Ref018-PW-1 & Ref018-PW-3

1528 Complete labels and place samples in ziplock bag and into cooler

1535 CMA retrives trident probe and began decon process

1540 A. Utter decon glove box and prepare for tommorow

1548 Anchors being pulled, preparing to depart for boat launch

1610 Depart for boat launch

Amber Utter
9/25/19

Scale: 1 square = _____

Rite in the Rain

26 Sep 2019

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tieton

0800 Arrive at Syringa Boat Launch

830 Tieton + Cayuse combine for health + safety meeting: Slips on deck due to wet surfaces

845 Depart docks for Ref013

Personel on board today: AECOM - Anders Utter
Gravity - John Schaefer, Chad Furuline
EPA/Jacobs - Rachel Zajac-Fay
CMA - Chris Smith, Alan Sims

0852 Gravity and CMA adjusting trident probe for sampling + decon for equipment blank.

0910 Arrive at sample location: Ref013
Coordinates are: E 435360.02
N 546690.13

Water depth: 12.6 m

0915 Begin decon and calibration check of trident probe

0916 Equipment blank is going to be taken before sampling Ref013. Equipment blank will be named Ref018-PW-4-092619. This is because that was our last sampled location, hence this blank will be quality control for that sample location and every location before that.

0930 Decon and cal check complete

945 Sampled Ref018-PW-4-092619

000 Deploy trident probe target facies - sand/mud
1st attempt - cobble failed, readjust probe
2nd attempt - appeared to be sand/mud could not get probe into sediment, attempted to hammer in but was not working. Moved to new location due to disturbed substrate

Note* successful stratum location but trouble getting probe into surface. 0-6 inch. b/c of equipment issue

Scale: 1 square = _____

26 Sep 2019
continued

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tiger

1011 pulling probe out of water to check equipment. Seems to be a malfunction with the drive connection

1015 Equipment seems to be fine. Dropping probe again

Attempt 3 - probe hit ~~sand cobble and did not penetrate sediment, potentially sand layer on top~~ Sand (Augrzic?). Drive function not working again

note * Stratum is good and verified with target, the drive function is malfunctioning not allowing probe to be driven

1028 3rd attempt successful drive, drive function worked properly and assisted probe into the 0-6 in substrate. after adjusting equipment

1030 Began purge of 300 mL of PW line

1045 Finish purge of 300 mL of PW line

1108 Sampled Ref013-PW-1-092619 order: metals
DOC
TOC
Sulfate

1134 Finished Sampling Ref013-PW-1-092619

1142 Completed labels and placed samples in ziplock bag in cooler

1144 CMA retrieves trident probe and begins decon process

1153 A. Utter decons glove box with Lab DI water

1204 Pulling Anchors to head back to dock

1220 Depart Ref013 for boat launch

Melissa Utter
9/26/19

Scale: 1 square = _____

Rite in the Rain

27 Sep 2019

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tieton

0730 Arrive at Trail Boat Launch

800 Tieton + Capuse combine for daily health + safety tailgate meeting: switching from lake to river work environment, more current, be alert

825 Depart from dock for Ref01 & ref02

Personel on board today - Anders Utter (AECOM)
John Schaefer, Chad Furuline (Gravity)
Chris Smith, Alan Sims (CMA)
Rachel Zayac-Fay (EPA/Jacobs)

0843 Gravity & CMA adjust probe for sampling + decon

0910 Arrive at sample location Ref002
Coordinates are: E 447491.69
N 5446069.32

Water depth (~~meters~~): 2.8 ft / 0.85 meters

0854 Begin decon and calibration check of trident probe

0929 Decon and Cal check complete, calibrated O_2 sensor to 20.8 %

0949 CMA + Gravity adjusting probe so drive function won't malfunction like yesterday at Ref03. To compensate for the drive function not working when sloped, CMA added on buoy to the top of the trident probe to lift the frame just slightly so it is suspended 1/4 inch above surface to get drive function vertical and hammer in probe 0-6" into sediment.

1010 Arrive at Ref002 (See notes above for coordinates)

1013 Deploy trident probe target facies - sand
verified facies - sand

1017 Began Purge of 300 mL of PW line

Scale: 1 square =

27 Sep 2019
continued

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tiction

1050 Finish Purge of 300 mL of PW line

Order: Metals
DOC
TOC
Sulfate

1056 Sampled Ref002-PW-1-092719

1124 Finished sampling Ref002-PW-1-092719

1134 Completed labels and placed samples in 1-gallon zip lock bag and into cooler

1135 CMA retrived trident probe and ~~begins~~ begins decon process

1142 A. Utter decon glove box and prepare filters for next sample location

1221 Depart sample location Ref002, heading to sample location Ref001

1245 Arrive at Sample location Ref001
coordinates are: ~~E4474 86.39~~ AM 9/27/19 447483.04
N ~~5445986.46~~ 5445987.18

Water depth (meters): ~~4.9~~ AM 9/27/19 ~~6.4 m~~ AM 9/27/19 ~~6.4 m~~ AM 9/27/19 5.8 m

1246 Deploy trident probe Target facies - mixed
verified facies - mixed (sand and small coarse cobble)
attempt #1 frame was not level/would not drive
attempt #2 ~~unsuccessful~~ successful
AM BS mCS 9/27/19

1312 Begin purge 300 mL of PW line

1337 Finish purge of 300mL of PW line

1340 Sampled Ref001-PW-1-092719
Ref001-PW-2-092719

Order: Metals
DOC (1 DUP)
TOC
Sulfate

1413 Finished sampling

1420 CMA retrived trident probe and ~~began~~ decon + breakdown for the day

1428 Completed labels and placed samples in 1-gal zip lock into cooler

1430 A. Utter deconned glove box and prepped for tomorrow

Scale: 1 square = _____

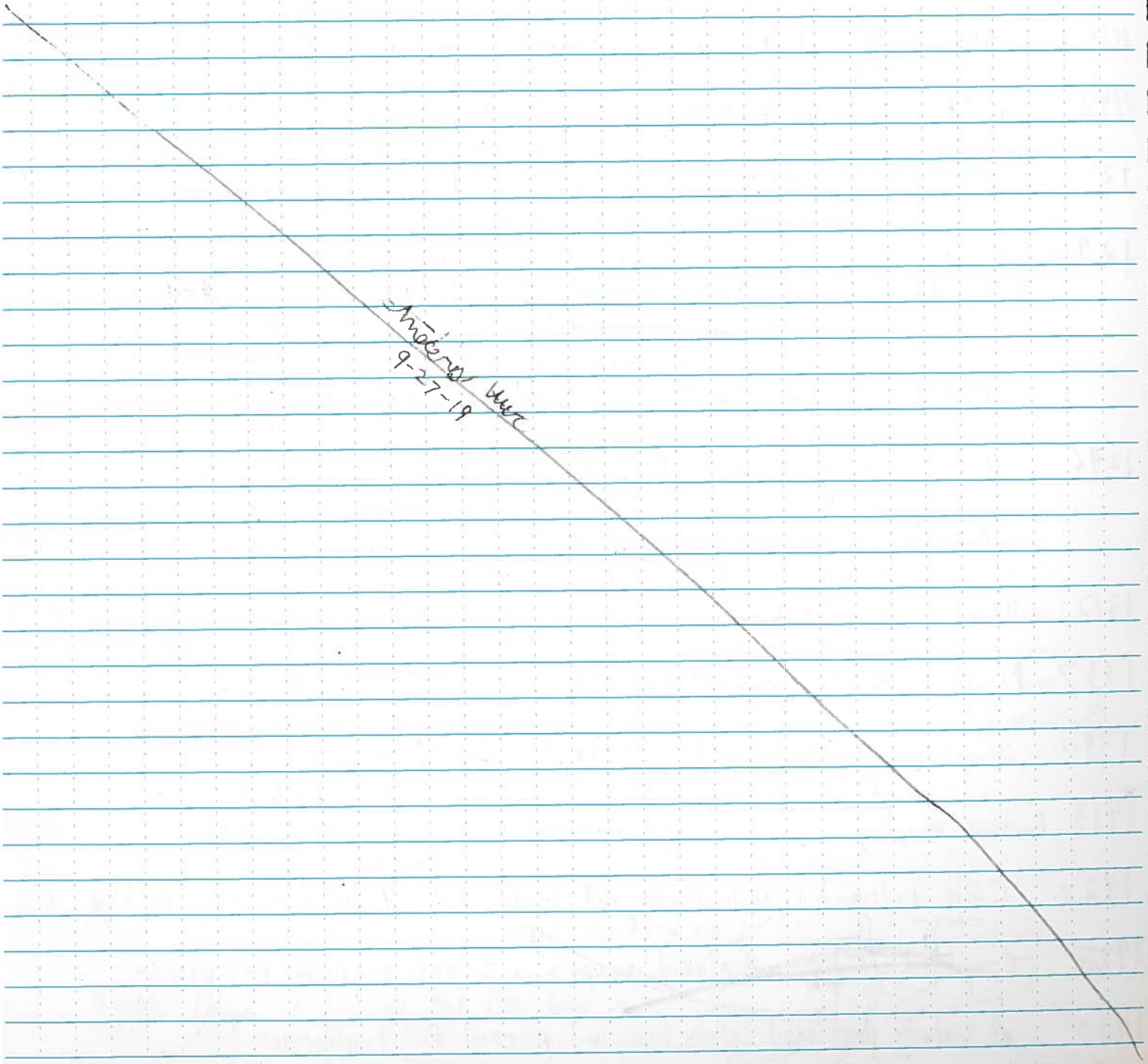
Rite in the Rain

1440 breaking down porewater equipment for the day and motor back to Trail boat launch.

.Weather today: 40°-50° partially cloudy with intermediate rain occasionally throughout day. <5mph winds

445 Pulling anchors and departing sample location Ref001.

455 Leaving sample location for dock



Scale: 1 square =

28 Sep 2019

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tieton

0730 Arrive at trail boat launch

0800 Tieton and Capuse combine for daily health and safety meeting: Slips, trips, and falls due to wet surfaces. Temperature monitoring too. Potential to drop close to freezing

0820 Depart from dock for sampling locations Ref003 & Ref004

Personel on board today – AECOM: Anders Utter
Gravity: John Schaefer, Chad Furuline
CMA: Chris Smith, Alan Sims, Marie Biser
Jacobs/EPA: Rachel Zajac-Fay

0843 Beach boat near sampling locations to do trident probe maintenance and decon + cal checks

1023 Decon complete heading to sample location Ref003

1040 Arrive at sample location Ref003
Coordinates are: E 447864.56
N 5446885.35

Water depth (meters): 0.76 m

1045 Deploy trident probe target facies – sand
verified facies – sand

1047 Began purge of 300 mL of PW line

1105 Finish purge of 300 mL of PW line

1121 Sampled Ref003-PW-1-092819 Order: Metals (+ EPA split)
DOC
Ref003-PW-3-092819 EPA split TOC
Sulfate

1153 Finish sampling Ref003-PW-1-092819
Ref003-PW-3-092819

1155 Complete labels and place samples in 1 gallon zip lock bag and in cooler

Scale: 1 square = _____

Rite in the Rain

28 Sep 2019
continued

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tireton

1204 CMA and Gravity retrive trident probe and begins decon process

219 A. Utter decon glove box and prepare filters for next sample location

250 Pulling anchors and leaving sample location for Ref004

257 Depart Ref003

1318 Arrive at Sample location Ref004
Coordinates are: E 447850.55
N 5446937.86

Water depth (meters): 0.6 m

322 Deploy trident probe target facies - mixed
verified facies - mixed MCS

1st attempt probe got caught up on cobble, going to readjust
2nd attempt successful drive into the sediment 0-6"

1345 Begin purging 300 mL of PW line

1410 Finish purging of PW line

1417 Sampled Ref004-PW-1-092819 Order: Metals
DOC
TOC
Sulfate

1448 Finished sampling Ref004-PW-1-092819

452 Complete labels, place samples in 1-gallon ziplock and into cooler

530 CMA troubling shooting drive mechanism on trident probe to function better

1538 CMA + Gravity retriving trident probe and pulling anchors to depart for dock.
1614 Anchors up and departing sample location for boat launch

9/28/19

SEPT 30, 2019 — LCR PHASE III SEDIMENT STUDY — RV TIEDON

42° PARTLY CLOUDY

ON BOARD TIEDON:

CLIFFORD PEARSON (AECOM)

JOHN SHAEFFER & CHAD FURULLE (GRAVITY MARINE)

SHAWN ROARK (EPA OVERSIGHT / JACOBS)

CHRIS SPEETH & MARC BISER (CCMA)

0815 - ARRIVE AT DOCK

0845 - BEGIN PUTTING BOATS IN THE WATER

0930 - TAILGATE MEETING WITH ALL BOATS

1000 - BOATS LEAVING DOCK, HEADING TO SAMPLING AREA

1035 - ARRIVE AOI AND DISCUSS SAMPLING PROCEDURES

1113 - CALIBRATING SAMPLER AND FIELD MONITORS

1130 - DECONNING SAMPLING LINE (ALCONOX, DI, LAB GRADE DI).

1200 - BOX DECONNED (DISILLED AND LAB GRADE DI)

BOX PREPPED WITH SUPPLIES & SEALED TILL SAMPLING

1220 - PROBE IN WATER @ REF009

1250 - CALL W/ DAVE HOSE RE: INCORRECT FACIES @ REF009 (COBBLE MIX).

GOING TO HEAD INTO DEEPER WATER AWAY FROM SHORE TO LOOK FOR SAMPLEABLE SAND

1315 - SAND LOCATION FOR REF009 GRAVELS STILL PRESENT ~ 20'.

1316 - ON STATION TIME. BEGIN PURGE OF PORE WATER LINE & SURFACE WATER LINE TO 300ML

1330 PARAMETERS - SURFACE WATER

COND. 134.2	ORP 211
TDS 86.29	TEMP 13.6
pH. 7.24	

1335 - PURGE COMPLETED 300 mLs

PORE WATER

~~COND 134.2~~ 250.5	~~ORP~~	pH 7.06
TDS 163.8	TEMP	12.3
~~ORP~~ 221	DO	3.76

MID SAMPLING -

COND. 243.1	pH	6.91
ORP 222	TEMP	11.8
TDS - 160.2	DO.	2.88

FINAL SAMPLING -

COND. 220.0	pH	6.87
TDS 144.0	TEMP	12.5
ORP 221	DO	2.27

TAKEN WHILE IN BOX

1435 PULLED UP SAMPLER FROM WATER. SAMPLING COMPLETED

REF009-PH-1-093019 SAMPLED @ 1352

4 BOTTLES FILLED FOR METALS (FF) DOC (FF), TOC, AND SULFATE/CHLORIDE/ALK/pH

INITIAL H2O QUALITY PARAMETERS TAKEN WHILE IN BOX

Scale: 1 square =

SEPTEMBER 30, 2019 (CONTINUED) — UCR PHASE III SEDIMENT STUDY — PW TIETON — ~~PAGE 2 OF 2~~

1450 - HEADING TO REF007

1457 - ANCHOR DOWN NEAR REF007

1515 MAINTENANCE BEING CONDUCTED ON THE SAMPLER FRAME

1517 DECONNECTING SAMPLING LINES (ALCONOX, DI, LAB GRADE DI)

1545 SAMPLER IN THE WATER

1548 SAMPLER ON GROUND @ REF007 - OVER PUSHED INTO SAND.

1555 SEDIMENT (SAND) @ REF007 TOO SOFT

SETTING PIN IN SAMPLER TO PREVENT OVER PENETRATION

1600 SAMPLER BACK IN WATER. HIT BOTTOM. GOOD LOCATION AND PENETRATION DEPTH

BEGIN 300 mL PURGE

1615 NEAR BOTTOM WATER QUALITY PARAMETERS MID PURGE

COND 1347 pH 7.43

TDS 81.33 TEMP 13.2

ORP 218

1620 PORE WATER H2O QUALITY PARAMETERS POST PURGE

COND. 288.2 pH 7.07

TDS 189.6 TEMP 13.0

ORP 38 DO 2.82

MID SAMPLING H2O QUALITY PARAMETERS		POST SAMPLING H2O QUALITY PARAMETERS	
COND 459.5	pH 7.41	COND 299.0	pH 7.38
TDS 309.0	TEMP 12.7	TDS 192.3	TEMP 10.5
ORP -39	DO 2.59	ORP -51	DO 2.51

1707 SAMPLING COMPLETED

REF007 - PW-1-043019 @ 1632

MID H2O QUALITY PARAMETERS & POST SAMPLING H2O QUALITY PARAMETERS TAKEN WHILE IN BOX

1711 - SAMPLER OUT OF WATER

BEGIN PACKING UP TO HEAD BACK TO DOCK.

NO PHOTOS TAKEN TODAY

1742 - LEAVING AREA, HEADING BACK TO DOCK

1807 - AT BOAT DOCK

1810 - OFF BOAT

1820 - LOADING UP SAMPLE VEHICLE PREPARING TO DEPART

2 SAMPLES COLLECTED TOTAL

REF007-PW-1-043019 @1632

REF009-PW-1-043019 @ 1352

Scale: 1 square = _____

OCTOBER 1, 2019 — LCR PHASE 3 SEDIMENT STUDY - PORE WATER — ~~PAGE 1 OF 2~~

RV TIGER

0830 VESSEL AND SAMPLING CREW AT THE DOCK

0900 DAILY TAILGATE MEETING.

ON TIGER TODAY:

CLIFFORD J. PEARSON (AECOM) — JOHN SHAEFFER (GRAVITY)

CHRIS SPEITH (CCMA) — CHAD FURLLIE (GRAVITY)

MARK BISER (CCMA) — SHAWN ROARK (EPA OVERSIGHT, JACOBS)

0930 - LEAVING DOCK HEADING TO SAMPLING AREA

0950 - ARRIVE BACK AT THE SAMPLING LOCATION

1020 - WORKING CALIBRATING THE SAMPLING PROBE HAVING DIFFICULTIES WITH CALIBRATION, POSSIBLY DUE TO PRIOR NIGHTS FREEZING TEMPS (?)

1050 - AFTER SOME RE-WORKING THE PROBE IS CALIBRATED (CALIBRATION SOLUTIONS APPEAR TO HAVE BEEN MIXED UP)

CHRIS HEADING BACK TO DOCK TO PICK UP D.O. METER LEFT ON SHORE REMAINING TEAM BEGINS DECONNING AND CONTINUING SET UP.

1105 - BEGIN DECONNING THE SAMPLE LINES AND SAMPLING PROBE (NEAR BOTTOM & PORE WATER LINES)

1125 - SAMPLE LINES BOTH DECONNED. PREPARING TO DECON BOX

1132 BOX DECONNED

1155 - CHRIS RETURNS TO SAMPLING AREA

1200 - HEADING TO SET UP ON REF008

1225 - HIT BOTTOM @ REF008 APPEARS SAND ON BOTTOM

Begin 300 ML PURGE

1240 - MID PURGE H_2O QUALITY PARAMETERS (PORE WATER)

COND.	136.7	pH	7.01
TDS	93.84	TEMP	16.8
ORP	216		

1250 POST PURGE H_2O QUALITY PARAMETERS (PORE WATER)

COND	136.2	pH	6.74
TDS	120.7	TEMP	17.5
ORP	106	DO	3.09

MID SAMPLE H_2O QUALITY PARAMETERS

COND -	178.5	ORP =	80
TDS -	117.9	pH -	6.63
TEMP	17.8		
DO	2.47		

MID-SAMPLE TAKEN WHILE IN BOX

FOUR PRIMARY BOTTLES FILLED:

1 - METALS (FF)

1 - DOC (FF)

1 - TOC

1 - SULFATE/ALKALINITY/CHLORIDE

ONE DUP BOTTLES FILLED

1 - TOC

1330 - OUT OF BOX SAMPLING COMPLETE - REF008-PW-1-100119 @ 1259

REF008-PW-2-100119 @ 1259

POST SAMPLING H_2O QUALITY PARAMETERS

COND	162.5	ORP	70	TEMP	17.6
TDS	142.4	pH	6.59	DO	2.37

Scale: 1 square = _____

Rite in the Rain

October 1, 2019

~~Oct 3, 2019~~ ~~Page 2 of 2~~

SP 11-20-19

UCR PHASE III - PORE WATER

TIETON

1340 - SAMPLER OUT OF THE WATER

1350 - BEGIN DECONNING SAMPLE LINES FOR STATION REF005

1415 - DECON OF THE SAMPLING LINES FOR BOTH PORE WATER AND NEAR BOTTOM WATER COMPLETED.

BEGIN CLEANING/DECONNING BOX

1425 - SAMPLING BOX DECONNED AND PREPPED FOR SAMPLING

PREPARING PROBE FOR DEPLOYMENT

1455 ANCHORS IN WATER, SITTING 3 ANCHORS TO HOLD US IN POSITION W/ FASTER WATER

1510 ALL ANCHORS SET. PROBE IN WATER

1511 PROBE SET IN CONFIRMED MID @ REF005

1512 BEGIN 300 ML PURGE AT REF005

1528 MID PURGE H2O QUALITY PARAMETERS (SURFACE WATER!)

COND 133 pH 7.15

TDS 85.57 TEMP 14.2

ORP 205

1533 POST PURGE H2O QUALITY PARAMETERS (PORE WATER)

COND 131.3 pH 6.92

TDS 84.48 TEMP 14.7

ORP 213 D.O. 6.04

MID SAMPLING H2O QUALITY PARAMETERS

COND 129.0 pH 6.81

TDS 82.58 TEMP 14.5

ORP 274 D.O 6.20

MID H2O QUALITY PARAMETERS TAKEN WHILE IN BOX

1629 - SAMPLING COMPLETE = REF005-PW-1-100119 @ 1544

4 BOTTLES FILLED FOR METALS (FE), DOC (FE), TDC, & SULFATE/CHLORIDE/ALKALINITY.

NO SULFIDE SAMPLE

POST SAMPLING H2O QUALITY PARAMETERS ~~TAKEN WHILE IN BOX~~ @ 10:11:19

COND 128.3 pH 6.76

TDS 82.26 TEMP 14.0

ORP 293 D.O. 6.23

1621 - PROBE ON DECK. CLEANING UP TO HEAD BACK TO DOCK

1633 - BRING UP ALL ANCHORS

1653 LEAVING SAMPLING AREA AND HEADING BACK TO THE DOCK.

1710 ARRIVED BACK @ DOCK

1730 OFF BOAT.

Scale: 1 square = _____

OCTOBER 2, 2019 — UCR PHASE III SEDIMENT STUDY
RV TIEDON - PORE WATER SAMPLING

35° MOSTLY CLOUDY

0830 - ARRIVE AT BOAT LAUNCH SITE.
0845 - CONDUCT DAILY TAILGATE MEETING
TIEDON CREW TODAY
CLIFF PEARSON (AECOM)
CHRIS SMITH & MARK BISER (CMA)
JOHN SHAEFFER & CHAD FERRILLIE (GRAIICY)
SHAWN MARIC (EPA OVERSIGHT / JACOBS)
0900 - LEAVING DOCK FOR SAMPLING AREA ~ UP STREAM OF GENESEE
0930 - ARRIVED AT LOCATION ~ UP STREAM OF GENESEE
0940 - BEGIN PREP AND CALIBRATION OF EQUIPMENT
0955 - CALIBRATIONS COMPLETED BEGIN DECONNING SAMPLE LINES (PORE WATER & NEAR BOTTOM WATER SAMPLE LINES)
1013 - SAMPLE LINES DECONNED
DECONNING SAMPLE BOX, DISC FILTERS PREPPED W/ LAB DI. BOX CLOSED TILL SAMPLING.
1034 - MOVING INTO POSITION @ REFOII
1048 - SAMPLING PROBE ON BOTTOM IN SAND.
1049 - BEGIN 300 ML PURGE
1105 - 'SURFACE' H_2O QUALITY PARAMETERS

COND	151.3	pH	7.18
TDS	97.12	TEMP	9.8
ORP	288		

1115 - POST PURGE H_2O QUALITY PARAMETERS

COND.	185.5	pH	7.21
TDS	120.3	TEMP	11.6
ORP	295	D.O.	7.28

1213 - OUT OF SAMPLING BOX. SAMPLING COMPLETED

REFOII-PW-1-100219	@ 1129	
REFOII-PW-2-100219	@ 1129 (DUP)	
REFOII-PW-3-100219	@ 1129 (EPA SPLIT)	

POST SAMPLING H_2O QUALITY PARAMETERS

COND.	289.1	pH	6.91
TDS	190.3	TEMP	13.8
ORP	229	D.O	6.48

200ML H_2O QUALITY PARAMETERS

COND.	197.9	pH	6.98
TDS	128.7	TEMP	13.7
ORP	321	D.O	7.07

400 ML H_2O QUALITY PARAMETERS

COND.	242.4	pH	6.72
TDS	158.6	TEMP	14.1
ORP	246	D.O.	6.77

200 ML & 400ML H_2O QUALITY PARAMETERS WERE TAKEN WHILE IN BOX.

1230 - DISCUSSION W/ EPA OVER SIGHT RE: THE USE OF FILTERS AND MEANS ANALYSIS AND PREPPING OF THE LARGE FILTER. ARE THE FILTERS NOT BEING FLUSHED AFFECTING METAL RESULTS? DISCUSSION ELEVATED TO AECOM

Scale: 1 square = _____

Rite in the Rain

OCTOBER 2, 2019 — UCR PHASE SEDIMENT STUDY
(CONTINUED) — RV TIETON - PORE WATER SAMPLING

1250 - IN THE MIDDLE OF DECONNING BOTH THE PORE WATER LINE AND THE NEAR BOTTOM WATER LINE

1310 - HEADING TO STATION REF012-PW
SAMPLING LINE AND BOX ARE DECONNED, PREPPING BOX FOR SAMPLING
DISC FILTERS PREPPED IN LAB DI. BOX CLOSED TILL SAMPLING

1326 - ANCHORS BEING DEPLOYED @ REF012

1350 - DRIVING SAMPLING PROBE INTO MIXED FACIES @ REF012 AFTER MULTIPLE DROPS TO FIND A SAMPLEABLE LOCATION FOR PROPER FACIES AND PENETRATION

1415 - LOCATION NO GOOD UNABLE TO ACHEIVE PROPER PENETRATION TO 6-INCHES WILL PULL UP SAMPLER AND TRY NEW LOCATION

1419 - HAMMERING AT NEW LOCATION

1450 - STILL HAVING DIFFICULTIES @ REF012. LARGE SAND BAR IN THE AREA AND WHEN A MIXED AREA IS FOUND, THE PROBE CAN NOT PENETRATE DEEP ENOUGH FOR SAMPLING

1500 - CALL TO JENNIFER PREPARE RE-EQUIPMENT HAVING DIFFICULTY ACHIEVING PENETRATION DEPTH.

1505 - ACHIEVED APPROPRIATE PROBE PENETRATION DEPTH FOR SAMPLING
BEGIN 300 ML PURGE.
TOTAL OF 5 GPS LOCATIONS TAKEN FOR THIS STATION.

1520 - SURFACE H2O QUALITY PARAMETERS
COND. 124.7 — pH 7.75
TDS 80.69 — TEMP 13.4
ORP 204

1525 - POST PURGE H2O QUALITY PARAMETERS
COND. 251.4 — pH 7.10
TDS 164.5 — TEMP 13.9
ORP 285 — DO 4.72

MID SAMPLING H2O QUALITY PARAMETERS
COND. 220.1 — pH 7.01
TDS 191.1 — TEMP 13.7
ORP 250 — DO 4.27 or 4.21

1615 - SAMPLING COMPLETED OUT OF THE BOX
REF012-PW-L-100219 @ 1537
DIS METALS (FF) DOC (FF), TOC, SULFATE/CHLORIDE/ALK./pH.
4 BOTTLES FILLED IN THAT ORDER ↑

POST SAMPLING H2O QUALITY PARAMETERS
COND 247.3 — pH 7.32
TDS 196.1 — TEMP 13.7
ORP 196 — DO 4.11

1620 - PROBE OUT OF WATER. CLEANING UP DECK TO HEAD BACK

Scale: 1 square = _____

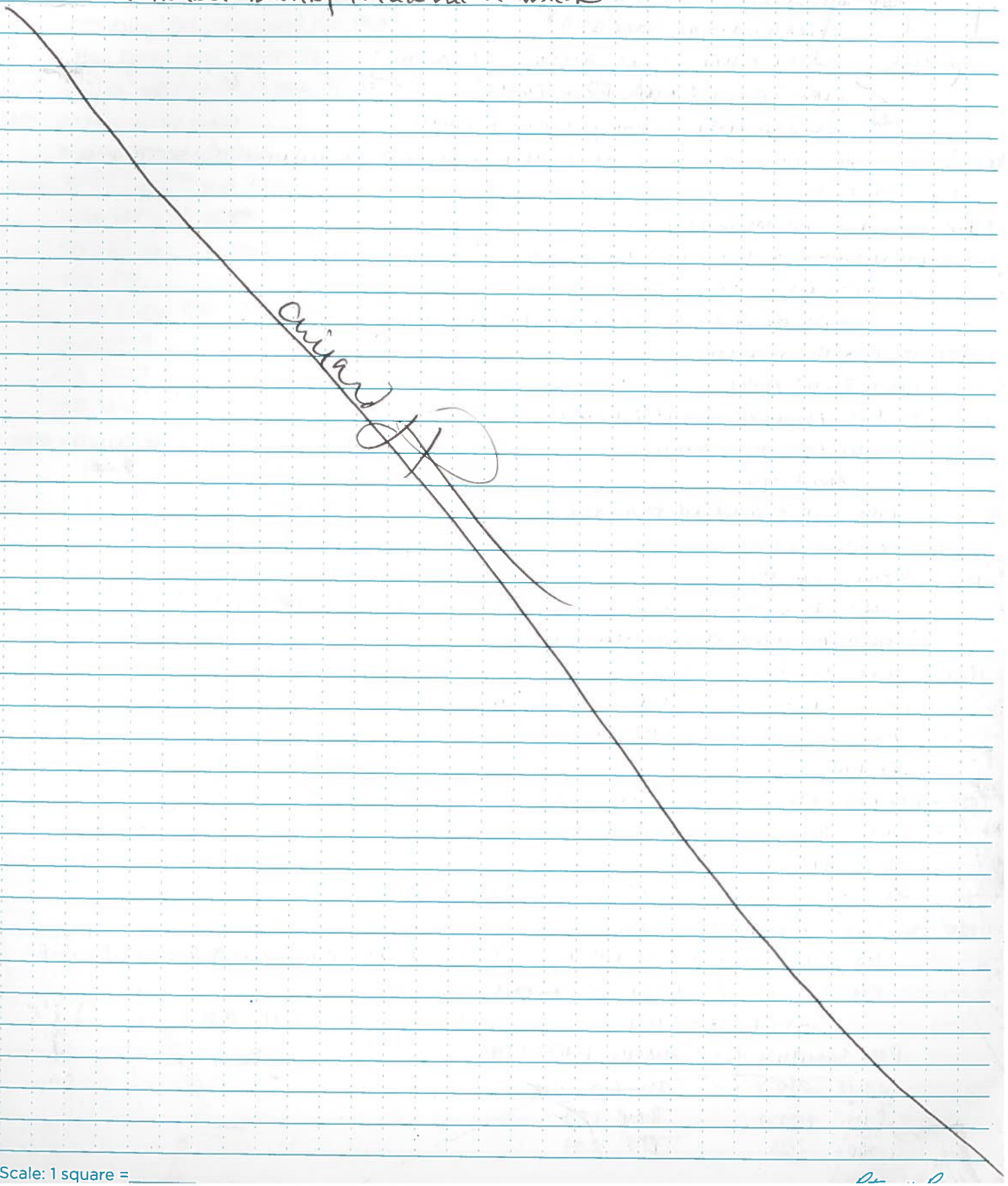
OCTOBER 2, 2019 (CONTINUED)

UCR PHASE III SEDIMENT STUDY
RV TIETON - PORE WATER SAMPLING

1635 - BRING UP ANCHORS @ REF 012

1651 - LEAVING AREA TO HEAD BACK TO DOCK

1715 - BACK AT DOCK WAITING TO PULL OUT OF WATER



Scale: 1 square = _____

OCTOBER 3, 2019 — LCR PHASE III SEDIMENT STUDY
403 COURAY, DPM. — R.V. TIETON - PORE WATER SAMPLING

0730 - ARRIVE AT DOCK
0810 - DAILY HSE TAIL GATE MEETING COMPLETED. PREPARING BOATS TO LEAVE DOCK
RV TIETON CREW
CLIFF PEARSON (AECOM)
SHAHN ROARK (EPA OVERSIGHT / JACOBS)
CHRIS SPEITH & MARK BISER (CMA)
JOHN SHAEFFER & CHAD FURLICH (GRAULTY)
0835 - ARRIVED AT SAMPLING LOCATION - GENELLE UPPER. PULLING OUT EQUIPMENT AND SETTING UP THE DECK.
0857 - EQUIPMENT CALIBRATIONS COMPLETED
BEGIN DECONNING PORE WATER & NEAR BOTTOM WATER SAMPLE LINES
0930 - SAMPLING LINES DECONNED.
SAMPLING BOX DECONNED & PREPPED FOR SAMPLING. LID CLOSED.
0957 - PROBE ON BOTTOM IN SAND
0959 - BEGIN 300 mL PURGE.
1008 - NO FLOW. PULLING UP SAMPLER TO INSPECT
1042 - SAMPLER BACK ON BOTTOM IN SAND. MOVED TO THE WEST BY A COUPLE FEET TO AVOID SAME HOLE
BEGIN 300 mL PURGE.
ISSUE WITH SAMPLER NOT COMPLETELY IMMERSED. EITHER A LOOSE FITTING OR A ~~CLOGGED~~ of CLOGGED SAMPLING POINT.
1056 - RESTART 300 mL PURGE.
HAD ISSUES W/ YOUR 'SILICON' (?) TUBING WORN OUT AFTER MULTIPLE DAYS / WEEKS USE.
REPLACED TUBING THROUGH PERI-PUMP AND LOOKS TO BE WORKING FINE
1109 SURFACE H2O QUALITY PARAMETERS
COND - 134.8 pH - 7.10
TDS 86.06 TEMP 10.9
ORP 194
1120 POST PURGE PORE WATER QUALITY PARAMETERS
COND: 228.6 pH 6.91
TDS 149.7 TEMP 11.7
ORP -25 DO 4.45
1120 - SAMPLING COMPLETED, OUT OF BOX
REF009A-PW-1-100319 DISS METALS (FF), DOC (FF), TOC, SULFATE/CHLORIDE/ALK/pH
REF009A-PW-2-100319 DISS. METALS ONLY (FF)
SAMPLE TIME: 1136 4 BOTTLES + 1 DUP BOTTLE
POST SAMPLING H2O QUALITY PARAMETERS
COND - 239.8 pH 6.78
TDS 157.0 TEMP 12.6
ORP -25 DO. 2.31

Scale: 1 square =

OCTOBER 3, 2019 (CONTINUED) — UCR PHASE III SEDIMENT STUDY — RV TIETON - PORE WATER SAMPLING — ~~PAGE 2 OF~~

1222 - SAMPLE BOTTLES ON ICE. PROBE OUT OF H20. BEGIN CLEAN UP AND PREP FOR NEXT STATION

1240 - IN THE MIDDLE OF DECONNING PORE WATER AND NEAR BOTTOM WATER SAMPLING LINES

1255 - PURGE LINES DECONNED

SAMPLING BOX DECONNED AND PREPPED FOR SAMPLING DISC FILTERS PREPPED W/ LAB DI

BOX CLOSED TILL SAMPLING

1305 - PULLING UP ANCHORS TO MOVE TO NEXT STATION.

1330 - ON STATION IN MIXED.

BEGIN 300 ML PURGE

1343 - SURFACE WATER 133.4 MID PURGE H20 QUALITY PARAMETERS

COND ~~133.4~~ CL pH. 7.25

TDS 85.66 TEMP 16.2

ORP 178

1352 - POST PURGE PORE WATER H20 QUALITY PARAMETERS

COND 190.8 pH 7.01

TDS 124.0 TEMP 16.2

ORP 166 DO 4.66

1433 - OUT OF BOX. SAMPLING COMPLETE

REF006-PW-1-100219 @ 1405

4 BOTTLES ~ DISS. METALS (LT), DOC (EF), TOC, SULFATE/CHLORIDE/ALK/pH ~ IN THAT ORDER

POST SAMPLING PORE H20 QUALITY PARAMETERS

COND: 199.8 pH 6.76

TDS 130.1 TEMP 16.1

ORP 131 D.O. 2.03

1437 - BEGIN CLEAN UP

1443 - SAMPLING PROBE OUT OF H20

ONE SEDIMENT REMAINING IN THIS AOI (REF010). GIVEN SEDIMENT DIFFICULTIES WITH SEDIMENT SAMPLING BOAT, THE STATION NEEDS TO BE RE-LOCATED. SEDIMENT BOAT HAS NOT YET FOUND A NEW LOCATION

PACKING UP TO HEAD BACK TO THE DOCK

1515 - HEADING BACK TO DOCK

1530 - BACK @ DOCK WAITING FOR OTHER BOATS TO PULL OUT

1550 - OFF BOAT FINALIZING PAPERWORK

Scale: 1 square = _____

OCTOBER 4, 2019 — LCR PHASE III SEDIMENT STUDY — PAGE 1 OF

40°'s & DRY, CLOUDY — RV TIFFON - PORE WATER SAMPLING

0731 - ARRIVED AT DOCK

DAILY HSE TAILGATE CONDUCTED W/ ALL BOATS

0800 - HEADING OUT TO ACE - UPPER BENICIA FOR HNAC SAMPLING STATION REF011.

0820 - ARRIVED AT UPPER BENICIA.

0835 - CALIBRATION COMPLETED ON FIELD EQUIPMENT

BEGIN DECONNING PORE WATER AND NEAR BOTTOM WATER SAMPLING LINES

0911 - SAMPLING LINES DECONNED

DECONNING ADDITION SILICON PIECES & FILTER ATTACHMENTS FOR ID BOX USE

GEARING READY TO SET UP ON STATION.

SAMPLING BOX PREPPED / DECONNED CLOSED TILL READY TO USE. PREPPED DISC FILTERS W/ LAB ID

0920 ON STATION

0927 - PROBE IN WATER ON MUDD COARSE @ REF011

USED PNEUMATIC HAMMER TO ADVANCE SAMPLING POINT TO 6" DEPTH.

0937 - BEGIN 300 ml PURGE

0958 - SURFACE H2O QUALITY PARAMETERS

COND - 135.3 pH 7.49

TDS 86.79 TEMP 8.8

ORP 214

1004 - POST PURGE PORE WATER QUALITY PARAMETERS

COND 220.6 pH 7.54

TDS - 1442 TEMP 8.7

ORP 160 DO 5.44

MID SAMPLING H2O QUALITY PARAMETERS

COND - 218.1 pH 6.78

TDS - 1425 TEMP 9.4

ORP 165 D.O 4.32

(TAKEN WHILE IN BOX)

1054 - SAMPLING COMPLETED OUT OF BOX

REF011 - PW-1-100419 @ 1021

4 BOTTLE FILTER ~ METALS (FE), DOC (FE), TDS, SULFATE/CHLORIDE/ALK/pH IN THAT ORDER.

POST SAMPLING H2O QUALITY PARAMETERS

COND. 216.7 pH 7.01

TDS 141.5 TEMP 10.0

ORP 148 DO 3.58

1121 - SAMPLER OUT OF THE WATER

1125 - PACKING UP TO HEAD BACK TO DOCK

1144 - LEAVING UPPER BENICIA, HEADING BACK TO DOCK

1200 - AT DOCK

1228 - EPA OVERSIGHT SHAWN ROARK HAULS BACK EPA SED & PORE WATER SPLITS FOR AECOM TO TAKE TO WAREHOUSE. EPA OVERSIGHT PLANS TO PICK UP THIS EVENING, ACCORDING TO SHAWN.

REF011-PW-3-100419 (DISS METALS) & REF011-SE-3-100119 (1 JAR)

RETURNED TO AECOM FOR TRANSPORT, PLACED ON ICE

Scale: 1 square =

October 8 2019

UCR Phase 3 Sediment Study
Porewater Sampling - RV Tiefon

0730 Arrive at Northport Boat Launch
0745 Tiefon and Cayuse combine for health and safety meeting. Safety observation: cold weather in the morning. Layer up and keep PFD on your outter layer.
0800 Gravity and CMA rigging Tiefon and setting up for sampling prior to getting boat in water
0900 Depart from dock for sampling locations DME 050 & 057
Personel on board today: Anders Utter (AECom)
Chris Smith & Alex Sims (CMA)
John Schaefer & Larry LeSueur (Gravity)
0912 Arrive near sample locations. Beach boat to complete trident probe decon and adjustments/setup
0945 Daily Calibration of all equipment complete
A. Utter deconned glovebox with Lab DI water
1025 Arrive at Sample location DM-050
Coordinates are: E446902.90
N 5420309.19
Water Depth (meters): 6.1 m
1030 Deploy trident probe Target Facies: Sand (mFs)
Verified Facies: sand (mFs)
1046 Begin 300 mL purge of PW line.
Previously were having issues with air compressor getting appropriate pressure to initiate drive mechanism on trident probe. Resolved issue.
1124 Sampled DM-050-PW-1-100819 Order: Dissolved Metals
DOC
TOC
Sulfate
1151 Finished sampling DM-050-PW-1-100819
Completed labels placed samples in gallon zip lock bag in cooler. Completed sample form, photo log
1203 CMA & Gravity retrive trident probe and begin decon process Alex S.
1209 A. Utter decon glovebox with Lab D.I. water and prepared filters & sample bottles for next location
1240 Pulling up anchors to depart to next sample location DM-057
1250 Depart DM-050 head for DM-057
1302 Arrive at sample location DM-057
Coordinates are:

water depth (meters):
1310 ~~Attempt 1~~ Deploy trident probe target facies - Sampleable sand (mFs)
1345 Attempt 1 - hit potential cobble beneath top layer of sand. Bringing trident probe up to attiadditional weights to the frame to assist in driving force

Scale: 1 square =

October 8th, 2019

VCR Phase 3 Sediment Study
Porewater sampling - RV Tietan

1400 call Tony to discuss sediment. Facies seems correct but having trouble penetrating with probe. Sand seems to be "cemented". Discussion led to sample for sediment team had trouble at this location. Did lots of attempts for a complete sample. Decided to give it another go for today. PW team must get sample here because sediment team did.

1445 Adjusting anchors to position boat toward area we had most success at/saw most visible, loose sand and continuing attempts to find a spot the probe is not getting refusal

545 Calling it a day at this location due to time constraints. Will attempt this location tomorrow

550 CMA & Gravity retrive trident probe and bring it on decke for transport back to boat launch. Breaking down trident probe, and pulling anchors.

643 Headed back to the dock

Andrew Little
10/08/19

Scale: 1 square = _____

9 October, 2019

VCR Phase 3 Sediment Study
Porewater Sampling - RV Tiet on

0730 Talked with Field Lead (Jenny Pretare) about our level of effort at sampling location DM057. A sediment sample was collected at this location. Our sampling crew attempted to drive the probe into the substrate approx. 10 times, all within the sampleable sand facies, and hit refusal ~3 inches into the substrate. After discussing our level of effort being sufficient, attempts were proficient and quality attempts, yet we continued to hit refusal, we have decided to abandon this location. This has been discussed with field leads Dave Hose, Jenny Pretare, and Anthony Palmieri, and confirmed with them as being an accepted method to move forward with the sampling.

0830 Combine health and safety meeting for Tiet on & Copuse. Safety observations: lots of people on board sampling boats, use safety boats when possible to have people on during congestion periods of sampling

0930 Depart dock for sampling locations

Personel on board today: AECOM - Anders Utter
Gravity - John Schaefer, Larry Lesser
CMA - Chris Smith, Alex Sims
CCC - Joe
- Tamara Knudson

0951 Called Sarah Kintner to discuss status on duplicate samples for Tiet on. She told me the last DUP was collected Thursday October 3rd, and was a dissolved metals bottle. I believe it should have been a TOC bottle because 2 weeks ago I was on Tiet on and complete DUP samples for Diss. Metals and DOC before passing the sampling off to Cliff Pearsen.

0955 Called Sarah Kintner again to discuss, concluded the DUP was indeed correct and no errors occured. Following the current chronological order of DUP's as planned.

1000 Tamara & Joe on board getting briefing of PW sampling method, decon method, and logistics of sampling.

1030 Dissected sample locations with John S. Planning on attempting DM046 and potentially DM061 confirming with Tony because DM061 does not have a sediment sample collected there.

1040 CMA has began setting up trident probe and the decon process. Calibration checks are complete. A. Utter decon glovebox with lab D.I. water and prepped for sampling.

1102 Decon complete and head to sample location DM046

1123 Arrive at Sample location DM046
Coordinates are: E 446850.50
N 5420280.78
Water Depth (meters): 4.80 m
Target Facies: sampleable sand (mFs)
Verified Facies: sampleable sand (mFs)

1128 Deploy Trident probe

1130 Begin Purging 300 mL of PW line

1150 Finished Purging 300 mL of PW line

Scale: 1 square =

October, 2019

UCR Phase 3 Sediment Study
Porewater Sampling - RV Tiet on

.02 Sampled DM046-PW-1-100919 Order: Diss. Metals
DOC
TOC
Sulfate

32 Finished sampling DM046-PW-1-100919
35 Complete labels and place samples in gallon ziplock bag and into cooler. Complete field form and photolog.
45 CMA & Gravity Retrive trident probe and begin decon process Alan S. & Larry L.
58 Attempt decon glovebox with lab D.I. water and prepare filters & bottles for next sample location
15 Call Tony Palmieri to discuss where to go next. There are no locations in DME the sediment boat has completed a sample that the PW boat has not been. PW boat hesitant to go to locations and collect a sample bc find out the sediment boat was unsuccessful and have that PW sample be a waste. We decided (Field Lead Tony Palmieri) to focus on sampleable sand, so head to DME 035, 033, & 040.
Note: Chris recommended doing the PW only sample locations and allow the sediment boat to go to stations and collect samples in the meantime.
20 Tamara K & Joe W. depart Tieton onto safety boat while we pull anchors
45 Depart Sample location DM046
00 Arrive at DM035 Target Facies: Sampleable Sand (S)
Coordinates are: Verified Facies: Coarse

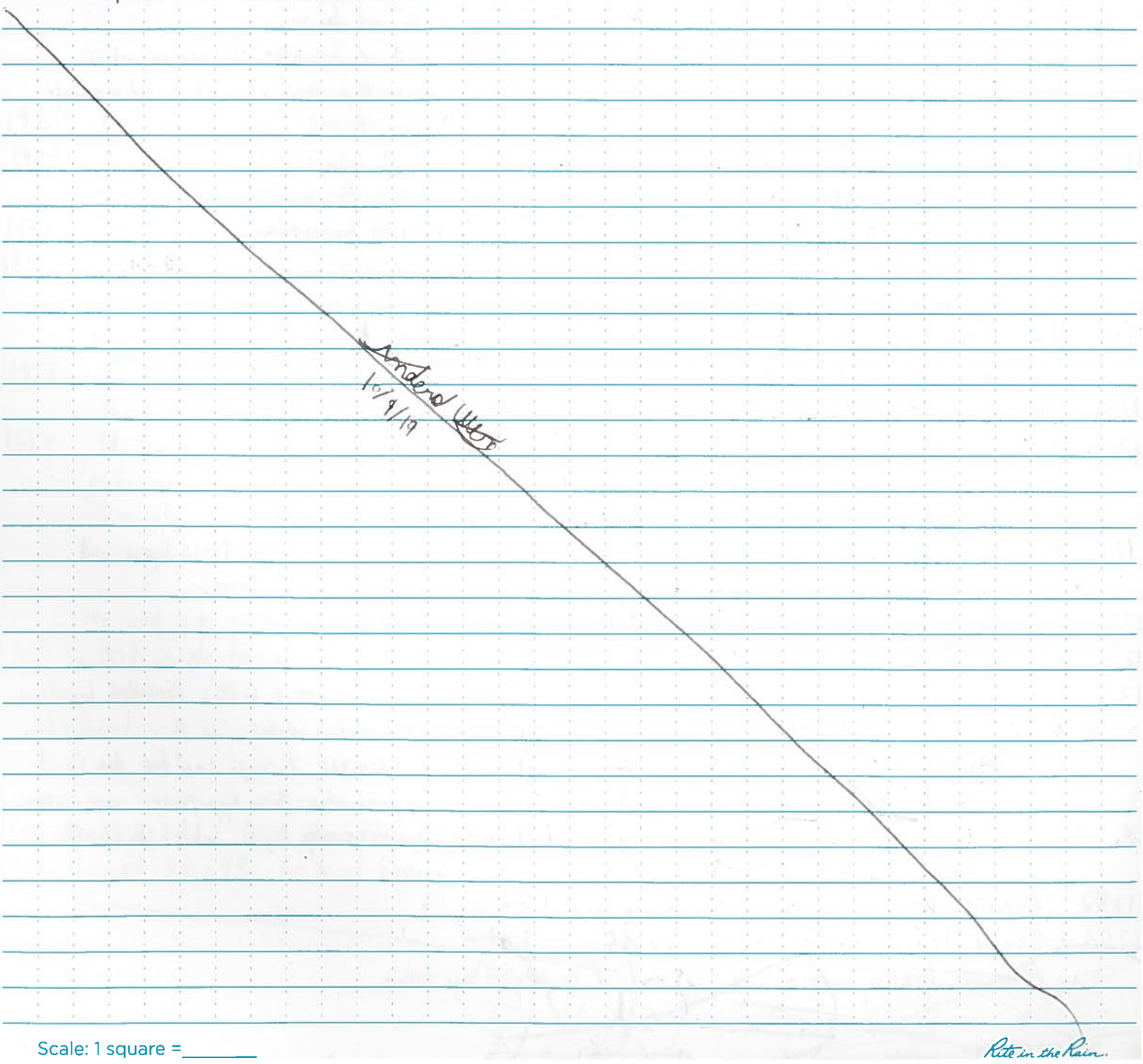
Water depth (meters)
09 After deploying trident probe and scanning bottom of riverbed, no sampleable sand facies has been identified. We have been seeing mixed coarse sand with cobbles. No sand patches identified yet. Continuing to look
20 Did not find sand at DM035 found predominately mCs and coarse material. DM036 is a location almost within the DM035 radius. Going to DM036 to look for target facies of mixed coarse.
40 Arrive at DM036 Drop trident probe to search for target facies of mixed coarse. Found the target facies for DM036. Going to go ahead with sampling this location.
~~Coordinates are:~~ As of 11/7/19
Coordinates are: ~~446684.49~~ 446687.18 target facies: mixed coarse
~~5420434.59~~ 5420433.98 verified facies: mCs, mixed coarse
Water depth (meters): 11.70
52 Began Purge 300 mL of PW line
10 Finish Purge 300 mL of PW line
11 Joe W. & Tamara K. on Tieton from safety boat
16 After taking water quality readings the surface water and porewater parameters were nearly identical. This could be a result of the probe not be secured below the substrate and river water being taken up in the probe in the substrate. Chris S. thinks the pin in the drive mechanism is resisting the probe from being hammered into the substrate completely. Removing the pin in the trident probe frame and attempting again.
545 Repositioned probe and began purge of 300 mL of PW

Scale: 1 square =

9 October 2019

UR Phase 3 Sediment Study
Porewater Sampling - RV Tieton

1600 Finished Purge of 300 mL of PW line
1601 Parameters between PW and surface water not showing much of a difference. Chris S. and Anders U. decided this is not an acceptable sample and pulling the probe out. With a time constraint of arrival back at the dock we are calling it today.
1602 CMA & Gravity retrive trident probe. Anders Utter will consult with field team lead about returning to this site tomorrow.
1625 decon complete of trident probe by Alan S.
1628 Tamara K. & Joe W. off Tieton.
1636 Pulling anchors and prepping boat for departure.
1645 Depart DM036



Scale: 1 square = _____

Rite in the Rain.

10 October 2019

VCR Phase 3 Sediment Study
Porewater Sampling: RV Tietan

0830 Tietan and Cayuse combine for health and safety meeting. Safety Observation: stay hydrated even when its cold make sure to drink water. Ice on deck of boats from night before.

930 Load equipment onto Tietan

000 Depart dock for sampling locations.
Personnel on board today: AECOM – Anders Utter
Gravity – John Schaefer, Larry LeSueur
CMA – Chris Smith, Alan Sims
Jacobs – Shawn Roark

006 Arrive near sampling locations on beach to set up trident probe and decon.

12 Calibration check of all equipment complete Chris S. A. Utter and J. Schaefer discussing which location to attempt first today. D. Hosa recommended DM002 where they successfully collected a sample with the correct facies – sampleable sand.

23 Arrive at sample location DM002
Coordinates are: 445983.40
5421235.60
Target Facies: Sampleable sand (S)
Verified Facies: Sampleable sand (S)
Water depth (meters): 10.3 m

24 Deploy trident probe 1st attempt successful

30 Began Purge 300 mL of PW line
Finish Purge 300 mL of PW line

155 Sampled DM002-PW-1-101019 Order: Metals
DOC
TOC
Sulfate

221 Finished sampling DM002-PW-1-101019

230 Sample labels complete, bottles placed in gallon ziplock bag and placed in cooler. Field form and photolog complete

231 CMA; Gravity retrive trident probe. A. Sims begins decon process

232 Anchors being pulled to head to next sample location

237 A. Utter decons glove box with Lab D.I. water and prepares filters + bottles for next location.
Note: PW parameters (DO; conductivity) are usually higher than surface water. In this location they were not this could be caused by – river water flowing straight through sand bar due to its very loose nature. – a potentially spring nearby impacting porewater, these hypothesis were discussed by A. Utter, C. Smith, and S. Roark. P.H. was also unusually high which B. Chadwick experienced in this location as well.

1242 Depart DM002 to beach and decide next location

253 Headed to next sampling location DM045
Alternate location where a successful sediment sample has been taken

Scale: 1 square =

10 October 2019

UCR Phase 3 Sediment Study
Porewater Sampling: RV Tietan

1320 Arrive at Sample Location DM045
Coordinates are: E 446834.05
N 5420285.42
Water Depth (meter): 5.80 m
Target Facies: Sampleable Sand (mFs)
Verified Facies: Sampleable Sand (mFs)

1321 Deploy trident probe. First attempt successful
1323 Begin purge 300 mL of pw line
1328 J. Weatherman safety boat rafts up to Tietan
1350 Finished purge 300 mL of pw line
1354 Sampled DM045-PW-1-101019 order: Metals
DOC
TOC
Sulfate
1421 Finished Sampling DM045-PW-1-101019
1429 Completed labels and placed samples in gallon ziplock bag and into cooler. Field form and photo log completed
1430 CMA & Gravity retrieved trident probe. C. Sims begins decon process
1440 J. Schaefer and crew discuss remaining time left in day. We decide to go to DM044 (sampleable sand target facies) scope it out with a camera on trident probe and see what the substrate looks like. If we find sand ~~the~~ immediately then we will sample.
1444 A. Utter decon glove box with Lab D.I. water and prep filters & bottles for potential third sample. Depart sample location DM045
1510 At Sample location DM044 and have scoped out a sand area within the polygon. We are dropping probe into area to see if sand goes down farther than 0-2 inches like previously experienced here. A couple areas we have been able to get the probe in so this area will be an acceptable location to sample. Target Facies - Sampleable sand
verified Facies - Sampleable sand
We will come to this sample location tomorrow. We decided to call it for the day instead of collect a third sample because of time constraints. Decon of the trident probe will begin once probe is retrieved

Inventory: - More Sample kits
- Distilled water
- 1 filter kit

1515 Breaking down boat for storage at night
1540 Depart DM044 for boat launch

Andrew Utter
10/10/19

Scale: 1 square =

11 October 2019

UCR Phase 3 Sediment Sampling
Porewater Sampling: RV Tieton

0830 Tieton and Cayuse combine for health and safety meeting. Safety observation: With change in barometric pressure a lifejacket changed from being green to red. Make sure to check life jackets before boarding boat to see if it is usable.

900 Loading equipment onto Tieton at Northport Boat Launch.

130 Depart Boat Launch for sample locations DM044 & DM061

Personnel on board today - AECOM: Anders Utter
- Gravity: John Schaefer, Larry LeSueur
- CMA: Chris Smith, Alan Sims
- Jacobs: Kaila Savage

149 Arrive near sampling locations, beach boat so we can decon trident probe and strategize sample locations. Decon of trident probe by A. Sims

150 Daily calibration check complete by C. Smith. Decon of glovebox and prep of filters & sample bottles done by A. Utter.

153 Leaving beach and headed to Sample Location DM044. Decon complete.

153 Arrive at Sample Location DM044

Coordinates are: E 446811.01
N 5420321.36

Target Facies: Sampleable Sand (mFs)
Verified Facies: Sampleable Sand (mFs)

Water Depth (meters): 4.2 m

156 Deploy trident probe 1st attempt successful. ~4 drives with drive mechanism

157 Began 300mL purge of PW line

Finish 300mL purge of PW line

202 Sampled DM044-PW-1-101119

Order: Diss Metals (+DUP)
DOC
TOC
Sulfate

Sampled DM044-PW-2-101119 (Dup)

207 Finished Sampling DM044-PW-1-101119
DM044-PW-2-101119

215 Sample labels complete, bottles placed in ziplock bag, and in cooler. Field form and photo log complete
Note: Dissolved metals bottle collected for DUP set.

220 CMA & Gravity retrive trident probe. A. Smith begins decon process. A. Utter decons glove box and preps filters & bottles for next sample location.

300 Depart DM044, heading to DM061 to scope for sampleable sand. from visual inspection

320 Scoped DM061 and confirmed target facies of sampleable sand. Setting anchors for location.

330 Arrive at DM061

Coordinates are: ~~E 447102.04~~ ~~N 5420646.95~~ coordinates abandoned

Target Facies: Sampleable Sand (S)
Verified Facies: Sampleable Sand (S)

Water Depth (meters): ~~2.0 m~~

338 Begin Purging 300 mL of PW line

Scale: 1 square = _____

11 October 2019

UCR Phase 3 Sediment Study
Porewater Sampling: RV-Tieton

Note - Vegetation present made it hard to clearly see surface where probe was inserted. A. Sims removed vegetation around probe for better visual. A. Utter also jammed boat pole into substrate. Could hear the graininess of sand through the pole and when scoped up no residual silt/clay was left on pole. This helped identify it was not mud/silt/clay and in fact ~~silt~~ sand.
AU 10/11/19

1400 Finish Purging of PW line

1430 200 mL reading while sampling were near identical to surface water. C. Smith and A. Utter decided to drive the probe further and abandoned sample to make sure foam seal is better and parameters provide closer PW qualities

1443 After discussion we decided to move the probe to a new location with less to no vegetation.

1450 Call Tony to discuss if surface vegetation causes problems for Sed. boat and if denser sand that creates cracks in the surface near probe causes problems. Conclusion of call results that it does not warrant problems for Sed. boat or PW sample with cracks

1457 Began Purge 300 mL of PW line
New DM061 locations.
Coordinates are: E 447096.95
N 5420648.26
water depth (meters): 2.20 m

1511 Finish Purge 300 mL of PW line

1522 Sampled DM061-PW-1-101119 Order: Metals
DOC
TOC

1550 Finished Sampling DM061-PW-1-101119 Sulfate

1556 Complete labels, placed samples in gallon zip lock bag and into cooler. Completed field form and photo

1557 CMA & Gravity retrieve trident probe and break down deck of Tieton for the day. We will begin collecting samples tomorrow at alternate locations unless otherwise advised.

1617 Engine trouble on Tieton. When hydraulics stall the engine does not want to start. J. Schaefer says let it wait a little then should start up.

1637 Depart sample location DM061 for dock

Andrew Utter
10/11/19

Scale: 1 square =

12 October 2019

UCR Phase 3 Sediment Study
Porewater Sampling - RV Tieton

0830 Tieton & Cayuse Combine for daily health and safety meeting. Safety observation: opening day of hunting season, be alert of hunters on boats, on road, and on private property.
900 Load equipment onto boat at Northport Boat Launch
930 Depart dock for sample locations
Personnel on board today: AECOM - Anders Utter
Gravity - John Schaefer & Larry LeSueur
CMA - Chris Smith & Alan Sims
Jacobs - Kaila Savage
50 Arrive near sampling locations, beach boat to set up trident probe and strategize sample locations. A. Sims begins decon of trident probe.
00 Daily Calibration check complete by CMA, A. Utter decon glovebox with Lab D.I. water and preps filters for sample locations.
16 Larry LeSueur on Tieton.
044 Decon complete, headed to sample location DM027
56 Arrive at sample location DM027
Coordinates are: 446314.68
5421058.35
Target Facies: Sampleable Sand (S)
Verified Facies: Sampleable Sand (S)
Water Depth (meters): 4.30m
58 Deploy trident probe 1st attempt successful
59 Begin Purge of 300mL of PW line
20 Finish Purge 300mL of PW line
130 Sampled DM027-PW-1-101219 Order: Diss. Metals
DOC
TOC
Sulfate
157 Finished Sampling DM027-PW-1-101219
00 CMA & Gravity retrieve trident probe. A. Sims begins decon process of probe.
06 A. Utter completes labels place samples in ziplock bag and into cooler. Field Form and Photolog
10 A. Utter decons glovebox with lab D.I. water and preps filters plus bottles for next sample location
45 Depart DM027 for beach to solve ~~next~~ anchor issue before heading to next location
00 Fix anchor problem and depart for DM060
Arrive at sample location DM060
Coordinates are:
Target Facies: Sampleable Sand (S)
Verified Facies: Mixed cobble with sand
Water depth:
355 DM060 is incorrect Facies. 4 attempts at location and either hit bedrock or cobble/boulder about 2 inches below the surface. Top 2 inches at most seem to be sand but below that is not sand and impenetrable by probe. Attempted 6 spots within sample location/polygon of sampleable sand. All came back as incorrect facies and/or probe could not penetrate surface.

Scale: 1 square = _____

12 October 2019

UCR Phase 3 Sediment Study
Porewater Sampling RV-Tioga

1400 Pulling anchors and attempting DM058, the only other alternate location within this portion of DME that has not been sampled, or marked as incorrect facies.

1410 At sample location DM058, going to fly camera along bottom looking for correct facies. If incorrect facies is encountered we will abandon DM058 and move to another alternate sampling location.

1420 Scoped DM058 polygon and did not find the correct facies. Facies mostly identified was mixed boulder/cobble with sand. other locations were similar to what we experienced at DM060. our 4 attempts at DM058 were unable to penetrate substrate more than 1-2 inches. Possible bedrock beneath small layer of sand.

1425 heading to beach to decon trident probe and decide which location to go to next.

1448 Decon of trident probe complete, headed to DM019

Note: Talked with Dave Hasse, they encountered consolidated slag at DM061 that they had to break apart by hand. This is what we could have experienced at DM060 and DM058 when we were unsuccessful driving the probe completely into the substrate. This occured at ~~with~~ DM057 as well, we hammered probe in successfully into a "dark" material beneath layer of sand.

1508 Having technical issues with anchors again being deployed They keep getting knotted up and refusing to go through winch.

1521 Anchor problem resolved. Rope got jammed into winch. Setting anchors at DM019

1528 Arrive at Sample location DM019

Coordinates are E 446207.40
N 5421190.86

Target Facies: Sampleable Sand
Verified Facies: Sampleable Sand

Water Depth (meters): 1.8 m

1529 Deploy trident probe 1st attempt successful

1530 Begin purge 300 mL of PW line

1550 Finish purge 300mL of PW line

1600 Sample DM019-PW-1-101219

order: Diss. Metals
DOC
TOC
Sulfate

1627 Finish Sampling DM019-PW-1-101219

1630 Complete labels, place samples in zip lock bag and into cooler. Completed Field form and photolog

1638 CMA + Gravity retrive probe and break down deck for end of the day.

1700 Depart for boat launch

Andrew Miller
10/12/19

Scale: 1 square =

14 Oct 2019 Phase 3 Sediment Study, LWR
Tieton - Porewater Sampling

0830 Arrive Northport Boat Launch
Tieton + Cowiche combined for health and safety meeting, Safety observations:
workspace awareness, slips, trips, and falls, fog
Personnel on boat today:
AECOM: Linda Howard
Gravity: John Schaffer, Ryan McElree
CMA: Alan Sims, Mark Biser
0850 Loading equipment on boat in parking lot
0900 Launching vessels
0950 Departed boat launch
1010 Pulled onshore @ Deadman's Eddy to set up equipment
1041 Decontaned glove box and Trident probe, porewater + surface water lines
1052 Completed calibration checks + decontaned filters.
1126 Arrived @ DM025 Coordinates: 446314.78 Target Facies: sampleable sand
DM025-1-PW 5421097.86 Verified Facies: sampleable sand
Depth: 2.8
1130 Deployed Trident probe, verified facies, began purge of 300 mL of PW line.
1154 Completed 300 mL Purge of PW line
1156 PW + Surface Water parameters Taken; almost identical so will pickup probe and move slightly.
DM025-2-PW Coordinates are: 446314.19 Verified facies:
5421048.91 sampleable sand
Depth: 2.8 m.
1201 Started 300 mL Purge of PW line. Took ~~PW+~~ Surface waters parameters;
1220 Took PW parameters
1221 Complete purge PW line
1232 DM025-PW-1-101419 Sample time, order: Metals
DOC
TOC
Sulfate

1247 Finished sampling DM025-PW-1-101419
1300 CMA Retrieved probe, begin decon; L Howard completes sample labels, placed samples into 2 ziploc bag + into cooler, Completed
1320 L Howard deconned glove box and prepped filters for next sample.
1342 Chris McCoy and Rob (TECK) boarded and CMA showed them the PW probe and process.
1348 Chris + Rob (Teck) departed boat

Scale: 1 square =

14 Oct 2019 Phase 3, Sediment Study, LCR
Tieton - PW Sampling

1358 Depart DM025
1420 Arrived DM020
1429 Anchored at DM020-1-PW Coordinates: 4462226.87
5421209.74
1430 Deployed Trident probe Depth: 4.8 m
1432 Began 300mL purge of PW line.

1507 Began sampling DMØ2Ø-PW-1-101419, order: ←
1547 Finished sampling DMØ2Ø-PW-1-101419
1554 Retrieved Trident probe, L. Howard labeled sample bottles, placed in ziploc bag and placed in ice cooler, including EPA split.

DM020-PW-1-101419 metals
DM020-PW-3-101419 Metals
DM020-PW-1-101419 DOC
TOC
Sulfate

1601 Breaking down equipment for day.
1640 Back at boat launch; finished sampling for day; handed EPA split off to Ella Anzinger at boat launch.

Laurie M. Hamel
10-14-19

Scale: 1 square = _____

Ritter the Rain

5 Oct 2019 Phase 3 Sediment Study, LCR
Tieton-Porewater Sampling

0800 Arrived Northport Boat Launch. Combined Tieton & Cowlitz Safety meeting
0900 Launched boats, loaded equipment & personnel on board
Personnel on boat today:
AECOM: Linda Howard
Gravity: John Schaefer, Ryan McElwee
CMA: Mark Beer, Alan Sims
EPA/Jacobs: Elle Ansinger (arrived at 10am)
0915 Arrive Deadman's Eddy, pulled to shore, deconned Trident probe, glove box, prepped filters for sampling, performed equipment calibration checks.
1040 Heading to 1-B5-NRT.
1054 Arrived 1-B5-NRT, heavy vegetation beneath boat to shifted around for a bare spot.
1057 Deployed Trident probe (driveframe). Camera shows heavy vegetation so moving around to find bare spot.
1100 Began 300 mL purge of PW line.
1115 Took surface water parameters
1122 Completed purge, took porewater parameters.
1132 Started sampling 1-B5-NRT-PW-I-101519, in following order: Metals
DOC
TOC
Sulfate
1201
1207 Finished sampling 1-B5-NRT-PW-I-101519
(H. 101519)

1210 Departed 1-B5-NRT. Pulled to shore. L. Howard labeled sample bottles, placed in 2 ziploc bag and in ice cooler. CMA began deconning Trident probe, L. Howard deconned glove box and - pre-cleaned filters for next sample.
1247 ~~Arrived 1-B6-NRT.~~
1304 Arrived 1-B6-NRT, deployed probe, faces is sample bubble stand
1307 Started 300 mL Purge
1323 Completed purge
1331 Started Sampling 1-B6-NRT-PW-I-101519 in order:
Metals
DOC
TOC
Sulfate
1402 Finished sampling
1412 Departing 1-B6-NRT for shore to decon.

Scale: 1 square =

15 Oct 2019 Phase 3 Sediment Study, MCR

Tieton – PW Sampling

1328 Began decanning probe while heading to DM024.

1431 Anchoring at DM024.

1423 Deconned trident probe. L. Howard decanned glovebox and pre-cleaned 4 disc filters for sampling. Collecting Dups for DOC and TOC.

1458 Began purge

Completed purge

1525 Began sample DM024-PW-1-101519 in the following order: DM024-PW-1-101519 Metals

DM024-PW-1-101519 DOC

DM024-PW-2-101519 DOC (DUP)

DM024-PW-1-101519 TOC

DM024-PW-2-101519 TOC (DUP)

DM024-PW-1-101519 Sulfate

1603 Completed sample DM024-PW-1-101519 + DM024-PW-2-101519

1618 L. Howard labeled sample bottles and placed in 2 ploc bag in ice cooler. CMA took water quality parameters + broke down equipment for day.

1642 Departed DM024-1-PW. Finished sampling for the day.

Lindsey Howard 10-15-19

Scale: 1 square = _____

Rite in the Rain

Tieton - PW Sampling

0800 Arrived Northport boat launch.
0815 Safety meeting with Tieton & Cowlitz teams.
0850 Loaded personnel & equipment onto boats.
0900 Departed boat launch.
Personnel on boat today
AECOM: Linda Howard
Gravity: ~~Alan Sims, Mark Biser~~ (LH 10-16-19) John Schaefer, Ryan McElhiece
CMA: Alan Sims, Mark Biser
EPA/Jacobs: Marilyn Gauthier
0906 Arrived Deadmans Eddy, pulled to shore to decon equipment & conduct calibration checks of sampling equipment.
0915 M. Biser deconned Trident probe. L. Howard decon'ed glove box and precleaned 2 disc filters for sampling.
0950 Finished with decon of equipment & glovebox.
1004 Headed to DM007. This is an alternate for DM006. Will do a DUP for Sulfate.
1022 Anchored at DM007, Deployed Trident probe (driveframe). Verified that facies is sampleable sand. DM007 - PW coordinates are:
4460885.39
542191.98
Water Depth 8.8 M
1057 Sample start time:
Sample DM007-PW-1-101619 in following order: Metals
DOC
TOC
Sulfate
DM007-PW-2-101619 - Sulfate
1133 Sample collection completed, L. Howard labeled sample bottles and placed in ziploc bag and in ice cooler. DUP collected for Sulfates.
1230 Departed DM007, Heading to DM028, facies = Coarse.
1248 Arrived, anchored at DM028. Water is fast and deep. Deployed Trident probe. Lowered about halfway down and anchors started dragging. Cannot hold anchor and will abandon (LH 10.16.19) ~~DM007~~ DM028-1. DM029 is nearby and similar conditions. Will skip for now. Will consider DM056 or DM059.
1322 Arrived, anchoring at DM059.
1327 Deployed Trident probe. Had to drive in several times.

Scale: 1 square =

16 OCT 2019 Phase 3 Sediment Study, WCR
Tieton - PW Sampling

1335 Began 300 mL purge of PW line.
Finished purge
1400 Sampled DM059-PW-1-101619 in following order:
metals
DM059-PW-3-101619 metals (EPA split)
DOC
TOC
Sulfate
1435 Finished sampling at DM059-1-PW. Coordinate: 447028.92
~~5167028~~ 5420602.52
Water Depth: 54 M
1525 Arrived back at Northport boat launch.
Finished for the day.

Linda M. Hamel
10-16-19

Scale: 1 square = _____

17 Oct 2019 Phase 3 Sediment Study, UCR
Tieton - PW Sampling

0800 Arrived Northport Boat Launch
0810 Held combined safety meeting with Tieton and Cayuse teams.
0820 Began launching CNI boats
0830 Began loading equipment and personnel onto boats
0910 Departed boat launch. Heading to DM0056.
Note: Discussed DM029 regarding potential to anchor at that location which is nearby DM028 where we could not hold anchor yesterday due to deep water and swift current. J. Schaefer (captain of Tieton) said it is too dangerous to try to anchor at DM029, so abandoning that location.
Personnel on boat today:
AECOM: Linda Howard
CMA: Alan Sims, Mark Biser
Gravity: John Schaefer, Ryan McEliece
0921 Arrived Deadman's Eddy and pulled ashore for decon of sampling equipment.
0:00 Completed decon of Trident probe, glovebox, and pre cleaned 2 disc filters for sampling
10:15 Departed shore for DM0056
0:21 Arrived DM0056, Current is too fast for safe anchoring. Abandoning this location. Heading to DM062 + DM063 to evaluate safety conditions for anchoring. DM062 considered unsafe to anchor.
1037 Arrived DM063, Anchoring.
1048 Finished anchoring at DM063-1, Deployed Trident probe, verified facies is coarse on underwater image. Need to hit to drive probe into facies. Not getting any penetration so will pick up probe, move slightly and set back down to try again, moved and tried again. Did not
1104 achieve penetration at DM063-2
1117 Aborted DM063-2 due to lack of penetration. Will move boat, set back down and try again at DM063-3
DM063-1 coordinates: 447338.10
5420973.99
Depth : 2.3 M
1106 DM063-2 coordinate: 447338.47
5420973.22
Depth : 2.4M
1118 DM063-3-PW coordinates: 44734.10
5420971.39
Depth : 2.5

Scale: 1 square =

Tieton - PW sampling.

1152 Sample start time for DM0163-8PW-1-101719 in order* Metals
DOC
TOC
Sulfate
* No Dups or EPA splits.

1215 Finished sample. L. Howard labeled sample bottles, placed in ziploc bag, and placed in cooler. CMA began decon of Trident probe and porewater/surface water lines.
L. Howard decanned glovebox and precleaned 2 disc filters for next sample. CMA added ~100 lbs to driveframe.

1305 Began pulling anchors.

1319 Arrived DM0164, alternate Coarse for DM0162.

1328 Anchored at DM0164

1330 Deployed probe, verified facies is coarse, began driving probe into facies. Was able to drive probe into about 5 3/4" and would not go farther so will go ahead and collect sample.

1347 Started purge of 300mL through PW line.

1413 Started sample DM0164-PW-1-101919 in order: metals
DOC
TOC
Sulfate

1452 End sampling. L. Howard labeled sample bottles, placed in ziploc bag and placed in ice cooler.

1501 Retrieved Trident probe and cleaned up workspace

1530 Departed DM0164. Recanned DM030 on return to boat launch. DM030 is in middle of strong current and not safe to try to anchor. Recanned location approximately 150m downstream in the same Coarse polygon that seems workable. J. Schaefer labeled it as "Proposed DM030" in GPS data.

End of day

Linda M. Howard
10-15-19

Scale: 1 square = _____

Tiverton - PW Sampling

0800 Arrived Northport boat launch.
0810 Held combined Tiverton, Cayuse & CNI boats H&S meeting.
Personnel on boat today:
AECOM: Linda Howard
CMA: Alan Sims, Mark Bisar
Gravity: John Schaefer, Ryan McElieece
EPA/Jacobs: Elle Anzinger
0830 Launched CNI boats, loaded equipment & personnel on boats.
0900 Departed boat launch. Heading to DM039.
0915 Arrived DME, pulled to shore for decon of Trident probe & sampling equipment. Deconned probe & PW & SW lines, L. Howard preclean 2 disc filters for sampling Conducted equip cal checks.
008 Departed shore for DM039 (mixed coarse)
1032 Arrived and anchored at DM039, coordinates are: 446780.76
5420451.47
Water depth: 6.70
033 Deployed Trident probe at DM039.
036 Viewed facies on screen and confirmed = mixed coarse.
1040 Began 300 mL purge of PW line.
1054 Completed purge ~~DM039-1-PW~~
~~1104~~ 1109 Began sampling at ~~DM039~~ in order: metals
1132 Completed sampling, deconned probe, SW & PW lines, glovebox, and pre cleaned 2 disc filters for next sample. DOC
TOC
Sulfate
1220 Pulling anchor, departed DM039
1237 Arrived DM043, began anchoring
1242 Deployed Trident probe at DM043-1-PW, coordinates: 446767.87
1254 Began 300 mL purge of SW & PW lines 5420318.93
Water depth 6.2
1320 Start sample DM043-PW-1-101819 in order: metals
1349 Finished sampling, deconned probe, glove bag. DOC
~~1444~~ L. Howard labeled sample bottles, placed in TOC
1444 10.18.19 ziploc bag and placed in ice cooler. Sulfate
1444 Arrived DM030, began anchoring
450 L. Howard, precleaned 2 disc filters for next sample.
Deployed probe, verified facies = coarse.
1458 Started 300 mL purge of PW/SW lines.
1515 Completed purge

Scale: 1 square = _____

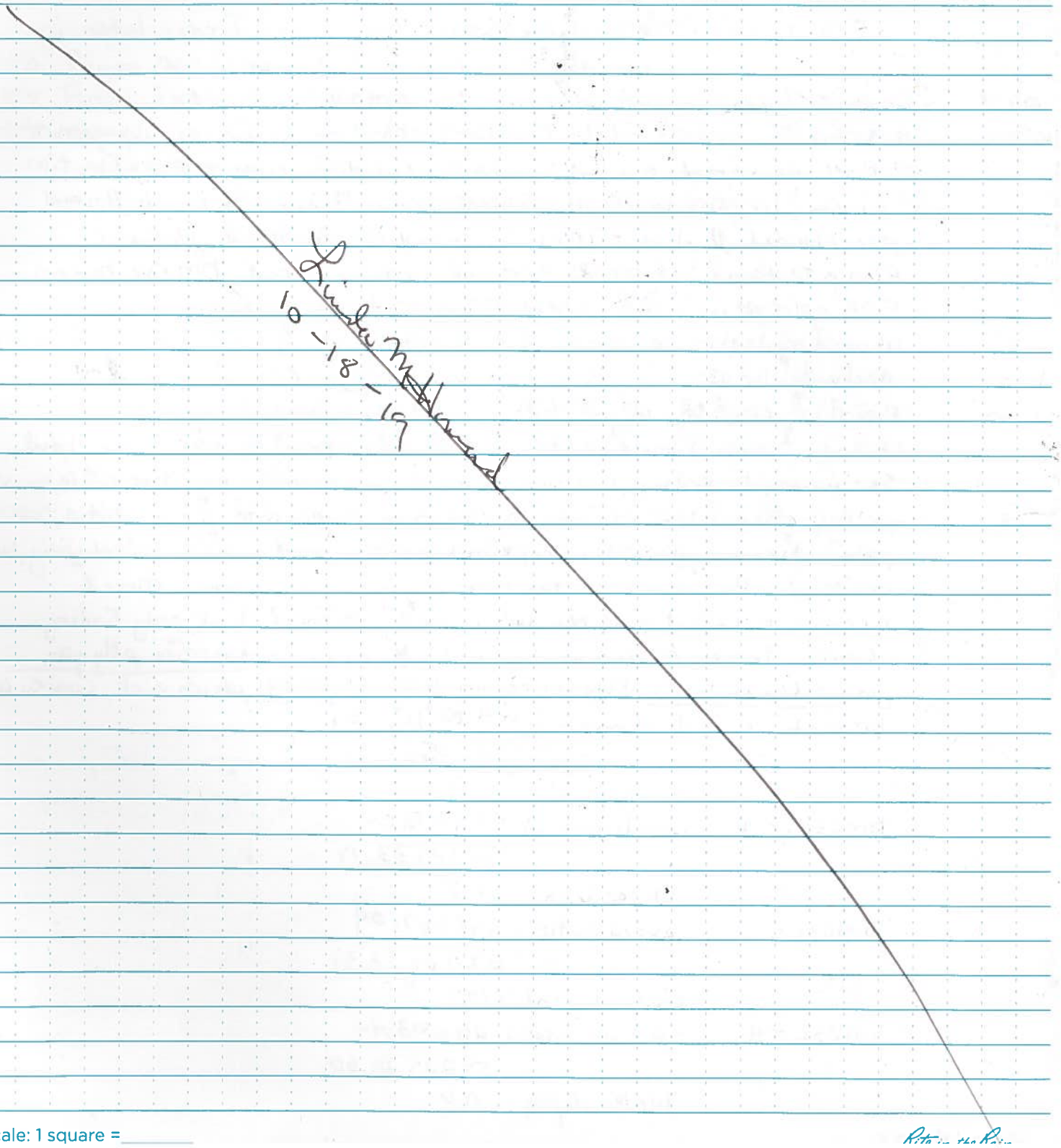
18 Oct 2019 Phase 3, Sediment Study, UCR – Tieton, PW Sampling

1527 Started sample DM030-PW-1-101819 in order: metals
DOC
TDC
Sulfate

1655 Completed sample. Retrieved probe.
Placed sample labels on bottles, placed in Ziploc bag, placed in ice cooler, cleaned up workspace.

1632 Departed DM030 for boat launch.

1650 Back at boat launch. End of day



Scale: 1 square = _____

19 OCT 2019 Phase 3 Sediment Study, LCR
Tieton – PW sampling

0800 Arrived Northport boat launch.
0810 Combined safety meeting with Cayuse, Tieton + CNI teams.
0820 Launched CNI boats.
0830 Loaded equipment and personnel onto boats.
Personnel on Tieton today:
AECOM: Linda Howard
CMA: Alan Sims, Mark Biser
Gravity: John Schaefer, Ryan McElwee
EPA/Jacobs: * Marilyn Gauthier may board Tieton later in the day, starting in Cayuse.
0900 Departed boat launch; heading to DM036 or DM047.
0909 Arrived Deadman's Eddy. Pulled to shore for decon of equipment. M. Biser (YH 10/19/21) and A. Sims conducted daily equipment calibration checks, began decon of Trident probe, SW/PW lines; L. Howard pre-cleaned 2 disc filters for sampling, decanned glovebox. Plan is to head to DM032 first and DM036 later. DM036 has an EPA split so will wait until Marilyn G is on board.
0958 Completed decon. Headed to DM032.
1015 Arrived DM032
1025 Finished anchoring at DM032.
Deployed probe + verified Facies = mixed coarse. Surface is very hard. Set down, pulled up, and move probe around several times, but surface is pretty homogeneous in area. Set down and tapped (YH 10/19/21) several times, but probe did not penetrate. Repeated process, penetrated slightly, but not much. Re-evaluated texture + concluded = Coarse. Moved around to extent possible while still anchored, but only finding Coarse Facies, moved anchor and video recorded entire polygon. All = Coarse Facies. Polygon recon included DM031, which is all Coarse also

DM032-1 coordinates: 44606760.67
5420532.41
Water depth: 11.7

DM032-2 coordinates: 44606722.0
5420533.15
Water depth: 11.8

DM032-3 coordinates: 44606767.04
5420533.31
Water depth: 11.9

DM032-4 coordinates: 44603.44
5420530.00
Water depth: 11.6

Tieton - PW Sampling

1119 Departed DMΦ32

1129 Arrived DMΦ47. ~~xx~~ Issues with one anchor detected

1146 Anchor issue Fixed, Finish anchoring.

1203 Began deconning Trident probe, ~~SW~~ PW lines. (Y+M 10.19.19)

1235 Deployed probe, verified Facies = Mixed Coarse.
DMΦ47-1-PW coordinates are: 4460818.38
5420453.52
Water depth: 4.9 m

1243 Began 300mL purge of PW line + SW line.

1258 Finish purge

1309 Start sample time for DMΦ47-1-PW in following order:

DM047-PW-1-101919	Metals
DM047-PW-3-101919	Metals (EPA Split; moved from DM036)
DM047-PW-1-101919	DOC
	TOC
	Sulfate

↓

1342 Finished sampling. L.Howard place sample labels on bottles, placed in ziploc bag and placed in ice cooler. Placed EPA split for DM047 in separate ziploc bag in cooler. EPA split was moved from DM036 to DM047 with approval from Marilyn Gauthier.

1427 Back at the boat launch. Gave EPA split sample to Marilyn Gauthier. Finished for the day.

Lucia M Howard
10-19-19

Rite in the Rain

Tietuv PW Sampling

0804 @ Northport, Tietuv only
Personnel on Tietuv today
AECOM: Anthony Palmieri
Jacobs: Gabriel Sedberry
CMA: Josh + Alan
Gravity: John + Ryan
USGS: Steve Cox
0815 Hold H&S meeting
0825 Start loading / launching boats.
0850 Depart boat launch.
0900 @ DME. Gravity / CMA will need ~1 hour to setup.
1025 Mobe to DM038.
1050 Anchored: Coordinates → N: 446 763.25
Water depth: 8.0m E: 542 045.77
1055 Deploy sampler, confirm mCS facies.
1107 Begin purge.
1129 Finish purge.
1145 Collect DM038-PW-1-102119
1220 Finish collecting sample. Begin decon. Will stay on station + anchored until that is complete
1258 Pull Anchors, mobe to DM036.
1323 Anchored @ DM036. Deploy sampler
Coordinates → N: 446 704.95
Water depth: 11.8m E: 542 045.26
1335 Sucessful penetration. Start purge
1354 Finish purge.
1400 Collect DM036-PW-1-102119.
1433 Finish collecting sample.
1441 Start pulling Anchors / securing equipment.
p ~~1456~~ 1512 Depart DM036 for Northport boat launch.
1519 @ Northport. Unload boat. Gravity does GPS ~~check in~~ SD check in.
1540 Steve Cox offsite.
1546 Depart for Warehouse
1626 @ Warehouse

10.21.19

Scale: 1 square = _____

Tieton PW

0730 @ Evans, Tieton only
AECOM: Anthony Palmieri
Jacobs: Gib Sedberry
CMA: Joss & Alan
Gravity: John & Ryan
0800 Tailgate meeting. Wind could be a problem later, will monitor.
0815 Start launching boats.
0856 Depart boat launch, begin equipment setup.
0940 @ EV030. Drop sampler to scout locations.
0950 Start setting anchors.
1005 CMA / Gravity realizing water is too deep (~100 ft) at this location. Only have 85 ft of usable cable. Will pickup and assess water depth @ other locations. Alan will call Bart to see if it makes sense to bring Yeti to Evans if water depth is an issue @ other locations.
1019 @ EV032, water is ~12 m deep (very close to shore). Slope seems manageable, will anchor and recon.
1045 Confirm correct strata (coarse). Successfully drive probe.
Coordinates → N: 5391990.06
Water depth: 9.9m E: 424200.90
1046 Start purge.
1103 Finish purge
1110 Collect EV032-PW-1-102219.
1112 Finish sample collection. Begin decon
~~1150~~ 1221 Depart EV032.
1237 @ EV038. Start setting anchors
1248 On station, Video confirms correct strata (coarse). Penetration successful w/ 3 hammer hits.
Coordinates → N: 5392193.37
Water depth: 16.0m E: 424510.02
1253 Start purge.
1320 Collect EV038-PW-1-102219
1350 Finish sampling. Start decon
1400 Pull Anchors
1411 Depart EV038
1418 @ EV043. Water is too ~~deep~~ shallow deep for connect setup. Will take pictures of locations that need them.
1428 @ EV046-1-PW location, Record picture "EV046-1-PIC"
1445 Talk w/ Jenny P. indicates that pictures need to be taken w/ different camera/frame. Confirm that we should demobe for day →

Scale: 1 square =

10-22-19

Tieton PW

So that Gravity/CMS can unload PW sampler and land imagery equipment.

1505 @ Evans boat launch.
1515 Depart Evans for warehouse.
1531 Back @ warehouse

10.22.19

Scale: 1 square =

RV Tieton

0750 S. Holmes at Northport Boat Launch. Heavy fog on river.

0755 Conducting health+safety meeting w/ crew.
AECOM: S. Holmes
Gravity: J. Schaefer (Captain), Ryan McElliece (deckhand).
CNI: J. Weatherman, B. Hoover
Jacobs/EPA: Gabe Sedberry

0810 Loading boats into water. Will finish rigging of camera on Tieton and wait for fog to abate.
Forecast: Currently 33°F and foggy.
Highs in 50's, should clear up throughout day

0943 Done rigging camera, enter standby due to fog.
Plan for day is to video/photo locations that have no imagery. Will take 3 points/captures at each station, mirroring previous recon points when possible.

1045 Fog is less thick, crews will slowly head upriver toward Deadman's Eddy

1104 At station DM033

1115 Begin video/image capture (DM033-SV-4 thru 6). Gravel and small cobbles.

1123 Begin video/image capture at DM034 (SV-2 thru SV-4). Cobble and gravel w/ little sand.

1131 Begin video/image capture @ DM037 (SV-5 thru SV-7). Gravel and cobbles w/ little sand.

1142 Begin video/image capture @ DM040 (SV-1 thru SV-3). Gravel and hardpan.

1153 Begin video/image capture @ DM041 (SV-1 thru SV-3). Gravel and cobbles w/ silt or sand and occasional boulder.

1201 Begin video/image capture @ DM042 (SV-1 thru SV-3). Cobbles w/ gravel and little silt/sand.

1208 Begin video/image capture @ DM049 (SV-3 thru SV-5). Cobbles w/ little sand

1216 Begin video/image capture @ DM051 (SV-1 thru SV-3). Gravel and small cobble w/ hardpan.

1222 Begin video/image capture @ DM052 (SV-1 thru SV-3). Gravel and silt w/ vegetation, hardpan.

1229 Begin video/image capture @ DM053 (SV-4 thru SV-6). Cobbles and gravel.

1236 Begin video/image capture @ DM054 (SV-4 thru SV-6). Cobbles.

1250 Begin video/image capture @ DM066 (SV-5—SV-7). Observe

Scale: 1 square =

cobbles and gravel.
1302 Begin video/image capture @ DM012 (SV-1 thru SV-3). Cobbles w/ coarse gravel.
1317 Heading to Northport Boat Launch
1323 At Northport Boat Launch RV Tieton performed GPS check-in at poles on dock in the AM
1330 Crew heading to China Bend Boat Launch.
350 At China Bend Boat Launch.
1355 Boarding RV Tieton, heading to CB022.
1400 At CB022, deploying power grab w/ camera.
1404 Begin video/image capture. Very difficult to see due to depth. When light is turned on, it is harder to see due to turbulence. Some apparent rocks, gravel, sand observed
1417 Back at China Bend Boat Launch.
1420 Heading to Evans Boat Launch.
1445 At Evans Boat Launch
1450 On RV Tieton L Raterink (Jacobs/EPA) now also on board.
1456 Begin video/image capture. Deep water, difficult to see. Apparent cobbles and sand (SV-1 thru SV-3). Station EV067
1510 Video/image capture at EV062. Cobbles and gravel in silt and vegetation observed (SV-3 thru SV-5)
1521 Video/image capture at EV058. (SV-1 thru SV-3). Gravel and cobble w/ sand or silt and occasional boulder.
1531 Video/image capture at EV053 (SV-1 thru SV-3). Cobble w/ silt or sand.
1543 Video/image capture at EV046 (SV-1 thru SV-3). Silt/mud w/ occasional gravel and small cobble. Large silt plume upon landing sampler.
1557 Video/image capture at EV014 (SV-1 thru SV-3). Cobbles and apparent silt/sand. Deep water, difficult to see. Occasional boulders.
1606 Heading to Evans Boat Launch.
1615 At Evans Boat Launch.
1635 Completing forms, waiting for USB Drive w/ data
1649 USB Drive obtained, SH heading to warehouse
1704 At warehouse, unloading supplies

END OF THE LOGBOOK

SHut Heather 10-23-19

#4

Yeti - PW

Rite in the Rain®

ALL-WEATHER

UNIVERSAL

№ 373-MX

CONTENTS

PAGE	REFERENCE	DATE
	Get on board: ~~clipboard~~	
	~~tray for inside glove box~~	
	~~Divider tabs~~	
	~~slightly larger bin~~	
	~~fat sharpie~~	
	~~4 more bottle sets (primary)~~	
	order medium vinyl gloves for over G.B. gloves	
	PW kits	
	labels for EPA splits	
	C.B. sediment station sheet.	
	SIO 277-5369	

16 Sept 2019 Phase 3 Sediment Study Upper Columbia River

RV Yeti
Personnel on board:
AECOM : J. Pretare
Gravity : Rene Trudeau, Ed Sloan
~~GT~~ CMA : Chris Smith, Alan Sims
Jacobs: Dan LaVoie
Visitor: Whitney Fraser (CCT)

1500 - Load vessel at Evans Campground Day use launch H/S orientation + tailgate done previously
1545 - all gear + people stowed; motoring to EV@64.

Weather: Light wind, 60°F, overcast; some chop on water.

1608: Dan told Jenny P that Jacobs H/S manger is visting tomorrow John Cully 206-660-3367

1614: Cayuse called from DME - overheating + returning to dock.
1615: Yeti anchoring
1614: attaching O_2 sensor to glove box = It is a Analytical Industries Oxygen Analyzer S/N 905947963
O_2 reading is 20% w/o Nitrogen running in glove box, which is considered normal
1705 - Safety review of lifting trident probe (vibracore frame) off the back of Yeti
1730 - turned Nitrogen on into glove box to purge O_2.
1734 - Took about 5-10 minutes to get to 0% O_2
Timing to see how long until it gets to above 0.1% O_2
1742 - still 0%, 1746 still 0%, 1749 = 0%, 1750 - went to 3.5%
1739 - Sent probe down. Viewed on video. Confirmed that strata appeared to be mud, in comparison to pictures of strata in binder. got a small sediment cloud when probe hit bottom. Vibrated for ~ 3 seconds + "plate" settled to even w/ sediment surface. would not want to vibrate any longer than that.
1749: pulled trident probe on board.

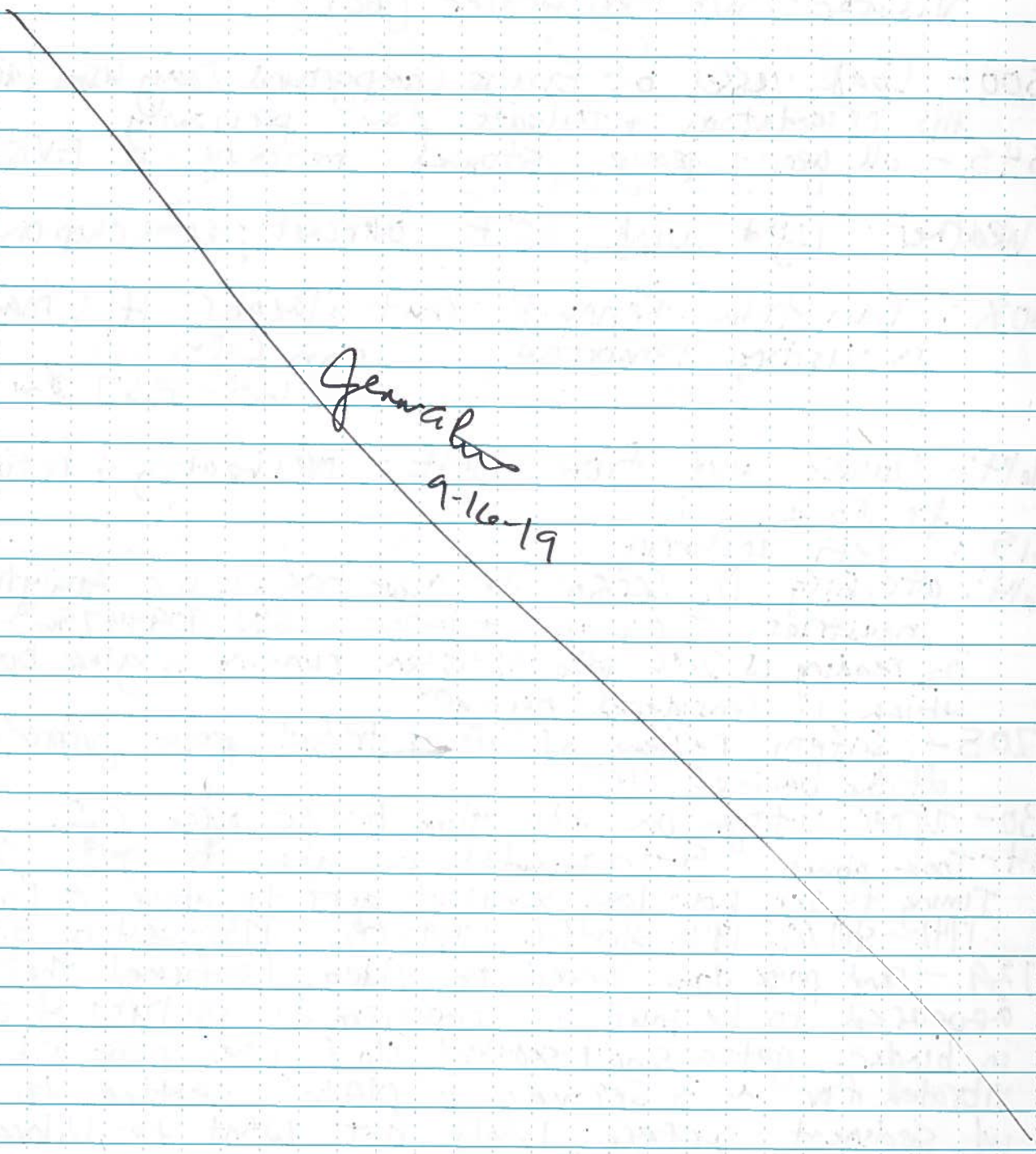
Scale: 1 square = _____

Rite in the Rain

16 Sept 2019 Phase 3 Sediment Study Upper Columbia River

Summary: No samples taken
No photos taken
No forms completed.

1830 - Return to Dock



Scale: 1 square =_____

17 Sept. 2019 Phase 3 Sediment Study
Upper Columbia River

1315 onboard RV Yeti
AECOM - J. Pretare
Grainy - R. Trudeau, E. Sloan
CMA - C. Smith, A. Sims
JACOBS - D. Lavoie - John Collins on board for tailgate
CNI boat - E. Weatherman, deckhand

1330 - on location EV&64 - setting up equipment, glovebox

1350 - boat is anchored ~~=~~ approx 3 m. of where the BMI sample was taken; at time of initial anchoring.

1403 begin glovebox decon; wiped w/ DI wipes.
Alan put ~ 350 mL alconox solution in glove box connected to tubing and will run it out (reverse) to trident probe
- Switch to 400 mL of ~~DI~~ distilled water only to rinse Alconox ↘ non lab

1430 - switch to 350 mL of lab grade DI water, to rinse distilled water

1440 - finished decon of water line. Capped it with clean black cap (rinsed in lab water)

1445 - loading glass beads into probe.

1453 - rinsing 2 DISC filters w/ 10 mL lab water

1510 - tested & cleaned 2 fittings needed for filters.
6.1 m depth at EV&64

1528 - ready to deploy trident frame

1533 - in the water

1534 - on bottom, confirmed mud Strata
settled finish w/ bottom one first drop; no vibration needed

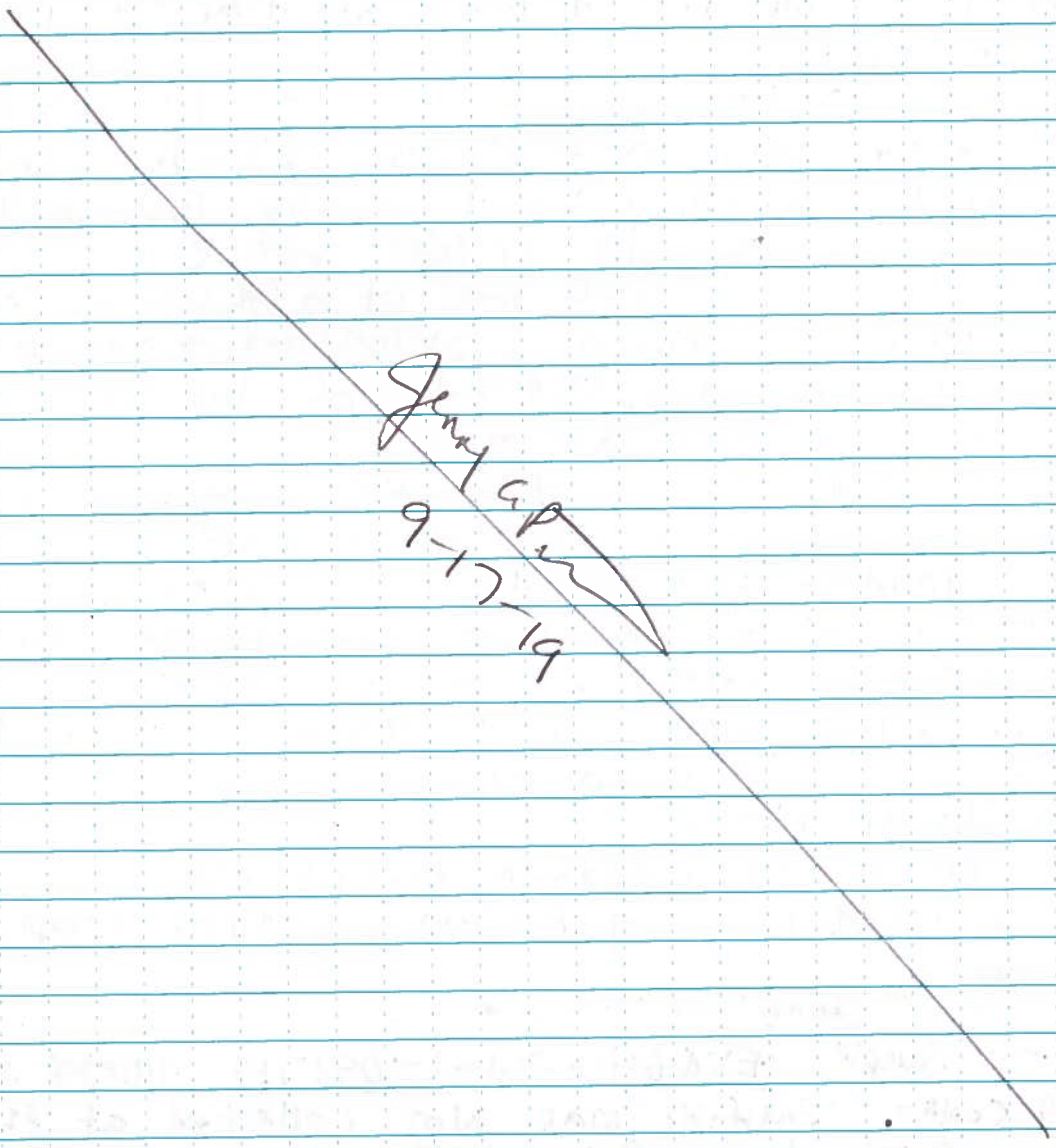
1650 - end sampling

1703 - Sample EV&64-PW-1-091719 labelled and put in ~~cell~~ cooler. Sulfide was NOT collected at this location. JP. * only 1 disk filter used, no problem with clogging
Sample bottles were labelled with the end time of sampling period.

CMA recorded additional data into their electronic data sheet while my hands were inside glove box.

Location for EV@64-PW-1-091719:
E: 424642.82
N: 5363930.69

Depart EV@64 at 1730
Back at Evans C.G. dock at 1800
Return to warehouse 1830; transfer sample TO refrigerator truck.



Scale: 1 square =

18 Sept 2014 Phase 3 Sediment Study, LCR
J. Pretare - notetaker

PW team technical discussion in warehouse w/ Kevin Lundmark:

If target strata does not match that indicated in FSP, ~~match~~ then make 3 attempts within the facies to find a place where the bed matches the (Look 3x with the camera) strata.
If you don't find it after 3 attempts, then move to another location.
Consult with EPA oversight about moving to next primary or an alternate. EPA oversight would discuss w/ captain + CMA about how hard it is to move + re-anchor.
FSP says collect at primary location no matter what, but moving to the appropriate strata would be the priority approach.

Connections of tubing - Linda had an issue! Jenny did not.
Ziptie fitting to

On Tieton: Video lens fogged up on inside - need to change. Also O2 sensor did not warm. Stabilized at 2.8%.

Purge before turning Nitrogen on.

EPA collected $ a split. & about needing new metals filter for that → Yes.

Sample time: all on same label. Use start time.

Data from CMA: · Excel file
· Calibration form
· text from Trident probe

C855 at Evans Campground
AECOM: Jenny Pretare
Jacobs: Dan Lavoie
CMA: Alan Sims, Chris Smith
Grantry: Pere Trudeau, Ed Sloan

Scale: 1 square = _____

Rite in the Rain

18 Sept 2019 Phase 3 Sediment Study
Upper Columbia River

CNI: Doug Hadley Deckhand - Jack Cotter
CCT: Whitney Fraser
ERM: Kevin Lundmark

0930 transferred from CNI boat to Yeti, which was already anchored at EV054.
weather - raining, cloudy, 58° F, no wind.

GPS location for EV054:
E 425055.29
N 5394270.50
6.1 m depth

1000 - Decon inside of glove box. Wipes, then Lab DI water.
1020 - Set up O2 sensor
1028 - CMA doing calibration checks
Beginning decon of Vibraframe Trident Probe. There is only one vibraframe for this study.
400 mL alcon of solution being pumped from glovebox to probe through tubing.
1043 - switched to 400 mL distilled water
1053 - switched to 300 mL lab DI water
1105 - Alm loading beads into Trident probe
1119 - Deploy Trident probe
confirmed it appears to be mud strata on video camera
1122 - dropped frame to riverbed. Appeared to settle flush with surface with no vibration.
1123 Took new GPS as probe set on bottom - offset to where winch line enters the water
E 425056.10
N 5393187.96
1125 - began purge to 300 mL.
1144 - finished 300 mL purge
1145 - begin testing of porewater with Myron-L meter. Rinse 3x and then take a reading
1150 - O2 meter reading 20.3% at ambient
3.86 mg/L = DO so, NO Sulfide bottle at this location

Scale: 1 square = _____

18 Sept 2019 Phase 3 Sediment Study

1207 - start sample bottle filling
1230 - end sample bottle filling

1247 - Bottle #2 for H_2SO_4 kept coming loose after closing and tightening, so we put electrical tape around the top.

Sample Number EV054-PW-1-091819
No sulfide bottle collected
1253 - labelled bottle + put into cooler on wet ice.

Begin notes for next sample location

1302 - pulling anchor at EV054 and heading to EV075 which is sampleable sand and has previously had sediment collected.
1310 - Decontaminating line + probe w/ alconox, distilled water and DI lab water while motoring to EV075
1320 anchoring at ~~EV054~~ EV075
1345 - anchors set 23.4 m. depth
1347 - deploying Vibraframe Trident probe Raining now
1351 - riverbed confirmed to be sampleable sand on video camera. Vibrated for 10 seconds to settle the probe down further
1355 - begin purge.

GPS point at: E 424383.01
N 5394451.90

1414 - purge complete
CMA doing readings: No sulfide collection at EV075
1426 - Q from Linda on phone - for Equipment Blank, do they do all 5 bottles or only a subset?
Leave bead pack on probe? ~~Yes~~ NO - per Kevin L.
1430 - O2 sensor reading 20.2% at ambient

1439 - preparing to close glovebox + fill w/ nitrogen

1 - metals
3 - TOC
5 - chloride/sulfide/alkal.

Scale: 1 square = _____

18 Sept 2019 – Phase 3 Sediment Study, Upper Columbia R. P.H

1455 – start sample time
1524 – end sample time
1536 – Label bottles for
EV075-PW-1-091819 NO sulfide bottle
and
EV075-PW-2-091819 for Alkalinity, Chloride and Sulfate (Bottle #5)

Taped bottles for DOC + TOC shut. They were getting loose.

1550 – put in cooler.

No pictures today.
Trident probe back on board
1600 – transfer to CN13
1622 – At Evans C.G. Dock.
1625 – Sat at dock w/ CMA + got data files from 9/17 and 9/18.
1730 – Return to sample processing + transfer

Jenna Rose
JP 9-18-19

19 Sept 2019 Phase 3 Sediment Study Upper Columbia River

0715 - Yeti did control point check at end of Evans Dock
0730 - Tailgate at Evans Campground
Personnel present:
AECOM - J. Pretare, N. Moody → Note taker
Gravity - R. Trudeau, E. Sloan, Emma Rigney
CNI - Jack Cotter, Doug Hadley
JACOBS - Jeff Johnston, Marilyn Gauthier
CMA - Chris Smith, Alan Sims

Weather: Cloudy, 52° F, but forecast is for clear skies in the afternoon
J. Pretare to train N. Moody on glovebox, then transfer off boat
Marilyn Gauthier will go to ~~S~~ DME after this tailgate.
0738 - RV Yeti anchoring in Evans A.O.I. EV063 ~~EV064~~ JP 9-19-19
0803 - Discussed boat to boat transfer
0823 - transfer to Yeti, begin set of glovebox. Nicky Moody doing set up.
1) Wipe inside of glove box with DI water
2) ~~ST~~ spray lab grade DI water on surface, avoiding O2 sensor port. Wipe dry with Kimwiper
3) move bottles + filters into box
4) 10 mL lab DI water through 2 disc filters
5) decon line w/ Alconox, then distilled, then lab DI

0925 - EV063 using vibraframe. Target strata is mud. We will do an EPA split at this location is just dissolved metals (one bottle), using same geotech filter as the primary filter.
water very calm today
7.5 m depth at this location

0950 Deployed trident probe
0955 Checked strata - confirmed mud, vibrated 1 second to settle frame to bottle of river bed.
GPS location:
E 424891.81
N 539389.95

Scale: 1 square = _____

19 Sept. 2019 Phase 3 Sediment Study
Upper Columbia River
RV Yeti

0956 – began purge of 300 mL PW
1009 – Stopped purge
1015 – CMA reading water quality readings
NO sulfide sample collection at EV@63

1023 – purge box with Nitrogen.
1027 – turned on pump
1030 – Sample starting flowing
1058 – End sample time
1108 – trident probe back on deck; start pulling anchors
1120 – Steve Bruchman, CNI Sub for Jack.
1030 ST Samples collected : EV@63-PW-1-091919 ⇄ ST 1030
EV@63-PW-3-091919
1111 – Bottles labelled + put in cooler.
1113 – J. Pretare transfer logbook to N. Moody
1115 – Decon teflon tubing: Alconox, DI, Lab DI
1118 pulling anchors; next station is EV057 Stratum/facies = Mud.
1142 ON Station EV057.
1146 NM cleaning glove box. - Wipe down, Lab. DI spray & dry
1206 NM labeling bottle lids; purged disc filter 10mL Lab DI
1211 Deployed trident probe - mud visible in photo.
1213 Pump on.
Water depth = 6.8 m EV057-1-PW
E 424820.59
N 5393493.93
1232 Purge complete.; CMA reading water quality readings, NO Sulfided collected
1247 Start filling containers after purge box full of Nitrogen
1310 finish filling bottles.
1247 ~~ST EV@63-PW~~ NM ST EV057-PW-1-091919
1319 Bottles labeled and put on ice
1324 Running Alconox, DI, Lab DI - Decon. - to collect Equipment Blank.

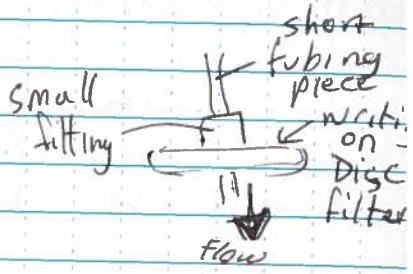
1405 ST-EV057-PW-4-091919 on vibraframe trident probe
Reverse flow of Lab DI from open glove box (no nitrogen) to trident probe. collect ~~Tea~~ NM equipment blank at tip of probe. 1 container for total metals
1426 – DJ, NM, CS, AS off Yeti - shuttle via CNI to shore.
1438 – Exit dock @ Evans, 1505 – @ Warehouse

20-Sept. 2019 | Phase 3 Sediment Study UCR - RV Yeti. | Page 11

0700 Leave Warehouse
0730 Gather for tailgate at Evans dock. - Stretch + Flex today.
0814 Depart dock on CNI boat. to RV Yeti.

RV Yeti Gravity = Renee Trudeau
Brett Walburn
Emma Rigby
CNI = Doug Hadley
Steve Bruckman
AECOM = Nicky Moody (Field Supervior/SSO)
CMA = Alan Sims
Chris Smith.

EPA/Jacobs = Jeff Johnson



RV Ingalls Gravity = Ed Sloan
Shawn Hinz
CNI = ~~Chris Smith~~ nm Dan Smith, Eric Weatherman
EPA/Jacobs = Marilyn Guthier
AECOM = ~~Nicky Moody~~ nm Michelle Stegner
Michael McCoog
Brian Fletcher

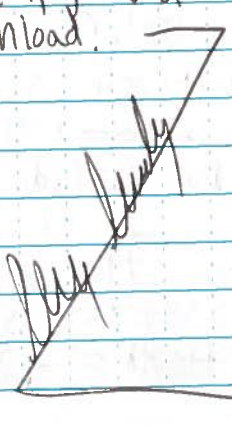
0821 Arrive at RV Yeti, board vessel. @ EV044
Set up to re-do equipment blank. - 10.30.19 J.A.P.
0900 ST EV044-PW-4-092019 This sample was collected without glass beads
~~09~~ nm Discussion w/ Alan + Chris; if a go for Canada on Monday Sunday is Driving/Mob Day.
Saturday is equipment transfer day. - No PW should occur on Yeti on Saturday. Nm to call JP before noon.
0916 Calibration complete.
Weather today = 50s-60s Sunny. Wind 3-5 mph
0935 Trident on bottom; confirm mud stratum
Gravity left ~2 inches out of mud; Vibration on for 2 sec and it is in all way.; Cleaning glove box w/ ~~50mg DI & tub~~ nm Chm wipes + DI spray.
0937 ~~Purge~~ Purge pump on; nm setting up filters and fitting & bottle order. ~~P~~ nm
0958 300mL purged; ~~Do~~ nm glove box set up w/ bottles.
1012 ST EV044-PW-1-092019 ~~No~~ 1013 Start filling first bottle
60mL + 80mL + 100mL = 90mL - No sulfide container. Only 1 disc filter used
1032 Stop pump/sampling. E = 424996.42
N = 5392737.25
Water Depth = 7.30 m

Scale: 1 square = _____

Rite in the Rain.

9-20-2019 RV Yeti

1045 Pulling probe anchors NM at EV044. - motor to EV013
1048 start decon process on trident probe and glovebox
1108 Glove box set up complete.
1113 Anchors up off station
1238 NM Anchors away at EV013
1202 Anchors set.
1209 ~~Trid~~ Trident on bottom 3" to go - used vibration
1212 Pump on - clear for purge. 300 mL → Confirm stratum = Samplable Sand w/ Video
EV013 GPS = E 422908.75
N 5391591.04
Water Depth = 24.90 m
1236 ST EV013-PW-1-092019 ; + field Dup total metals
1258 pump off - filled primary + 1 container → EV013-FW-2-092019
1300 Cleaned glove box w/ 2x wipes + lab DI
1312 Start Decon process Soap, Distilled (DI), & Lab DI. thru teflon tubing and trident probe, - reverse process. Labels finish on containers & then put on ice.
1318 Pulling anchors.
1324 Anchors away @ EV012
1348 Anchors set - Arrival time.
1356 Deploy trident NM ~~probe~~ vibraframe
1358 On bottom - confirm stratum = Samplable Sand w/ video; ~~vibrateon~~ vibration used to slide it down last couple NM ~~inches~~
1406 pump on purging 300 mL.
EV012-1-PW GPS coordinates
E 422812.86 Water Depth = 24.8 m
N 5391570.92
1421 ST EV012-PW-1-092019 - Primary only.
1439 Pump off.; labels on bottles; bottles in cooler.
1530 Ferry over to Evans via CN1 vessel - NM, AS, CS, & JJ
1550 Depart Evans campground.
1606 At warehouse - unload.



Scale: 1 square =

9-1

9-21-2019 R/V Yeti - Evans AOI Lucky Pg 13

0700 @ warehouse / load.
0730 @ Evans boat ramp. - fill out Float plan / Tailgate form.
0810 Joint tailgate Sediment & Porewater
See Ingalls logbook for staff; RV Yeti staff / team ↓
AECOM = Nicky Moody (NM)
Gravity = Renée Trudeau (RT), Emma Rigby (ER), Bret W (BW)
CMA = Alan Sims (AS), Chris Smith (CS)
CNI = Doug Hadley (DH), Steve Bruchman (SB)
0830 Depart Evans dock. on CNI shuttle
0845 Transfer from CNI shuttle to Yeti which is already anchored. @ EV010
0859 Decon Trident probe and teflon tubing.
0930 Equipment blank ST = EV010-PW-4-092119
This time collected with glass beads in probe.
1000 Pump off collected 3 containers; no filters
1004 Trident probe being deployed.
1007 Probe on bottom - last 2 inches vibrated in
pulled up & retried as didn't push back in all way 1st time.
1017 Pump on - purging 300 mL.
1034 ST EV010-PW-1-092119 / EPA Split EV010-PW-3-092119
1056 Pump off; ~~labels~~ NM 9/21
1101 Labels on containers
1107 Bottles into cooler. Trident probe on deck.
1108 Starting to pull anchors.
1123 off location EV010
1126 Motoring to Location EV005
1135 Start dropping anchor at EV005; Decon complete for glove box and trident probe/teflon tubing
1154 on Station EV005
1208 On bottom - vibrated x2 to get it in.
1209 Pump on - purging to 300mL;
fill Capsule filter
1230 ST EV005-PW-1-092119 Primary only
1251 Pump off
1257 Trident on deck
1301 Pulling up anchors at EV005; start decon of trident + tubing + glove box.
1320 Motor to EV002

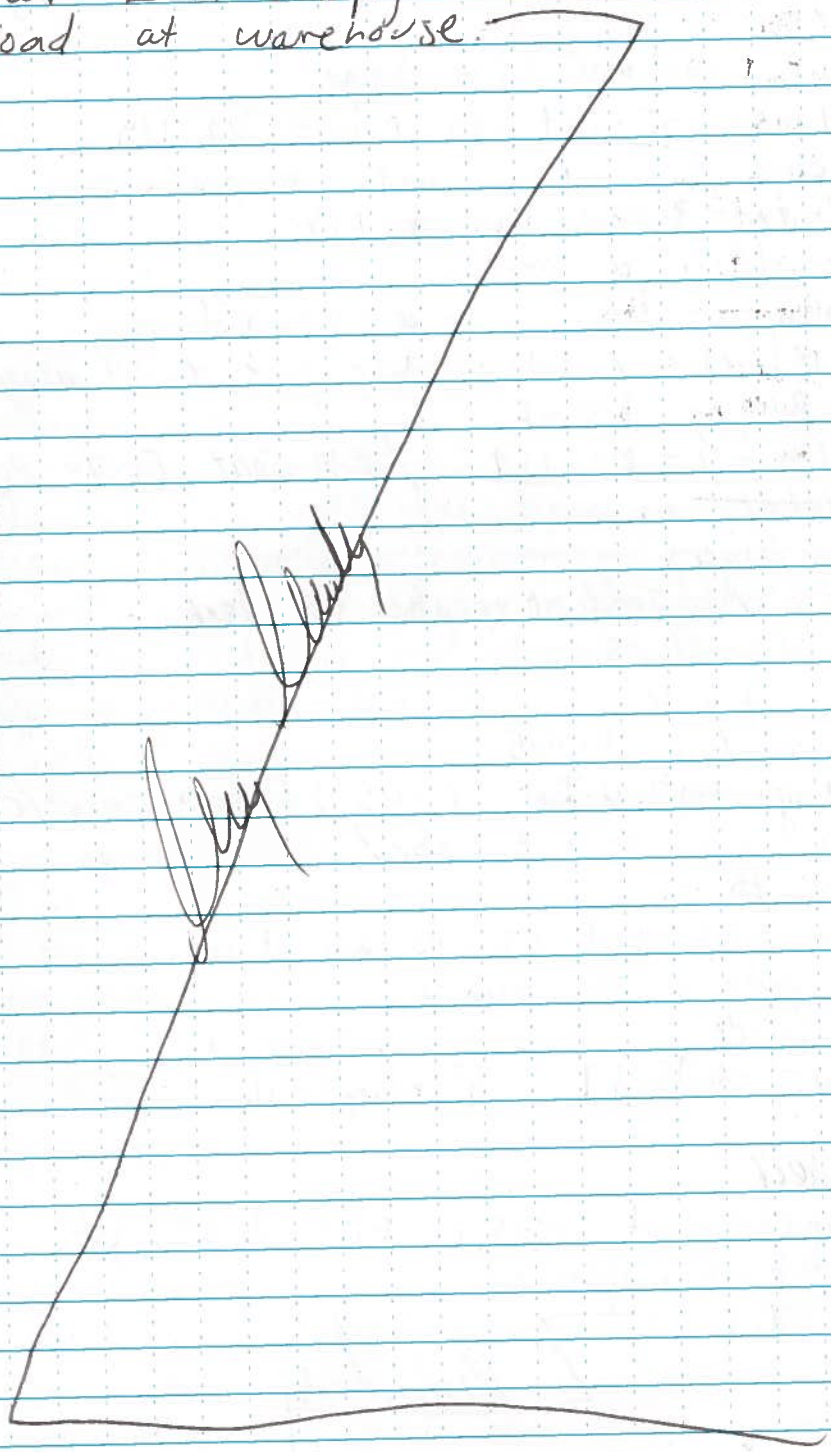
Lucy Mody

Scale: 1 square =

9/21/19 vm

9/21/2019 RV Yeti - PW Evans AOI

1340 set at EV002, 1343 Deploy trident probe.
1348 Pump on - purging 300mL.
1406 ST EV002-PW-1-092119 = Primary.
+ EV002-PW-2-092119 = Field Duplicate. → on DOC
1429 pump off; labels done
1443 Bottles in cooler.
1445 Pull trident probe up.
1500 pull anchors; clean up (NOT full Decon).
1510 Shuttle on CNT back to Evans dock.
1530 Depart Evan campground.
1550 Unload at warehouse.



Scale: 1 square =

0650 - Left Colville for Evans. Kettle. 0705 - Gathered @ Kettle and planned for today
0745 - Left for Evans
0811 - Arr @ Evans, setting up for PW,
Bart checking
0820 - Tailgate @ boat dock

0855 - On Yeti setting up for sampling @ EV065
0920 - CMA preparing to deploy drive sampler frame
Al filling in forms
1000 - CMA connecting tubing
1018 - Preparing to lift drive frame, lifted onto wood box
1025 - Conducted cal (CMA) of multimeter
1056 - De-conning sample lines ... Alconox, ~~DI~~ 9/23 Distilled, DI
1123 - Completed "
1128 - De conning Glove Box. CMA mechanically configuring drive frame
1142 - Jeff of EPA / Jacobs discussion; due to lack of collection of MS/MSD at a location already visited, EPA Jacobs requests that an MS/MSD be collected at EV037
1149 Deploying drive frame
1159 - Began purge of PW lines
1213 - CMA reading PW parameters → EV065-PW-1-092319 J.P. 10-12-19
1224 - Parameters stable ORP=+162 / DO=3.85 / 9 sept. 19
1253 - Sample Start time
1333 - " End time
Jeff J went to CNI chase boat
1347 - Left Station. EV048 too deep
1420 - Checking approx. depth at EV046
1428 - Arr @ EV048 46
1503 - Deploying drive frame @ ~~EV048~~ EV048 46
1507 - Purge begins
1525 - Surface water / ORP+216
1525 - Completed purge of 300 ml ; no need f
1548 - Sample start EV046-PW-1-092319 J.P. 10-12-19
1619 - Sample end
1640 - CMA deconning PW lines
1715 - Departing EV046
1734 - Leaving Evans for drive to Kettle
1755 - Arr @ Kettle
1840 - Leaving KF

9/23

0705 - Left for Kettle Falls
0725 - At KF - picked up ice + camera + thumbdrive
0730 - Left for Evans
0750 - Arr @ Evans
0800 - THA w/ crew
0805 - Left dock for EV026 0810 - Arr @ Yeti
0810 - Setting up for sampling
0840 - Decon Glove box, set up bottles + filters in Glove box
0915 - CMA working on getting drive frame to function, settled on rock during first attempt
0920 - and lowering - appears to be resting on shoulders of 2 cobbles
0934 - repositioning Yeti for another nearby location, or at least modifying current anchorage
0945 - " frame seeking fewer rocks/cobbles
1018 - CMA checking on air supply for driving the probe, did not appear to be reaching the drive frame from the surface the last couple of efforts
1048 - Appears to be resting on the bottom, appears to be saved at this location
- Checked parameters at purge. DO and ORP acceptable so no need for sulfide sample
1123 - Al in glovebox, started sample collection
1154 - End of sample collection EV026-PW-1-092419
JP 10-12-19
1212 - CMA doing Cal-checks : successful
1223 - " started de-con of sampler + lines
1223 - Left EV026 for EV037
1242 - Manuevering to anchor at EV037. CMA prepping drive frame
1311 - CMA purging. Al flushing disc filters in prep for sampling
1357 - Begin sampling. Included collection of MS/MSD for EPA: 3x Bottles Dissolved metals,
1454 - End sampling 1500 - Trident sampler back on deck || EPA took the bottles with them - EV
CMA took parameters → EV037-PW-1-092419, EV037-PW-3-092419, EV037-PW-4-092419
1541 - 4 folders from Bart today, the 2 that include Updated are files from yesterday that he amended + corrected
JP 10-12-19
CMA decon'ing in prep for Rinsate blank
1545 - Sampling Rinsate blank from Drive frame 2 - EV037-PW-4-092419
1615 - Left station EV037
1625 - dropped off @ beach @ Evans
1640 - Checking forms 1650 - Leaving for KF
17:10 - Arr @ KF. Checking in samples + field forms
1750 - Completed checking in

AS. 24 Sept. 19

25 Sept. 2019 UCR P3 Sediment Sampling Al Thatcher on vessel Yeti Page 17

0500 - Began w/ communications

0630 - Leaving for KF 0645 - Arr @ KF - P/U supplies

0706 - Leaving for Evans 0725 - Arr @ Evans -

Started float plan

0735 Stu leading Tailgate

New EPA rep today: D.J. Moore from Jacobs Portland, OR office

0750 - Left dock for EV051 0800 - Boarded Yeti, stowed gear

Completed & forwarded Float Plan, Sample locations photographs, CMA calibrating?

0825 - Prep for sample collection at EV051. Decon glove box. Deploying driveframe

0.4 miles to nearest (East) shore, 0.8 mi. to campground

0835 - Started purge

0855 Start sample @ 0859 : EV051-PW-1-092519 and EV051-PW-2-092519 JP 10-12-19

0959 End sample Sample collected included a Dup for Dissolved metals -

1020 - CMA deconning lines & driveframe. Packed sample & placed on ice

Gravity motoring towards EV059.

1048 - On station at EV059. Driveframe & lines decon complete

- Deployed driveframe. Not able to drive to obtain sample

1135 - 2nd deployment of driveframe, Able to drive sampler

1151 - Started purge @ EV059

1227 - Sample start time (initial - see below line for new start time of 1243

1243 - Capsule filter was at first attached with flow direction opposite that indicated on filter, during collection of first bottle of PW. That bottle and filter were set aside to be discarded. A new filter and bottle (for dissolved metals) were quickly inserted into glove box, the new filter installed in correct orientation, and new sample volume collected into that bottle. Filling of the remaining three bottles proceeded without error and sample collection completed

1325 - Removing sample bottles from glove box and labeling

1335 - Sample bottles placed on ice, sample bottle that was collected incorrectly was discarded

1340 - Left EV059. CMA deconning driveframe & PW lines

Motoring towards EV062

1400 - CMA completed decon. Arrive on station @ EV062 4250 17.42 5393766.58 Depth = 6.20

1407 - Drive frame deployed, upon approach to bottom observed sand & cobbles

1419 - Started purge of surface water

1425 - Communication w/ Marilyn of EPA and Jenny P. of AECOM re. whether to proceed at this location.

1445 - Jenny called back after communicating w/ Michelle & Ireton Ingalls, and said they rejected EV062 due to finding incorrect strata, so we should not proceed

1450 - CMA de-conning before leaving this station 5 accs. 9/25

1635 - Leaving Yeti with CNI 1650 - At Evans Campground, plan for tomorrow

1655 - Leaving Evans Campground 1620 - At Kettle Falls Whse 1800 Leaving KF

5 accs. 9/25

Scale: 1 square = _____

26 Sept 2019 UCR Ph3 Sediment Sampling Al Thatcher on vessel Yeti
0630 Leaving for KF 0645 Arr @ KF for daily items eg. camera, thumbdrive,..
0750 Leaving KF for Evans 0710 - Arr @ Evans. Met CMA
Prep paperwork for today.
0730 - Tailgate together w/ Ingalls crew
0750 - Left for Yeti. 0800 Arr @ Yeti at EV066
On board: Gravity: Rene Trudeau, Bret Waldburn
CMA: Bart Chadwick, Joel Guerrero
AECOM: Al Thatcher
CNI tied-up: Doug Jordan
Recording data for location
0827 - Deploying driveframe.
0831 - Started purge.
0847 - Collected surface water for parameters.
0916 - Sample start time. Collection included dup for DOC: EV066-PW-2-092619
0953 - " end time for EV066-PW-1-092619
1018 - Packed samples on ice. Left station, motoring towards EV066
1038 CMA conducted calibrations. Arrived on station EV066
1042 - CMA completed de-con on driveframe + lines, Glovebox decon completed
1048 - Deployed driveframe. Successful - Sampleable sand.
1054 - Started purge of driveframe + lines
1108 - Surface water parameters
1120 - End of purge. Taking PW parameters
Communicating with vessel Ingalls.
1130 - Getting into Glovebox for Sampling at EV066-PW-1-092619
1143 - Start sample time. Included collection of Dup for TOC: EV066-PW-2-092619
1221 - End sample time
1232 - Departed station EV066, motoring towards EV060
1312 - CMA completed decon of driveframe + lines
1314 - Glovebox deconned. On station at EV060
1316 - Deployed driveframe. Camera showed sand on approach, hit + did not penetrate
Raised several feet + re-lowered - penetrated nearly completely, drove several times
1320 - Purge of driveframe + lines begins
1358 - Start of sample collection EV060-PW-1-092619:
1436 - End of " " included collection of dup for sulfate-EV060-PW-2-092619
Packing up + labeling sample bottles
1445 - Communicating w/ Sed vessel for update
1500 - CMA deconning driveframe + lines
1535 - Left Yeti 1552 Left Evans for KFalls
1615 - Arr @ KFalls. Checking in samples, log book, camera, forms; and picking up supplies
1730 - Leaving KFalls

Scale: 1 square =

27 Sept. 2019 UCR P3 Sed Sampling A1 Thatcher

0640 - Leaving Colville for KFalls
0700 Arr @ KFalls - pickup supply
0710 - Left for Evans
0725 Arr @ Evans
0740 - Tailgate w/ both crews
0750 - Left dock for Yeti
0755 - Arr @ Yeti - at EV052
Prep for sampling, photographs,
0840 Glove box + sample bottles ready. CMA preparing to move driveframe off stand
0845 Deployed Driveframe 0847 - Start purge
0903 - CMA taking surface water parameters
0917 - End of purge Parameters DO 4.67 / ORP +151 so no Sulfides sample
0933 - Start sample time - EV052-PW-1-092719
1011 - End sample time - included a split for EPA for metals: EV052-PW-3-092719
1030 - Samples packed on ice, driveframe retrieved, CMA de-conning driveframe + lines
People on board: Grainty - Rene Trudeau + Bret Walburn // CMA - Bart Chadwick + Joel Guerrero
EPA / Jacobs - DJ Moore
1036 - ~~Left~~ 359/27 Leaving EV052, motoring towards 4-B1-2019
1047 - CMA completed cal checks - satisfactory
1102 - On location @ 4-B1-2019
Completed decon of glove box and drive frame + lines
1115 - Started purge 1135 - End of purge
1151 - Sample Start 4B12019-PW-1-092719 JP 10-12-19
1220 - End of sample time 1228 - Considering move to EV079, contacted Stu + Michelle for latest - used as alternate for 046, at which we were able to sample PW
1229 Retrieved drive frame, packed samples on ice
1247 - Leaving 4-B1-2019, Motoring towards EV003. CMA decon'ing driveframe + lines
1310 - anchoring @ EV003. Deconning glove box
1332 - On station anchored @ EV003 1333 Deploying driveframe
1337 - Purge start. Sandy bottom apparent complete penetration of probe
1415 - Start sampling time EV003-PW-1-092719 JP 10-12-19
1444 - End sampling time.
1450 - Packing up sample, CMA testing driveframe release function.
1515 - CMA Adding tubing to extend depth capability of drive frame, also additional wiring/cable
1520 - Recd communication from sed boat re. conditions at their sampling point
1555 - Packing up CMA gear
1615 - Leaving EV003 1630 At Evans dock
1650 - At KFalls - checking in samples + pickup supplies
1710 - Leaving KF for Colville

all 3. 9/27/19

Scale: 1 square = _____

Rite in the Rain

28 Sept. 2019 UCR P3 Sediment Sampling AI Thatcher

0655 - Left for K Falls
0710 - Left " Evans 0730 - Arr @ Evans
745 Tailgate with both crews
0800 - Left w/ CNI for Yeti
0815 Arr @ Yeti. Prep for sampling
0845 CMA setting up tarp on deck due to rain, finishing decon of lines
0855 Deploying driveframe @ EV008 0859 - Started PW purge
0918 Taking surface water parameters (CMA)
0922 Purge finished
0925 PW Starting parameters DO: 5.13 ORP: +202
0943 - Start Sample time for EV008-PW-1-092819 (JP 10-12-19)
1015 - End of Sampling. CMA collect DO: 3.82 ORP 238 some Sulfide
1030 - Packed samples + placed on ice in cooler.
On board today: Gravity - Rene Trudeau + Bret Walburn
CMA - Bart Chadwick + Joel Guerero // EPA/Jacobs: DJ Moore

1037 - Retrieved driveframe
1051 - Motoring to EV027 1105 - Starting to anchor @ EV027
CMA de-conning driveframe + lines after reconfiguring cables + PW lines 1135 - Completed decon
1140 Deployed driveframe 1141 Start PW purge 1202 End of Purge
PW Parameters: DO - 4.85 ORP - +244; ; : No Sulfide Sample needed
1220 - Start sample time EV027-PW-1-092819 (JP 10-12-19)
1251 - End sample. Bagging up sample
1315 - ~~Leaving EV027, motoring towards EV001.~~ CMA deconning driveframe + PW lines
ads. 9/28/19 - Anchor snagged, so took extra time
1350 - Leaving EV027, motoring towards EV001
1412 - On station @ EV001
1417 - Started PW purge.
1457 - Start of sample EV001-PW-1-092819 (JP 10-12-19)
1531 - End of sample.
1539 - Retrieving driveframe. Preparing sample label + affixing
1550 - CMA deconning driveframe + lines
Yeti staff provided thumb drive with file amended for yesterday, includes 4 points instead of 3
1612 - Packing equipment to Safety boat
1620 - Leaving Yeti 1630 Arr @ Evans dock
1640 - Leaving Evans 1700 At Kettle Falls
1810 - Left Kettle Falls

ads, 9/28/19

Scale: 1 square = _____

30 SEPTEMBER 2019 UCR PHASE 3 SEDIMENT STUDY

0740 LEAVE WAREHOUSE TO ARRIVE AT EVANS LAUNCH AT 0800

RV YETT

AECOM: JENNIFER RAY — NO EPA OVERSIGHT PRESENT

CMA: JOSS MOORE, JOEL GUERRERO

CNI: DOUG, JORDAN

GRAVITY: RENE FRANCESCHI

0830 TAILGATE WITH YETT + INSTALLS CREWS

0925 LEFT WITH CNI FOR YETT, GRAVITY STILL ANCHORING

0930 ARRIVE AT YETT, UNLOAD SUPPLIES, PREPARE FOR SAMPLING STATION EVO48. VESSEL SPECIFIC TAILGATE

1027 DEPLOYING DRIVEFRAME

1037 BEGIN PURGE, CONFIRMED SAMPLEABLE SAND, BUMPED ONCE TO SET

1051 CMA MEASURED 9 ml/min, TURNED UP FLOW

1053 18 ml/min, RECORDING SW PARAMETERS

1055 PROBE PRE-SAMPLING READINGS RECORDED

1105 PROBE PURGE COMPLETE

DO ~6 SO NO SULFIDE UNLESS DROPS

1107 PW DO ~4.65

1132 START PW SAMPLING EVO48-PW-1-093019

COLLECT METALS FIELD DUPLICATE EVO48-PW-2-093019

END SAMPLING, CMA COLLECTS END PARAMETERS

1240 SAMPLES PLACED ON ICE IN COOLER, CMA DECON FOLLOWING DRIVEFRAME RETRIEVAL + CALIBRATION CHECKS

1249 PULLED ANCHOR

1300 MOTOR TO EVO72

1335 ON STATION + ANCHORED

1345 DRIVEFRAME DEPLOYED, PURGE BEGAN. SET WITH 2 PUSHES

1353 CMA MEASURES FLOW 16ml/min

NOTED SLIGHT TURBIDITY IN FIRST ~50ml OF PURGE, MAY BE SOME SILT CONTENT TO SAND.

1410 NO SULFIDE, DO = 4.63 GLOVEBOX DECONNED

1434 ST EVO72-PW-1-093019

COLLECTED DUPLICATE FOR TOC EVO72-PW-2-093019

1518 END SAMPLE TIME

LOCATION ~1.8m FROM SED CHEM LOCATION + 8m FROM BM1

1530 DRIVEFRAME RETRIEVED + CMA DECONNING

BOTTLES LABELED + PLACED IN COOLER

1610 MOTOR BACK TO EVANS WITH CNI

1645 RETURN TO WAREHOUSE TO DROP FORMS, CARRY SAMPLES

1730 SRAM OFFSITE TO COLVILLE. JR 9/30/19

Scale: 1 square = _____

1 OCTOBER 2019 UCR PHASE 3 SEDIMENT STUDY

0645 AT WAREHOUSE TO GRAB ICE, LOGBOOK, CAMERA, FLASHDRIVE

0730 AT EVANS CAMPGROUND FOR TAILGATE

YETI CREW

AECOM: JENNIFER RAY

GRAVITY: RENE TRUDEAU, RYAN MCCLEES

CNI: DOUG

CMA: JOEL GUERRERO, JOSS MOORE

USGS: STEVE COX

SAFETY OBSERVATIONS FROM YESTERDAY

NEW PERSONNEL - TAKE YOUR TIME

TRAIN CROSSING - IF BLOCKED CONTINUE TO PULLOUT

BOILING WATER / PINCH POINTS

WILDLIFE SIGHTED WHILE DRIVING

LIFTING TECHNIQUE REVIEW

LIFEJACKETS

0800 MOTOR TO EV071, GRAVITY ANCHORED PRIOR TO TAILGATE

CMA PREPARES FOR DEPLOYMENT

0848 DEPLOY DRIVEFRAME

0853 DRIVEFRAME SET BEGIN PURGING, BROWN INITIALLY BUT CLEARED

0910 16 ml/min rate measured

0916 300 ml purge complete, SW parameters collected

0925 300 ml purge trident probe parameters collected

0920 disc filters flushed

0944 ST EV071-PW-1-100119 NO SULFIDE

1023 COMPLETE SAMPLING

1035 RETRIEVING DRIVEFRAME

1040 SAMPLES IN COOLER, LABELED

1055 PULLED ANCHOR, MOVING TO EV067

CMA CONDUCTING DECON + CAL CHECK

1115 ANCHORED AT EV067

1125 DEPLOYING DRIVEFRAME

COBBLES OBSERVED, PROBE REJECTED

SEARCH FOR SAMPLEABLE SAND TOWARD CHANNEL, ~~AND~~ SHORE, UPSTREAM AND DOWNSTREAM WITHIN POLYGON. ~~PIC~~ MIXED (MCS) COARSE + COBBLES OBSERVED THROUGHOUT, PANNED VIDEO WHILE MOVING

1147 CONTACTED N. MOODY TO DISCUSS APPROACH SAMPLE TEAM PROPOSES:

SINCE NEXT NEAREST ALTERNATE EV066 ALREADY COMPLETED FOR BOTH SED + PW, MOVE TO NEXT NEAREST ALTERNATE WHICH IS EV068. TO COLLECT PW SAMPLE.

1149 CONFIRMED APPROACH WITH J. PRETARE.

Scale: 1 square =

1150 MOVE TO EV0698 AS ALTERNATE TO EV067.
WHILE MOVING, CONFIRMED WITH WAREHOUSE ON EV0666 NOTES FROM SEDIMENT SAMPLING THAT EV066 WAS ALTERNATE USED FOR EV067
DISCUSSION AMONG SAMPLE TEAM CONCLUDES THAT SED AND PW SAMPLE COLLECTION SATISFIES ALTERNATIVE LOCATION REQUIREMENT FOR STATION EV067; THEREFORE, NO ADDITIONAL SAMPLING NEEDED AT EV0698. STEVE COX (USCG) AGREED.
1300 MOVE TO EV049. MCS TARGET
1343 ON EV049. INITIALLY OBSERVED MORE ANGULAR ALMOST BEDROCK. ADJUST POSITION TOWARDS CHEMISTRY SEDIMENT LOCATION.
Second ~~ATTEMPT~~ HIT ~~BEDROCK~~
third attempt, partial penetration with probe. FIVE QUICK DRIVES ADVANCED ~1" MORE. PULLED UP AND MOVED ~~78~~ ANOTHER ~~LOCATIONS~~ FEW METERS.
fourth attempt, probe submerged. however sponge still visible. FOUR QUICK DRIVES TO SEAL.
1413 PURGE STARTED
1430 +14 ml/min MEASURED, SW PARAMETERS COLLECTED
1440 PROBE PARAMETERS COLLECTED, NO SULFIDES ~6 mg/L DO
1506 ST EV049-PW-1-100119
1538 END SAMPLE COLLECTION, LABEL + PLACE IN COOLER
1540 COLLECT LAST PW PARAMETERS
1545 DRIVE FRAME RETRIEVED, CMA BEGIN DECON
1620 DECON COMPLETE
1622 CNI FERRY BACK TO EVANS CMPGD
1640 JL LEAVES FOR WAREHOUSE
1700 ARRIVE AT WAREHOUSE, UNLOAD SAMPLES AND GATHER SUPPLIES FOR TOMORROW
1810 SAMPLE PLAN FOR 10/2 COMPLETE.

10/1/19

Rite in the Rain

0645 SLAM AT WAREHOUSE TO LOAD SUPPLIES, PICK UP LOG.
0700 LEAVE WAREHOUSE TO EVANS
0730 AT EVANS, UNLOAD SUPPLIES + MEET FOR TAILGATE
YEST CREW
MECOM: JENNIFER RAY USGS: STEVE COX
GRAVITY: IRENE TRUDEAU, RYAN MCLEES
CMA: JOSS MOORE, JOEL GWERNER
CNI: DOUG HADLEY, JORDAN K.
STRETCH + FLEX WITH CREWS
DON'T SWERVE FOR WILDLIFE, JUST BRAKE. EXPECT MORE
0810 ARRIVE AT 4-B6-2019, GRAVITY ANCHORED PRIOR TO TAILGATE
CNI FERRIED CREW BACK
CMA PREPS EQUIPMENT
0842 DEPLOY DRIVEFRAME
0846 ON BOTTOM, CMA DOING 1 HIT. APPEARS FRAME ON SOMETHING BRINGING UP ~~LOOP~~ APPEARS ON VIDEO MAY BE IN SED SAMPLE DEPRESSION. MOVE OVER A FEW FEET ~~SEED~~
SECOND ATTEMPT SAME SITUATION, MOVE AGAIN
THIRD ATTEMPT ROCK
FOURTH ATTEMPT LOOKS LIKE GOOD MATERIAL
CMA DISCUSSING ~~BAC~~ CONDUCTIVITY/TEMP OF PROBE VS SW
GOING TO LEAVE AS IS AND KEEP PUMP RATE LOW (~10-12 mL/min)
0903 PURGE STARTED
0920 CMA INCREASED ^ FLOW RATE SLIGHTLY, CONDUCTIVITY STABLE
0927 14 ml/min, CONDUCTIVITY CLIMBING SLIGHTLY
0946 WQ PARAMETERS COLLECTED, NO SULFIDE DO=5.45 mg/L
1009 ST 4-B6-2019-PW-1-100219
1045 PUMP OFF, END SAMPLING, LABELED SAMPLE CONTAINERS AND PLACED ON ICE.
WHILE WORKING IN BOX STEVE COX INQUIRED ABOUT CAPSULE FILTERS AND NEED FOR FLUSHING/PREPPING. SOP-7 STATES THAT CAPSULE FILTERS DO NOT REQUIRE FLUSHING PRIOR TO SAMPLE COLLECTION. STEVE COX RETAINED SPENT CAPSULE FILTER FROM 4-B6-2019 SAMPLING
1055 DRIVEFRAME ~~RETAINED~~ RETRIEVED, SPONGE COVERED WITH RESIDUAL SED; SILICA PRESENT. SEE PHOTO LOG
1115 MOTORING TO EVO18 TARGET COARSE, MBS
1140 ON STATION EVO18, CMA DECONING. CALIBRATION ON CONDUCTIVITY TOOK LONGER.
1149 DEPLOYING DRIVEFRAME

Scale: 1 square =

~~ATTEMPT 1 DROVE 6 TIMES BUT~~

2 OCTOBER 2019 UCL PHASE 3 SEDIMENT STUDY

~~ATTEMPT~~ DROP 1 DROVE 6 TIMES, HOWEVER NO LONGER ADVANCING. RAISE PROBE TO ANOTHER LOCATION.

~~ATTEMPT~~ DROP 2 NO PENETRATION

~~ATTEMPT~~ DROP 3 PARTIAL PENETRATION, 3 BLOWS BEFORE APPEARS ~~CHANGE~~ NOT BEING CHANGED, PULLED TO TROUBLESHOOT

1231 REDEPLOY DRIVEFRAME, SLOW BUT STEADY PROGRESS. CONTINUOUS ~~DRIVE~~ BLOWS

1240 STEVE COX RETURNS FROM DISCUSSING FILTER (CAPSULE) PREP WITH BEAD (OVERSIGHT ON INGALLS). I DISCUSSED WITH J. PRESTELE AND SHE'S EMAILING TECH LEADS AT WINDWARD WHO AUTHORED SOP.

1315 BEGIN PURGE, ~40 BLOWS TO POSITION

1343 WQ PARAMETERS COLLECTED, DO 8.49 NO SULFIDES

1348 PREP FOR SAMPLE, DECON BOX, PURGE FILTERS

1403 ST EV018-PW-1-100219

1437 FINISH SAMPLE COLLECTION, LABEL + PLACE IN COOLER

1455 DRIVEFRAME RETRIEVED + CMA DECONING.

1518 PUMP OFF

1540 ENI FERRY BACK TO EVANS CAMPGROUND

1550 LEAVE EVANS TO LITTLE FALLS

1610 ARRIVE AT WAREHOUSE, DROP OFF SAMPLES. PREP FOR 10/3/19 SAMPLING.

1730 JCM LEAVES WAREHOUSE

JM

10/8/19

Scale: 1 square = _____

Rite in the Rain

3 October 2019 Phase 3 WIR Sediment Study

0645 J RAM AT WAREHOUSE TO PICK UP SUPPLIES
0700 LEAVE WAREHOUSE TO EVANS
0730 AT EVANS CAMPGROUND FOR TAILGATE. ATTENDEES:
ACCOM: J RAM
CMA: J MOORE, J GUERRERO
CNI: D. HADLEY, J ICKERER
GRAVITY: R. TRUDEAU, R. McCLEESE
OBSERVATIONS: · WEATHER FORECAST, POTENTIALLY STORMY COMING.
· TRIPPING HAZARDS IN CAMPGROUND
· PUBLIC INTERACTION / RESPONSE REVIEW
0750 CNI FERRY CREW OVER TO EVO36 WHERE GRAVITY PREVIOUSLY ANCHORED
0800 ARRIVE AT YEST, UNLOAD + PREPARE FOR SAMPLING
0835 DEPLOY DRIVEFRAME. FIRST DROP GOOD, ONE DRIVE TO CONFIRM SEAL. STRATA CONFIRMED
0904 WQ PARAMETERS COLLECTED, 116 ml/min MEASURED!
0922 PW WQ PARAMETERS COLLECTED, NO SULFIDE DO=4.46 mg/L
0940 ST EVO36-PW-1-100319
1015 END SAMPLING, FINAL PW WQ PARAMETERS COLLECTED
1025 DRIVEFRAME RETRIEVED
1039 LEAVE EVO36 TO EVO22 TARGET mCs
CMA CALIBRATING / DECONNING
1105 ANCHORS SET AT EVO22
1115 CONFIRM STRATA mCs, DROP SUCCESSFUL NO ADDL DRIVES NEEDED
1118 BEGIN PURGE
1139 WQ PARAMETERS COLLECTED. SW
1147 PW WQ PARAMETERS COLLECTED DO 6.50 mg/L NO SULFIDE
1203 ST EVO22-PW-1-100319
1239 END SAMPLING, FINAL PW WQ PARAMETERS COLLECTED
1245 LABEL SAMPLES + PLACE IN COOLER.
CMA CHANGES DOT NITROGEN SUPPLY.
1254 DRIVEFRAME RETRIEVED
1310 LEAVE STATION EVO22 TO EVO11
1335 DRIVEFRAME DEPLOYED
1340 DROP 1 UNEVEN
DROP 2 " "
PAN DROP 3-7 COBBLES
1345 ATTEMPT 1, DRIVE IN TO SEAL
1350 BEGIN PURGE

1400 18 ml/min MEASURED
1415 PW WQ PARAMETERS COLLECTED, NO SULFIDE DO 7.73 mg/L
1431 ST EVO11-PW-1-100319
1505 END SAMPLING
1510 SAMPLES LABELED + PLACED IN COOLER, DECON ~~PUMP~~ ALUMEFLAME
1550 CNL FERRIES QMA + FREEDOM BACK TO EVANS CAMPGROUND
1600 SRAM TO KETTLE FALLS
1620 SRAM AT WAREHOUSE, UNLOAD SAMPLES + DROP PAPERWORK
1640 SRAM OFFSITE

10/3/19

Scale: 1 square = _____

0645 J RAY TO WAREHOUSE TO PICK UP SUPPLIES
0700 LEAVE TO EVANS CAMPGROUND
0730 ARRIVE AT EVANS CAMPGROUND
0740 SAFETY TAILGATE. ATTENDEES:
AECOM - JENNIFER RAY
CMA - SOSS MOORE, JOEL GUERRERO
GANTT - RENE THIBEAU, RYAN MCLAUGHLIN
CNI - JORDAN, DOUG HADLEY
REMINDERS: SLIPPERY DOCK (FOAM/CAMP), EXPOSURES (SAMPLE CONTAINER PRESERVATIVES, GLASS BEADS)
0750 CNI FERRYS CREW TO YETI ANCHORED AT EVO21 + ~~PRESSURIZE~~ LINE PRIOR TO LIFTING DRIVE FRAME
0800 UNLOAD AND SET UP FOR PW SAMPLING
0833 DEPLOY DRIVEFRAME
0837 ATTEMPT 1, PARTIALLY PENETRATED, ATTEMPT TO DRIVE. NOT WORKING. LIFT + MOVE IN ATTEMPT TO FIX
0842 ATTEMT 2, PARTIALLY PENETRATED BEGIN DRIVING ~6 DRIVES, APPEARS TO BE BOUNCING. MOVE AGAIN
0847 ATTEMPT 3, BOUNCES AFTER ~4 DRIVES GO BACK TOWARDS INITIAL DROP AREA
0900 ANOTHER ATTEMPT W/ DRIVES BUT REFUSAL (EVO21-2)
0915 AFTER REPOSITIONING, + DRIVES AGAIN BOUNCING. SINCE >3 ATTEMPTS WITH DRIVES AND UNSUCCESSFUL AT GETTING DRIVEFRAME/PROBE SET WILL PULL ANCHOR + MOVE TO NEXT STATION
0930 DRIVEFRAME RETRIEVED
0945 MOVE TO STATION EVO23, CONFIRMED WITH J PRESTAGE TO NOT GO TO EVO15 OR EVO20 UNTIL ~~FURTHER DECISIONS~~ CONFIRMATION ON SPLIT LOCATION AND PRESENCE OF OVERSIGHT.
1000 ANCHORING AT EVO23, AREA SLOPED
1018 ON STATION, DEPLOY DRIVEFRAME
1028 BEGIN PURGE
1040 14 ml/min PURGE RATE MEASURED
1058 COLLECTING WQ PARAMETERS, NO SULFIDE DO = 9.53 mg/L
1117 ST EVO23-PW-1-100419
1152 END SAMPLING
1212 ANCHORS UP, MOTOR TO EVO24, CMA DEION/CALIBRATE
1249 DRIVEFRAME DEPLOYED, MOVED TWICE BC NOT TAKING DATA
1256 ATTEMPT 1 IN FIRST AREA ~~CORE~~ W/ TARGET STRATA/1258 PUMP ON
1305 ~18 ml/min measured by CMA

Scale: 1 square =

1317 SW WQ Parameters collected
1323 PW WQ PARAMETER COLLECTED, DO 6.68 mg/L NO SULFIDE
1340 ST EV024-PW-1-100419
1412 END SAMPLING COLLECT FINAL WQ PARAMETERS
1420 DRIVEFRAME PULLED
1430 MOTOR TO EV029
1457 ON STATION, DEPLOY DRIVEFRAME
1503 ATTEMPT 1, DRIVE REFUSED. PICK UP FRAME AND SEARCH FOR NEW LOCATION WITH CORRECT STRATA. (EV029 was determined to be correct strata J.A.P. 10-8-19)
1530 COLLECTED POINT + VIDEO TO DOCUMENT STRATA, ALL LOCATIONS SCOUTED THUS FAR HAVE BEEN COARSE - BOULDER/COBBLE.
1535 DRIVEFRAME RETRIEVED
1550 CNI FERRIES CMA + AECOM BACK TO EVANS CAMPGROUND
1610 JRAM LEAVES EVANS FOR KETTLE FALLS
1625 ARRIVE AT WAREHOUSE, DROP SAMPLES + PAPERWORK PREPARE FOR NEXT WEEKS CREW.

10/4/19

Scale: 1 square = _____

Rite in the Rain

8 October 2019 Phase 3 Sediment Study
Upper Columbia River

Weather: 48° F in Colville. Expected high of 52° F partly sunny w/ clouds

0730 at Evans CG, meet RV Yeti for tailgate meeting. People present:
AECOM: Jenny Pretare (note taker)
Gravity: Rene Trudeau, Emma ~~Rig~~ Rigbey
CMA: Joss Moore, Chris Pickerell
CNI: Doug Hadley, Jordan Kloppy
Jacobs (EPA oversight): Nicole Badon

Discussed: Freezing weather tomorrow, delayed start likely @ 0830 use heater in Yeti to warm cabin. using Trident drive frame - orientation to that instrument, pinch points. Nicole orientation to Yeti
- Initial Location target EV041
EV015

0757: Transfer to Yeti or CNI boat; set up on anchor at EV041.
Walked thru decon + sampling procedure w/ entire crew using drivetrame Trident probe. Probe + line was decon'ed at the end of last week.

0907 - deploy trident probe at EV041 - Depth 23 m.
Video display shows large cobble. Rene using remote control to adjust winch up + down + side to side with anchors to move the trident probe through the immediate vicinity of anchored location which is
E 424674.02
N 5392470.50 > NOT sample location just 1st anchored location
multiple attempts to penetrate the surface of riverbed, the probe tip is not even poking into substrate

Locations: (NN) w/i 20 meters of designated
v of dropped probe station.
No penetration at all after 5 drops of probe = "Attempt #1"

0930: going to move boat w/i strata to get a different section in hopes of finding a better area of with better penetration.
Spent about 5 minutes looking at similar substrate

0935: swinging the boat around again making multiple additional attempts. Completed "Attempt 2" and ~~mark~~ marked GPS point unsuccessful due JP 10-8-19 to no penetration.

Scale: 1 square = _____

10-8-19 Phase 3 Sediment Study, UCR

0950 - pulling trident probe back on deck. We will move Yeti to different section of faces map for EV041

1005 Drop anchor at new location for EV041 water depth ~ 26 meters

1011 - flyover of air force jets

1020 - trident probe deployed again. Video showing large cobble. Frame cannot settle flush on bottom with these large cobble b/f probe will tip. Keep looking for a good spot. Tried to drop. View from side makes it clear that probe is not connecting with substrate.
Probe punded ~ 7 times. It only appeared to make downward progress 2 times (#1, #2). After that the probe would shudder but not move down in the video frame. Joss (CMA) took lots of videos of substrate.

1049 - In discussion w/ EPA observer Nicole B. we decided to abandon this location. Its at
E 424625.43
N 5392428.96

1111 - pull anchor + move to EV040 which IS an alternate Course Strata location.

1147 - anchored at EV040. 22 meter depth.
E 424571.77 } 1st anchor location; not
N 5392288.30 } sampling location.

1147 - deployed Trident probe, starting recon w/ Video Large rubble + bed rock. Video capture of substrate "Attempt #1"

1156 - moving probe around in the vicinity. Videos showing cobbles to boulders.

1158 - probe landed well; going to attempt drive penetration. It had downward movement for the first 4 hits the next 4 it just bounced.

1203 - pulled probe up + will try another location.

1207 - Landed on a spot w/ contact to substrate. Going to try punding this spot.
"Attempt #3"
First 2-3 hits had some downward movement. After that it just bounced after 5+ more hits.

"Attempt #2"

1223 - pulling probe up.

Scale: 1 square =

Upper Columbia River

1224. Staying at same anchor point but rotating boat as far as it will go in opposite direction. Using video camera to look for suitable locations as we go.

1232 - Settled the probe on bottom and will attempt to push it in. The first 15 strikes made small incremental progress. After that, it started to hit & then bounce back up.

1246 - Decided to pull probe up & abandon this location. EPA oversight agreed (Nicole).

1250 - pulling anchors up & we will move to another region w/i the mapped facies; will attempt additional areas there.

1316 - put anchors down at new location within EV040. ~25m depth

1330 - trident probe deployed at E 424500.18
N 5392254.55

1343 - Video for the past 10 minutes is showing lots of boulders. Not any better than previous locations

1350 - given how late it is in the day, we have determined that it will not be possible to collect a sample if we have to pull up anchor and then reanchor. therefore we will continue to do video recon at this location, though it does not look promising.

1415 - Completed EV040 with no sample. Unable to penetrate substrate.

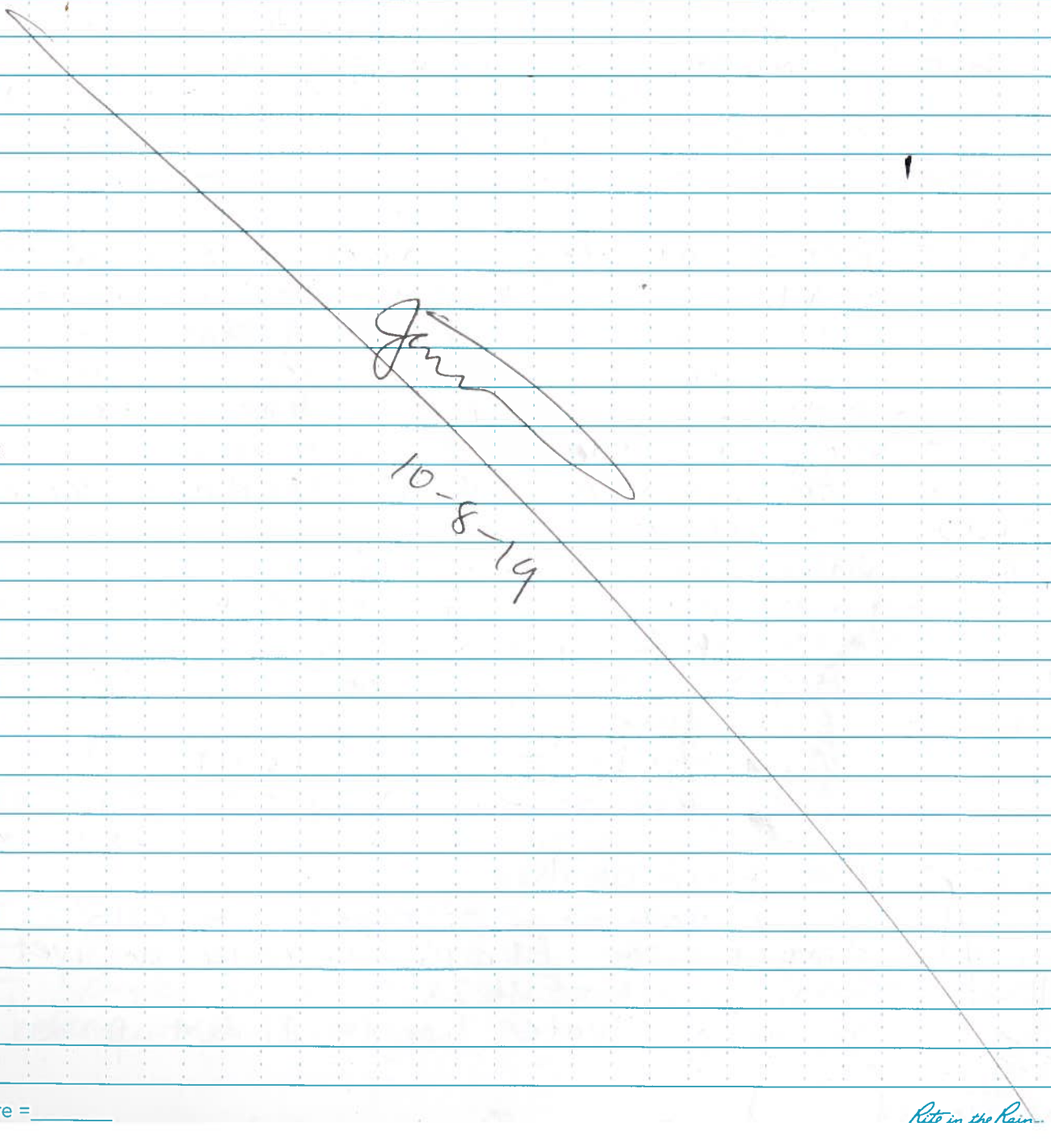
1434 - Relocated to EV025 to do video recon.

1453 - on location at EV025
E 423741.93
N 5392079.47 > anchoring location, not sample.

1500 - Trident probe deployed at EV025
1st time we dropped the frame the strata appeared to be sand. marked it with GPS & moved on. Video also collected. We were on ~~the~~ the very edge of the mapped facies. moving more towards middle of polygon.
2nd drop also sand
But then we started to see boulders intermixed

Scale: 1 square =

1512 - Currently estimating 80-90% fines based on video. Sand waves visible in the video.
1525 - retrieved trident probe
1530 - Returning to dock at this point because Yeti needs fuel tonight.
CMA purging water lines in anticipation of freezing temps tonight.
1600 - Back at Evans C.G.
No samples today.
0830 start time tomorrow.



Rite in the Rain

Upper Columbia River

0830 at Evans Campground. 39° F, high clouds, very light wind. High of 45° F predicted today. No precipitation

RV Yeti team for today sampling porewater:

AECOM : Jenny Pretare (notetaker)
Gravity : Rene Trudeau, Emma Rigbey
CMA : Joss Moore, Chris Pickerell
CNI : Doug Hadley, Jordan Klopping
Jacobs : Nicole Badon

Tailgate topics: cold weather, boat crew saw snowflakes @ 0630 at Kettle Falls marina. Dehydration - several people noted not drinking enough water yesterday. Lifting generator + air compressor on boat - use good body posture. Zip ties on trident probe umbilical cord - get caught on shooter box table. Lots of deadheads (logs) coming down stream.

0845 - transfer to CNI boat
0853 - Arrive at Yeti, already anchored at EV015. unpack gear. Took picture of location.
0915 - Deploy Driveframe trident probe, 25.5 m. depth confirmed current strata on video. set probe down on bottom. 15 hits w/ the drive hammer.
0926 - appears well settled on bottom & sponge is compressed. probe did not move side to side during deployment.
0933 - purge began in glovebox
1005 - purge complete - 300 mL
begin cleaning glove box; myron-L readings, nitrogen Purge when glovebox closed
1024 - Begin sampling (time on sample labels)
1107 - End sampling

EV015 - PW-1-100919 No sulfide
EV015 - PW-3-10019 EPA split 125 mL metals

1120 - probe pulled on deck
1122 - pulled anchor & departed EV015.
1126 - samples from EV015 in cooler on wet ice
1146 - Anchoring at EV024
decanning water line to Trident probe

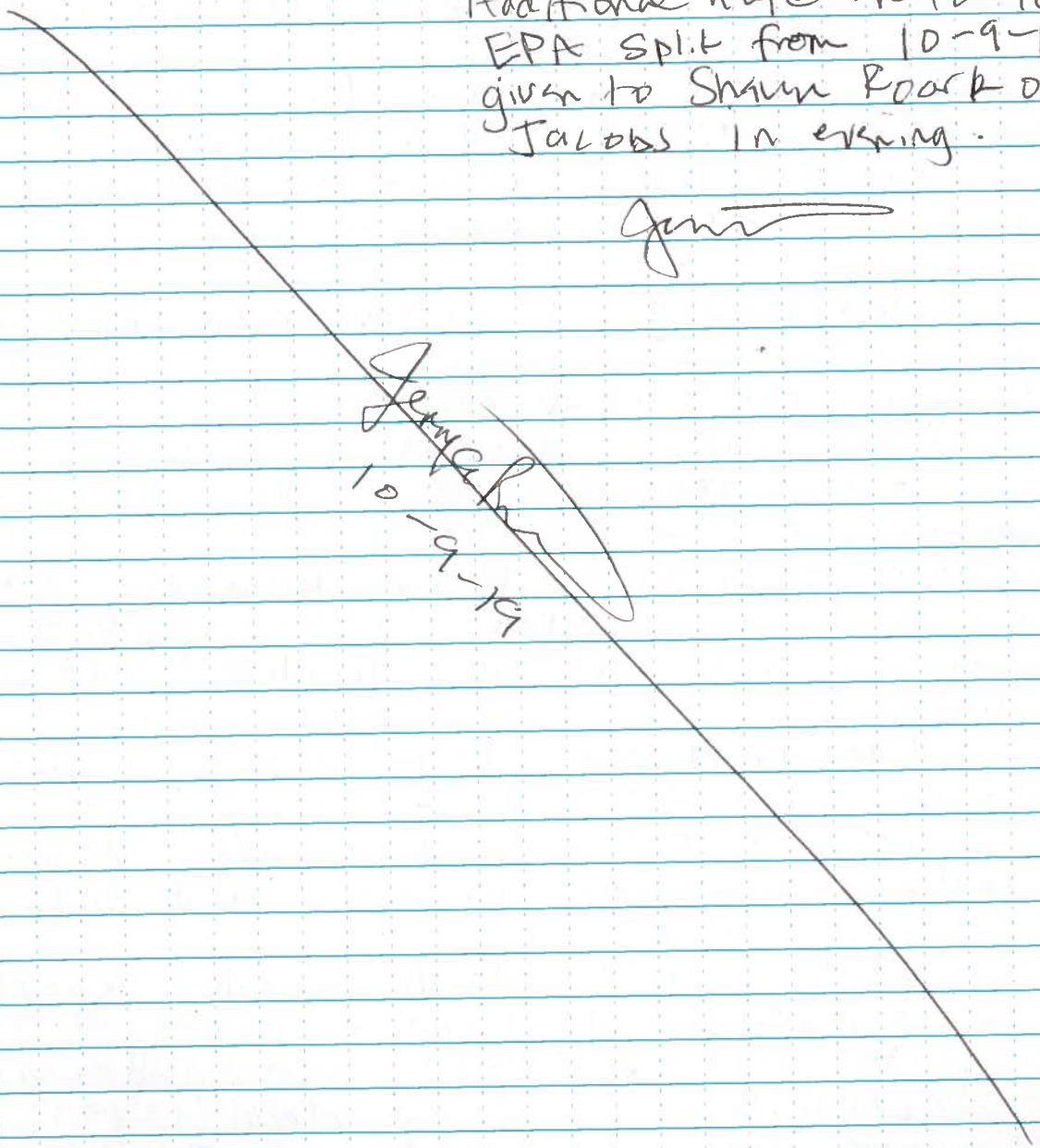
Scale: 1 square =

1212 - Deploy trident probe (Driveframe) at EV#26, viewing substrate, looking for Mixed Coarse
1222 - starting to pound
1229 - moved downward w/ 17 hits. 2-3 hits bounced ~~IT~~ down and up.. Withdrawing probe to look for another spot.
JP 10-9-19
1233 - Looking for another location at EV#26 on video.
1234 - probe settled on bottom; begin pounding. Bouncing during all 4 hits. No downward movement.
1236 - pulling probe up + looking for new location
1239 - trying another location w/ probe.
1258 - hits 50 times + then withdrew probe + moved steadily downwards until the final 4x hits
1302 - Decided to pull up anchor and try another area about 50 meters away.
1306 - Trident probe back on deck
1342 - Anchored at new spot in EV#26.
1350 - Trident probe deployed. Video appears to have correct substrate
1359 - probe on bottom. Begin pounding. 22 hits not complete penetration. Pulling probe out at.
1414 - Begin looking for new location at same anchoring.
1428 - settled on bottom, begin pounding. Bouncing from the beginning
1438 - settled on bottom, begin pounding. No penetration
1445 - settled on bottom, begin pounding. 20+ hits did not penetrate
1454 - Calling it quits at EV#26. No sample. 23 m depth at last location
1500 - probe back on deck, begin pulling anchors
1530 - Return to Evans C.G. dock
1610 - Samples returned to warehouse and transferred to refrigerated storage.

Scale: 1 square =

1613 – Received email correspondance today from Kathy Cerise of EPA that the PW boat at Evans may cease sampling the Coarse strata at Evans due to the difficulties with substrate penetration. The team may return to Evans AOT at a later date, time allowing. Tomorrow the Yet will begin sampling PW at China Bend.

Additional note on 10-10-19: EPA split from 10-9-19 given to Shawn Roark of Jacobs in evening.



10-10-19 Phase 3 Sediment Study Upper Columbia River p.36

0745 - Parked at Dan Smiths house + Shuttled to China Bend boat launch.
0800 - Temp at China Bend is 25-30°F, depending on what source you look at (cars, apps, etc.) Not warm enough to start work. We are hanging out in our car until it gets above 32°F. Low clouds hanging over the river but sun is breaking through. Predicted high of 47°F. Should be sunny all day. PW targets are CBQ12, CBQQ6.
0810 - RV Yeti crew today is:
AECOM - J. Preture (notetaker)
Gravity - R. Trudeau, E. Rigby
CMA - J. Moore, C. Pickerell
CNI - D. Hadley, Jordan Kloppy
Jacobs (EPA) - Nicole Badon
0910 - Did tailgate mtg w/ RV Ingalls crew at CB. parking lot CB dock is slippery. Very occasional other boat traffic.
0920 - Load RV Yeti
0930 - transfer to RV Yeti via CNI boat. RV Yeti anchored at CBQQ6. 15.6 m. deep at anchored location. This is supposed to be sampleable sand + the sediment team was successful here yesterday.
0955 Deploying trident probe Driveframe.
1004 - It appears that the temperature sensor inside the probe tip has frozen and make take awhile to warm up.
1008 - Confirmed substrate is sampleable sand. Dropped probe to riverbed. Begin warming up hydraulic system.
1011 - 3 hits + the probe was fully settled on substrate.
1012 - begin pumping for purge of water line.
1035 - End purge, begin water quality readings.
1100 - Begin sampling time JP E CBQQ6 10-Oct
1136 - End sampling time

Scale: 1 square = _____

Rite in the Rain

Received message from Tony Palmieri that CBØ07 has been classified as mismatched strata after being collected by sediment team yesterday.

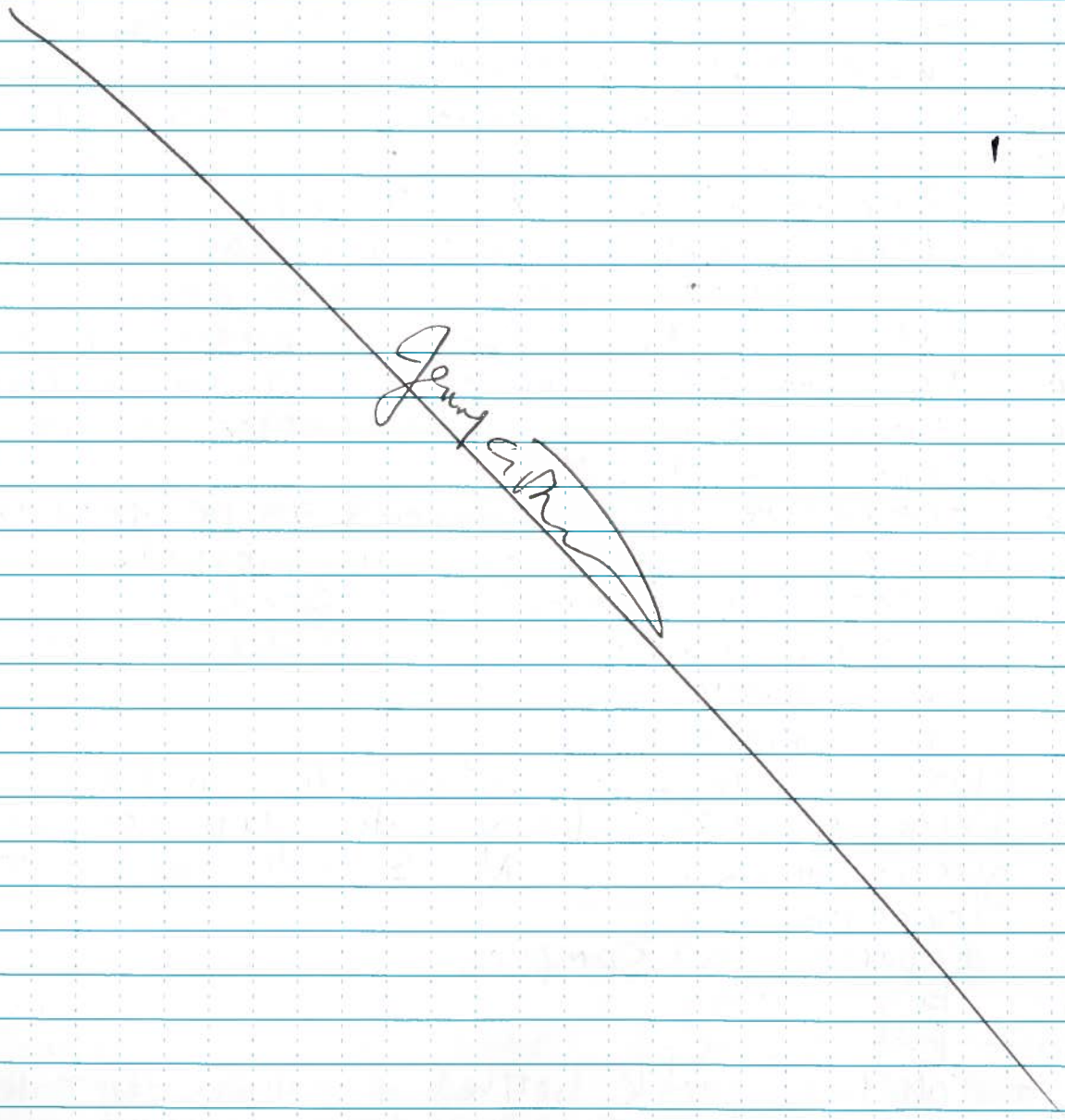
1142 - opened glove box, taped bottles shut and labelled CBØ06-PW-1-101019 No sulfide sample

1150 - put samples in cooler on wet ice.
1152 - Trident probe back on board
1154 - pulling anchors up
1159 - Heading to CBØ12
1215 - Anchored at CBØ12 . 21 m. depth
1230 - Trident probe in the water
1234 - Probe on bottom + settled into substrate w/o any parding. ~~Cont~~ JP 10.10.19 Confirmed! 21.1 m depth
It is sampleable sand at CBØ12
GPS location: 429601.41
5407389.45
1235 - begin purge of 300 mL
1256 - purge complete. begin water quality readings
1323 - begin sample time CBØ12-PW-1-101019
1404 - end sample time and
No sulfide collected EPASplit CBØ12-PW-3-101019
1417 - samples labelled and put into cooler on wet ice
1418 - Trident probe back on deck. Deploy of PWF line under way.
1428 - pulled up rear anchors and swinging the boat to CBØ18.
1430 - buzzed by FIBs 4x times
1441 - Arrived + anchored at CBØ18
1447 - Trident probe deployed
1452 - Probe settled on bottom, good contact w substrate, begin purge. Confirmed sampleable sand strata. GPS location: 429709.35 E
5407377.43 N

1535 - Sample start time
1613 - Sample end time

Scale: 1 square =

1625
~~1425~~ - Sample CB@18-PW-1-101019 labelled & put on wet ice.
JP 10-10-19
Trident probe back on deck. Decanning tubing for tomorrow
1635 - Sampling crew transfer to CN1 boat
1655 - Back to China Bend boat launch. Gave EPA split to Ellen.
1700 - To parking at Dan Smiths, then return to Kettle Falls.
1800 return PW samples to warehouse



Rite in the Rain.

Oct. 11, 2019 Phase 3 Sediment Study
Upper Columbia River

Update from Tony Palmieri + Kevin Lindmark on CB007
we will sample there

0830: Yeti sampling team Tailgate at China Bend boat launch.
AECOM: J. Pretare ~~(AECOM)~~ (notetaker)
Gravity: R. Trudeau, E. Rigby
CNI: D. Hadley, J. Klopas
CMA: J. Moore, C. Pickerell
Jacobs: M. Badon
- Subfreezing temp., reviewed boat launch for freezing water (its clear). Yesterday was good. Reviewed cut off time to finish sampling - 1630 ish. Which means 1430-1500 to begin last sample.

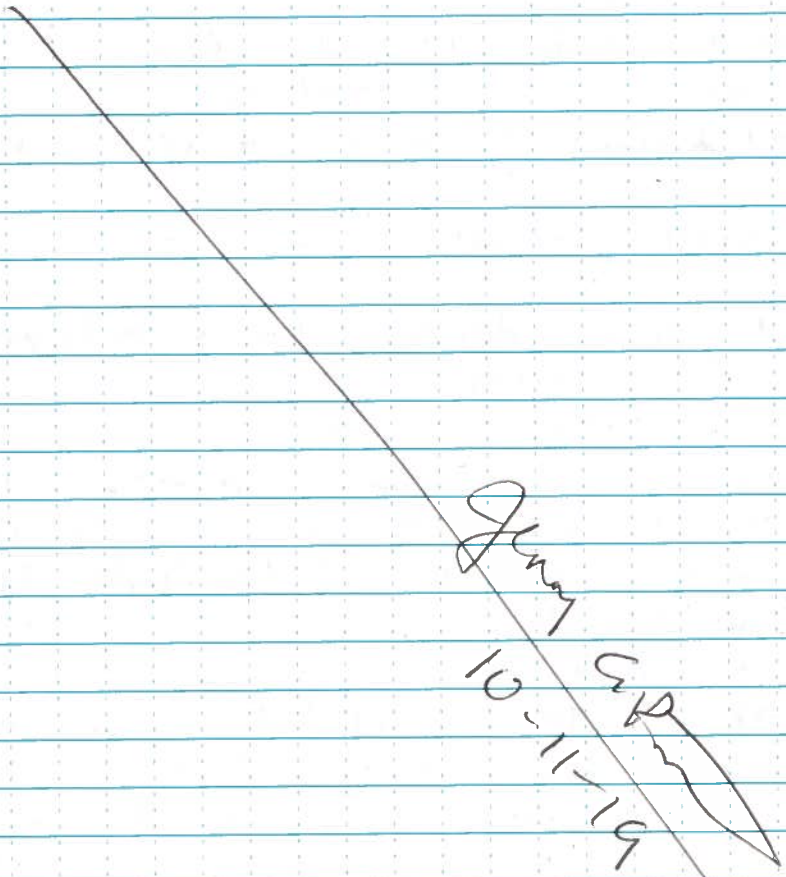
0900 - Sampling crew load onto CNI boat + transfer to Yeti which is anchored at JS001
0905 - On Yeti, beginning equipment set up
0917 - lowering Trident probe into water - it needs a little time to "thaw out". I think that means to warm up to water temp after sitting on deck in subfreezing temps
0923 - temperature sensor appears to be reading correctly, so Trident Probe lowered to substrate. Confirmed its sampleable Sand
0926 - ✓ begin 300 ml purge. JS001 location.
E 4382961.74
N 548751.4.30
Planning on doing a duplicate for metals at JS001
0947 - Purge complete, begin water data readings + glovebox. down. No Sulfide bottle at this location
0958 - prepared for sampling.
1014 - Begin sample
1056 - End sample
1105 - labelled sample bottles + put on Wet Ice pulled Trident probe on deck.

Scale: 1 square =

Completed sample JS001-PW-1-101119 No sulfide,
and Duplicate JS001-PW-2-101119 for Metals
1112 - pulling anchors and heading to JS002
1135 - anchored at JS002, but our nitrogen tank is empty and more is being driven out here by warehouse staff.
1203 - Deploy Trident probe at JS002
11.1 meters depth at this location
1209 - Frame settled on bottom; 1 hits w/ driveframe.
1210 - Purge beginning
1218 - returned w/ fresh Nitrogen.
CN1 boat
1250 - purge ended, begin decon of glovebox and Water Quality readings
1311 - start sample time
1344 - end sample time
1350 - samples labelled and put into cooler for
JS002-PW-1-101119 No sulfide bottle
1354 - Trident probe on deck
1356 - begin pulling anchors
1405 - Depart JS002 for CB007.
1418 - Arrive CB007. The location is sloped, anchoring + landing the Trident probe will be difficult.
1443 - Anchored at CB007.
1445 - Probe deployed
1446 - settled on bottom
1450 - 4 hits w/ Driveframe + CB007 is well placed.
1452 - begin purge
1528 - end purge
1529 - glovebox decon, Water quality readings
1547 - Begin sampling
1618 - End sampling
1625 - Sample put on ice in cooler: CB007-PW-1-101119
Trident probe back on deck No sulfide bottle
1640 - Begin transfer back to CN1 boat.

Scale: 1 square = _____

1645 - Back to China Bend launch
1730 - Transfer PW samples to refrigerated storage at warehouse.



0830 Tailgate Mtg for Yeti crew at China Bend
AECOM: J. Pretare (note taker) Sarah Kintner
Gravity - R. Trudeau, E. Rigbey
CMA - J. Moore, C. Pickerell
CNI - D. Hadley, J. Klopfy
Jacobs - N. Badgi
Orientation to boat boarding for Sarah; slippery dock, 3 points of contact
Weather: Approx. 32° F, clear, calm, expected high of 53° F today.
0900 Yeti crew transferred to sampling boat. All personnel on board & Ready to sample @ CB047
0914 - Begin decon of Trident probe @ CB047
* this station has an EPA split for porewater
0943 - Deploy trident probe at CB047.
0948 - Probe settle on bottom; confirmed correct strata. Going to push. Hit 2x times but probe did not readily sink. We are going to reposition probe at same anchor location
0957 - Lowering Trident probe. Went into substrate 1 inch. 7 hits total with drive frame
1003 - begin purge
1020 - ~~Collect~~ Secchi water quality readings
1026 purge end glovebox decon begins. no sulfide bottle location
1042 turn pump on, purging O_2. preparing to sample
1048 Begin sample
1130 End sample
labelled sample bottles & put on ice
connected CB047-PW-1-101219 no sulfide
CB047-PW-3-101219 metals only
1136 EPA oversight confirmed sample & label looks good
1140 Trident probe back on deck. beginning decon process
1141 pulling anchors heading to CB016
1206 - Arriving & anchoring at CB016.
Going to do a Rinsate Blank before sampling at this location. No filter included with Rinsate blank samples. Decanned the entire probe, added glass beads. We did NOT do a 300 mL purge

Scale: 1 square =

1225- Begin sampling time.
1246- End sampling time
CBR16-PW-4-101219 1) total metals
2) TOC.
3) Alkalinity, Chloride, Sulfate

bottles filled by Sarah Kintner
1250 - samples labelled and put into ø wet ice in cooler
Trident probe being deployed at CBR16
1253 - probe on bottom. Confirmed sampleable sand
Begin pumping - only took 1 int.
1254 - purge began
1310 - end purge. Water quality readings done.
No sulfide bottle.
1325 - pump on to ~~filter~~ glove box.
JP 10-12-19
1331 - start sample time CBR16-PW-1-101219 no sulfide
1414 - end sample time and
CBR16-PW-3-101219
EPA split for metals
1422 - samples labelled
and put into cooler
on wet ice. Trident probe on deck.
1439 - Decanning trident probe for next weep
1502 - Sampling stuff transfer to CNI boat.
CNI boat to RV Ingalls. Transfer 2 EPA PW split bottles for Elle Anzingar on Ingalls to keep for EPA.
1511 - Yeti crew at China Bend launch.
1600 - transfer samples to warehouse

Jenny R
10-12-19

Scale: 1 square =_____

10-14-19 Phase 3 Sediment Study UCR
note taker: Sarah Kummer (SEKK)
0800 tailgate meeting for Yeti & Ingalls @ China Bend boat launch
Yeti crew:
Aecom S. Kummer
Cmn B. Chadwick, Chris Pickerell
Gravity R Trudeau, E Rigby
CNI D. Hadley, J Klopsay
Jacobs L Raterink
Teck - Chris & Rob are my Env weatherman
~~SEKK~~ SEKK 101419 Ingalls crew - see Ingalls log book
- 3 points of contact, man overboard procedures in case of weather
boat safety orientation for new folks & Aecom health & safety for all
Weather: 29°, cool, calm & cloudy Expected high 56
0900 Yeti crew transferred to sampling boat all personnel on board
0911 Ready for sampling @ CB039. deconned on Saturday pm
0920 Lowering trident probe into water @ CB039
0926 Probe settled on bottom. confirmed strata going to bdrock
10 hits at dock frame
0935 begin purge decon glove box take Readings. NO Sulfur
1011 Sample begins E 430695.100 N 5407284.21 depth - 19.3m
1040 Sample ends. final PW parameters covered
label sample bottles & put on ice
CB039-PW-1-101419 NO Sulfur
1052 trident probe up
1057 picking anchors up. departing to CB
support vessel is getting GPS coordinates from Ingalls - CB009 & CB010 are close together
1113 Jet crew over
1114 begun motoring to CB009/CB010 deconning tubing while motoring & anchoring
1143 anchors set at CB010, nitrogen tank switched SEKK 101419
1150 trident probe lowered. bottom has cobbles & is ~~s~~ sloped. Repositioning probe w/out raising probe or moving boat
1152 trident probe down at CB010. confirmed strata. ~~no hits necessary~~ SEKK 101419 1 hit necessary
1154 begun purge. decon glove box. WQ read E 429620.88 depth - 21.1
N 5407419.22
1235 sampled begins 101419 SEKK
CB010-PW-1-101419 no sulfur
CB010-PW-2-101419 DOC, 125ml amber
1331 sample ends. WQ measured samples labeled & put on ice.
1340 TRIDENT probe up & deconning begins

Scale: 1 square = _____

Rite in the Rain

10-14-19 UCR Phase 3 Sediment Study - RV Yeti

We are not picking up anchors. CB009 can be reached from this anchor location p45

1412 trident probe lowered. Strata verified.

1418 probe down @ CB009 begin purge & glove box decon. 6 hits Required
E 4296127.77 N 5407433.37 depth: 14.18m

1428 Stop purging briefly to give trident another hit 4 hits; slightly coming up w winch to Readjust. Probe remained in sediment the whole time.

1433 Restarting purge. fresh 300 mL

1440 STOP purging. Pounded probe again(ii) & Readjusted winch tension. Assessing if water from purge is ~~different enough~~ 101419 SERK discernable from river water

1445 Tossed old purge water. Restarting 300 mL purge

450 WQ Readings for surface water

515 sample begins CB009-PW-1-101419 no surface

544 sample ends WQ measured. Samples labeled & put on ice

550 trident probe up. decon process begins

1020 Sampling staff transfer to CWI boat

1032 Yeti crew @ China Bend boat Launch

719 transferred samples to warehouse staff

10/14/19

Jordan E. K. Kentner

Scale: 1 square =_____

10-15-19 phase 3 sediment Study UCR
notetaker: Sarah Kinner (SEKIC)

0750 arrive @ chinabend boat launch
0815 tailgate meeting for Ingalls & yeti
Arcom: S. Kinner, S. DeGood, M. McCoog, Michelle Stegman
Arcom health&safety: A. Payiyer, S. Couch
Jacobs: L Raterink, M
CMA Chris Pickerell, B. Chadwick
CNI: P. Hadley, E. Weatherman S. Brueckman, E
Gravity; E. Rigby, C. Kellogs, R. Thuteau, P. Jenkins, J.
0835 yeti crew transferred onboard vessel. All personnel on sampling vessel
Yeti anchored @ ~~CB022~~ (losing SEKIC) CB020
note: CB020 is an alternate for CB022. no splits or dups required.
0910 Trident probe lowered & settled on bottom @ CB020. confirmed strata. 0 hits
begin purge & glove box decon. took photos of location
N 429733.38 E 5407303.18 depth: 20.8 m
0941 WQ Readings
0959 Sample begins CB020-PW-1-101519 no sulfide!
1029 Sample ends label samples & put on ice. final WQ parameters
1036 Trident probe up. decon begins
1058 anchors up motoring to CB027
1120 arrived @ CB027
1125 trident ~~down~~ (losing SEKIC) lowered. strata confirmed photos of location
1132 trident raised & pin put in
1135 trident back down in H2O column
1137 trident down @ CB027. 1 hit ~~SEKIC~~ (losing SEKIC) start of purge strata confirmed
1202 WQ measurement
1214 start sample CB027-PW-1-101519 no sulfide
1245 end sample. label bottles, put on ice
1293 trident probe back on deck. decon starts
1326 lowering trident in water for CB024. CB024 & CB027 can be reached from 1 common anchoring location. We did not Relocate.
1329 trident down @ CB024. Starting purge confirmed strata
N 429797.45 E 5407333.52 depth: 17.7m
1391 SW Quality check.
~~1434~~ (losing SEKIC) 1402 Sample begins CB024-PW-1-101519 no sulfide
1434 Sample ends. WQ. label samples & put on ice.
1440 trident out of water. decon begins
1446 anchors raised.
1510 yeti sampling crew boarded onto assistance vessel

Scale: 1 square = _____

Rite in the Rain

10-15-19 UCR P3SS

1928 pack @ parking spot
things TO grab for tomorrow
- 3 PW kits
- extra EPA metal split bottle for EPA soil/dup

1019 transfer samples to warehouse crew

10/15/19

Sarah Ehrentraut

Scale: 1 square =_____

10-16-19 Phase 3 Sediment Study - UCR
notetaker: Sarah Kintner (SCKK)
0745 arrive @ parking area & transfer into CMA's vehicle
0755 arrive @ China Bend boat launch
0810 tailgate meeting w/ Ingalls crew
Only 1 safety boat this morning. the five pump vent out on one of the boats yesterday evening Ingalls & Yen are working in close proximity today
decom: S. Kintner, S. DeGood, M. Stegner, M. McCoug
Jacobs: L. Ratterink
CMA: C. Pickerell, B. Chadwick
CNI D. Headley,
Gravity: E Rigby, R. Trudeau & Ingalls Crew (see other tailgate form)
0830 Yen crew transferred onto sampling vessel Yen anchored @ CB021
tailgate topics: new safety boat has lower profile - watch your step; watch for animals in road - dog ran in highway this AM
0838 preparing to put equipment in the water
0850 trident in place @ CB021. Strata confirmed took pictures of location
purge & glove box decon begun E 429788.37
0910 surface WQ Readings N 5407363.62
0921 sample start CB021-PW-1-101619 no surface depth = 12.50m
1001 sample end. Label bottles & put on ice. WQ reading
10:05 bringing trident up CB021-PW-2-101619 - TOC, 125mL amber
Note: both samples taken @ 0921, just wrote this in wrong spot
1025 decon of tubing begins
1032 anchoring down @ CB029. CB029 and CB021 are very close together. was not aware we were moving between locations.
1040 anchors set
1041 Sprinkling outside
1042 Support vessel tied up Doug & Jordan onboard
1048 trident probe lowered into water column took photos of location.
1051 trident settled on bottom @ CB029. hit 1 time. Strata confirmed
begin purge & glove box decon E 429820.94 N 5407309.49
1115 purge ends. WQ Reading depth = 13.9 m
1130 sample begins CB029-PW-1-101619 no surface
1201 sample ends labelled samples, put on ice Rain stopped during sampling
1210 trident back on deck decon begins
1225 Raising anchors
1230 motoring to CB044.

Scale: 1 square = _____

10-16-19 Phase 3 Sediment Study UCR
1238 arrived at CB044 dropping anchors
1243 anchored at CB044 - anchor lines got tangled
1310 anchored & stationary @ CB044
1311 Trident lowered in water column
1313 probe stationary @ CB044 no hits strata confirmed purge started
E 430 696.53 N 5407349.12 depth 12.4m
1335 surface WQ Readings
1350 sampled started CB044-PW-1-101619 no surface
1422 sample load label samples & put on ice
1427 trident out of water. decon begins
1432 Raising anchors
1441 mooring to CB002 (can alternate for CB008) no split, no dups
1450 arrived @ CB002
1504 anchored & stationary @ CB002
1505 trident in the water column
1506 trident settled on bottom. strata confirmed. 0 hits
purge & glove box decon begins. took photos of location
1016 19 Sekr E 429475.36 N 5407451.73 depth = 12.8 m
1539 sample start time
1610 sample end. CB002-PW-1-101619 no surface. label samples & ice
1612 trident probe up
1615 lifting anchors
1629 transferring to support boat
1630 Yeti Crew @ boat launch
1643 leave for warehouse
1715 transfer to warehouse

Jordan E.K. Kenna
10/16/2019

Scale: 1 square = _____

10-17-19 Phase 3 Sediment Study UCR
notetaker: Saran Kinner
0745 arrive @ parking area & transfer into CMA's vehicle
0815 tailgate meeting - 1 form for yeti & Ingalls crews
topics: animals in road, avoiding complacency
Aecom: S. Kinner, M. McCoog, M. Stegner, S. DeGood
CNI: J. Klobbe, D. Hadley, C. Weatherman, S. Brunenman
Gravity, R. Trudeau, C. Rigby, C. Kellogg, P. Jenkins
Jacobs: M. Grantham, L. Raterink
CMA: C. Pickerell, B. Chadwick
EPA: R. Tan
0840 Yeti crew transferred onto sampling vessel anchored @ ~~3-JR-~~ 3-R7-2019 101719
begin deconning equipment for sampling
0904 note: This location does not have a "target sediment feeties" because it is a Repeat from previous location.
0909 took photos of sample location
0928 lowering trident probe into water column
0930 trident settled on bottom - winch line went slack - video timed out so we didn't know. When video restarted, decided to hit probe. 8 hits
Strata appears to be sand - table doesn't specify strata for location
0933 start purge decon glove box E 430298.28 depth: 20.2m
0952 surface WQ readings N 5407149.84
1000 decided PW WQ Readings were very close to SW drove sample in it & additional hits. doing another 300mL purge to check PW WQ Readings
1027 did second PW WQ Readings. deemed probe position to be acceptable
1035 sample start 3-R7-2019-PW-1-101719 nose left
~~to~~ 1109 sample ends. label & place on ice.
10179 Start 1110 Raising trident
1113 picking up anchors. headed to CB035
1146 anchored & stationary @ CB035
1147 lowering trident into water
1154 trident settled on bottom. purge started. N12 hits
1241 sample start CB035-PW-1-101719
1312 sample end
E 430355.34 N 5407157.41 depth=20.2m
1316 trident - pulling up. decon begins
1331 motoring to CB046
1410 anchors down & stabilized
1412 trident probe in water

Scale: 1 square =

10/17/19 Phase 3 Sediment Study - UCR

1413 trident probe settled @ CB040 confirmed strata
E 430800.08 N 5407321.00 depth 18.4m

1422 purging begins

1439 surface WQ Readings

1451 sample start CB040-PW-1-101719 no surface

1529 sample end. label samples & put on ice

1534 trident being pulled up decon begins

1540 lifting anchors

1541 Bart gives additional files on thumbdrive
files are "[Filename]-Amended" - the old version had incorrect #s (i.e. unupdated) for mL of sample before WQ Reading. the new files (i.e. suffix "Amended") have been updated to reflect what actually happened.

1550 begin transferring staff to support vessel as able

1609 leaving Yeti

1610 back @ China Head boat launch

1615 back @ cars

1650 hand off samples to warehouse crew

10/17/19

Jordan & K Kuntz

10-18-19 Phase 3 Sediment Study UCR
notetaker Sarah Kimmer (SEKK)

0745 depart from parking area
0850 arrive @ China bend boat launch
~~0825~~ 101819 0805 tailgate meeting
topics: Yeh will be crowded today - good communication & watch your placement.
Aecom: M. Stegner, S. Kimmer, S. Degood, M. McCoy
EPA: R. Tan
Jacobs: L. Raterink, Marilyn Gavin
CNI: E. Weatherman, S. Brunarman, J. Klopp, D. Hadley
CMA: C. Pickarell, B. Chadwick
Gravity: R. Trudeau, C. Rigby, C. Kellogg, P. Jenkins
0825 Yeh crew (S. Kimmer, B. Chadwick, C. Pickerell, L. Raterink, R. Tan) transferred to vessel. anchored @ CB036
CB036 is an alternate site for CB038. ~~NOAH~~ 101819 SEKK, no dup or split
weather for today: high 91, partly sunny for Evans, WA
0858 trident probe into water column
0900 trident settled on bottom. strata confirmed
0909 trident probe positioned. Required 14 hits. purge & glove box decon begins
E 430462.516 N 5407139.35 depth = 20.9 m
0929 surface WQ Readings
0949 sample start CB036-PW-1-101819 no sulfide
1027 sample end. label bottles, put on ice
1035 picking up trident probe decon begins
1040 Raising anchors headed to ~~CB03~~ 101819 SEKK CB056
1120 arrived & anchored @ CB056
1126 trident probe settled @ bottom. 2 hits
1201 sample start CB056-PW-1-101819 no sulfide
1232 sample end. label bottles & put on ice
1240 Raising trident. begin decon
1300 anchoring @ ~~CB054~~ 101819 SEKK CB055
1329 trident on bottom strata confirmed ~~27~~ 101820 2019 SEKK
1330 probe location finalized. 27 hits. begin purge & glove box decon
1340 safety boat brings R. Tan back to shore
1400 SEKK ~~purge~~ 101819 filling metals filter
1407 sample start CB055A-PW-1-101819 no sulfide
101819 SEKK
1439 composite sample
1449 trident probe up. decon begins
1491 decon paused. have to add cable & tubing for deeper sites
1536 new tubing fitted together

Scale: 1 square = _____

10-18-19 UCR P3SS

1544 beginning decon of tubing
1619 transfer to support vessel
1625 transfer to dock
1632 at car
1715 transfer sample to warehouse

Jonah E K Kantner

10/18/19

Scale: 1 square =_____

10/19/19 onsite 3 sediment study UCR
notetaker: Sarah Kimmer (SEKK)
0749 depart from parking area
0800 tailgate meeting @ China Beach boat launch
decon. S. Kimmer
CNI: D. Hadley, J. Hoppe
CMA: B. Chadwick, C. Pickarell
Leaving: C. Rigby, R. Trudeau
Jacobs: L. Rathink
TOPICS: careful of slippery surfaces due to rain. saw a moose on the road!
Weather: high 49 overcast, occasional sprinkle
0817 yeh crew on board sampling vessel. anchored @ CB014
0830 trident lowered in water column
0836 trident positioned on bottom. Ø hits. purge started (400mL) strata confirmed
E 429614.20 N 5407342.37 depth: 37.8m
purge started
0930 sample start CB014-PW-1-101919 no sulfide
1010 sample end. label bottles & put on ice
1017 trident on deck. decon begins
1030 pulling anchors. headed to CB005
1042 dropping anchors at CB005.
- Question: what do we label an EPA split duplicate?
Lisa texted marilyn
- Answer: marilyn says use the same ~~idea~~ 101919 ID
1107 lowering trident probe into water column
1112 trident probe settled on bottom. strata confirmed. Ø hits. begun purge (400mL)
1203 sample begins CB005-PW-1-101919 no sulfide
CB005-PW-3-101919 x2 125ml dis metal bottles
NOTE: An EPA split & EPA duo were taken: 2 dissolved metals bottles to EPA.
1259 sample ends. label bottles & put on ice
E 429408.44 N 5407338.98 d: 40.1m
1307 trident back on deck. decon begins
1315 lifting anchors
1336 motoring to next location:
1350 anchored. lowering trident into water had to move probe around to find location probe could go in at.
1412 probe in. Ø hits. purge started @ 3-RS-2019-1-PW coarse.
no target strata - looks mixed coarse 10/19/19 SEKK
1456 sample start ~~3-RS-2019-101919~~ no sulfide
1534 sample ends 3-RS-2019-PW-1-101919

Scale: 1 square =
Rite in the Rain

E 4294414 4 N 5407286.30 depth = 415m
1540 Lisa brought EPA split bottles to safety boat to deliver to marilyn @ boat launch
1542 trident out of water. Removing extra length that was added yesterday for todays deep sites then decon.
1620 transfer to safety boat
1632 back @ parking location
1711 transfer samples to warehouse

on boat
3 PW kits
enough labels, misc. supplies & DI

On monday, bring:
- Red yeti cooler
- 3 PW kits
- 2 distilled water
- clipboard
- logbook
- SD card
- camera
- flash drive

* these are all in this pile
* Clipboard contains tailgate + float plan form for monday AM
* also grab ice for sample

10/19/19

Jonah Fenner

10/21/19 Phase 3 Sediment Study UCR

0753 S. Holmes (notes) at China Bend Boat Launch. RV Yeti Crew at launch.

0755 Conduct Health + Safety tailgate ~~form~~ SH meeting w/ CNI and Yeti crew. See form for list of attendees.

0810 Crew loading onto safety boat, heading to RV Yeti which is anchored on CB040, 4ft for CB050

0815 Crew on RV Yeti. Gravity: R. Trudeau, E. Rigsby; CMA: B. Chadwick, J. Guerrero.

0820 Decon and set up materials in glove box.

0850 Trident lowered onto CB040 location. Matches mixed coarse

0911 Sampler in place. after 28 hits. Begin porewater purge of 300 ml

0947 Sample start. CB040-PW-1-102119. No sulfide

1021 End sample.

1025 Sampler on deck, begin decon.

1030 Pulling anchors. Heading to CB041 (coarse, EPA split)

1052 At station CB041, deploying anchors.

1112 Anchors set, lowering trident w/ drive frame.

1115 Cobbles/gravel observed on video. Coarse facies confirmed. Begin attempt to set sampler. Set after 24 hits

1124 Begin purging 300 ml of porewater

1203 Sample start. CB041-PW-1-102119 and EPA split on dissolved metals CB041-PW-3-102119. No sulfide

1245 End sample

1250 Sampler on deck - begin decon.

1255 Pulling anchors, heading to CB043. (Coarse, will collect duplicate on sulfate/chloride/alkalinity)

1315 At station CB043, setting anchors

1326 Trident lowered into CB043, begin attempting placement. 26 hits, sampler in place

1343 Starting 300 mL purge

1410 Purge complete, conductivity reading higher than other samples - CMA troubleshoots, confirms cal and that sensor is reading correctly.

1429 Started sampling. Collected CB043-PW-1-102119, plus CB043-PW-2-102119 (time of 1500) in extra sulfate/chloride/alkalinity bottle. No sulfide.

1514 End sampling.

1525 Trident on deck, begin decon.

Note: L. Reterink was Jacobs/EPA observer today.

1540 Supplies needed for tomorrow: 1 PW sampling kit.

Rite in the Rain.

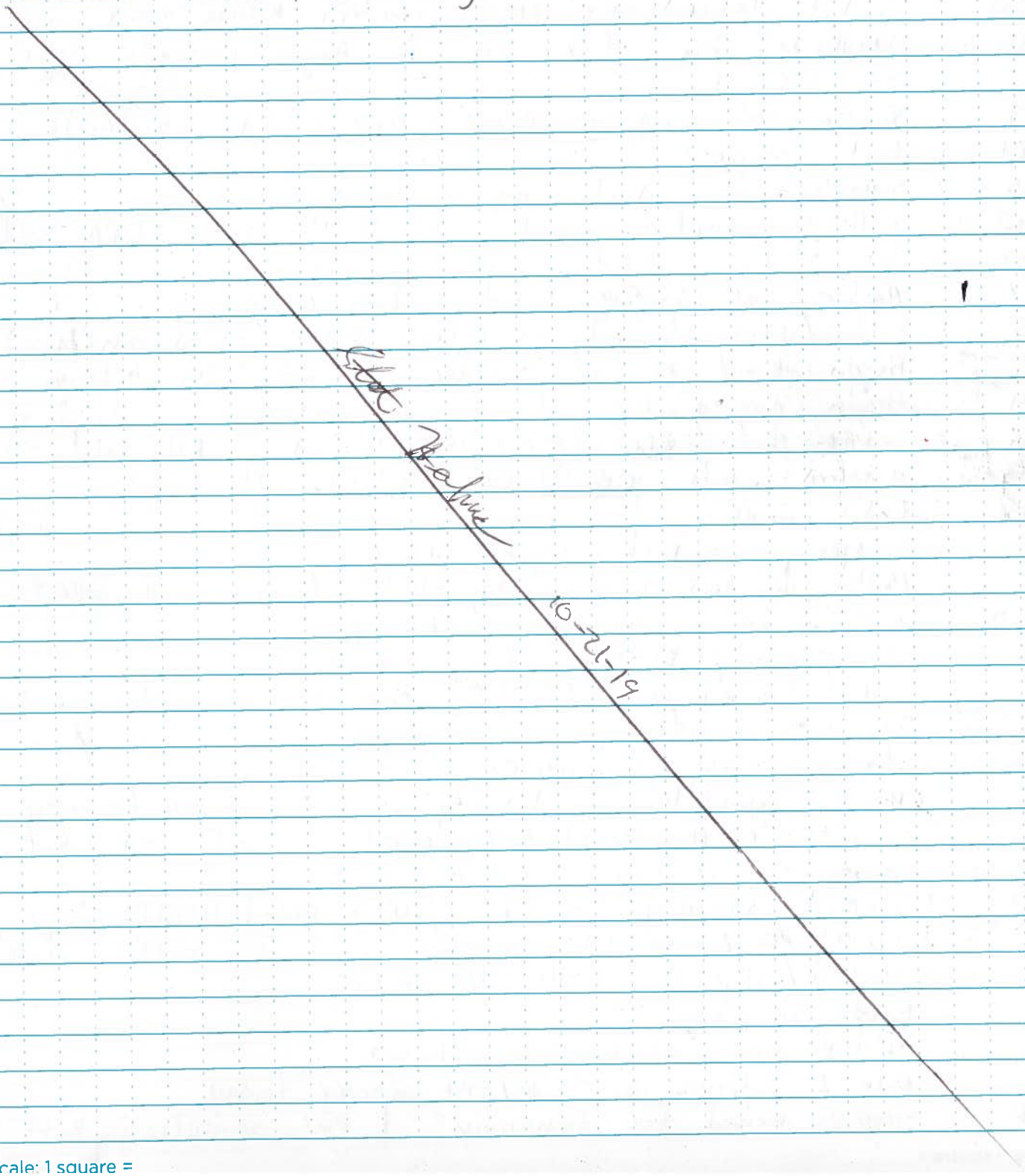
Bart says CMA has additional Nitrogen canister in their truck to load tomorrow. Enough DI/distilled H_2O on board.

1558 Transfer onto CNI-3 to return to China Bend Launch.

1603 At boat launch, unload. Transfer bottle from EPA split at CB041 to L. Waterjug.

1606 Heading to warehouse.

1636 At warehouse, unloading samples.



Scale: 1 square =

0755 S. Holmes (notes) at boat launch.
0757 Conducting health/safety tailgate (see form for full list of attendees). Beware of wake from other boats.
0810 Boarding RV Yeti.
AECOM: S. Holmes
Gravity: R. Truedeau (captain), E. Rigsby (deckhand).
USGS: Steve Cox
Jacobs/EPA: L. Raterink
CMA: B. Chadwick, T. Guerrero
Weather:
45°F (overcast).
Afternoon high of 58°F.
0815 Decon glove box. Boat anchored on CB048.
0835 Trident w/ driveframe lowered onto station. Coarse strata confirmed. Begin driving sampler
0855 Start purge
0905 After ~100 mL purged, determine there is not enough difference in parameters b/t surface water and porewater. Moving trident w/in same general area.
0918 Probe in place after 22 hits (<2m from original location, no new GPS point). Begin 300 mL purge.
0942 End purge
0954 Sample start. Collected CB048-PW-1-102219. No sulfide.
1031 End sample.
1035 Trident pulled on deck, begin decon.
1040 Pulling anchors, heading to CB049.
1100 At CB049, deploying anchors.
1128 Begin attempt to land and insert sampler. Having difficulty getting sampler tip in between rocks.
1142 Aborting attempt # 1. Searching polygon for better area.
1213 Found suitable area w/ attempt #2. 46 hits to set sampler (coarse strata confirmed). Begin 300 mL purge.
1251 End purge.
1300 Start sample. Collected CB049-PW-1-102219. No sulfide.
1330 End sample
1337 Trident on deck. Begin decon.
1340 Pulling anchors. Heading to CB052.
1345 Performed calibration check of all instruments. Only needed to recalibrate glove box O_2 sensor
1400 Setting anchors at CB052.

Scale: 1 square =

Stuart Holmes 10-22-19

Rite in the Rain

10/22/19 Phase 3 Sediment Study

1429 Trident lowered at CB052. Coarse strata confirmed. 17 hits, successful drive of sampler. Begin purge

1503 End purge

1513 Start sample. Collected CB052-PW-1-102219. No sulfide.

1548 End sample collection.

1555 Trident on deck. Pulling anchors.

1600 Steve Cox (USGS) off Yeti.

1620 Sampler pinned up, preparing to photograph CB022.

1625 At station CB022.

1632 Collect sediment video at CB022. Cobble and sand. In vicinity of CB022-1 target. Marked as CB022-1-SV
E: 429786.94 N: 5407323.35 D: 21 m

1646 Sediment video CB022-2-SV Gravel w/ sand
E: 429776.21 N: 5407330.26 D: 26.6 m

1647 Sediment video CB022-3-SV Gravel w/ sand
E: 429772.93 N: 5407338.28 D: 22.4 m

Sediment video CB022-4-SV Gravel w/ sand.
E: 429767.68 N: 5407342.73 D: 22.8 m

1653 Pulling camera.

1659 Boats off water.

1701 Heading to warehouse

1729 At warehouse, unloading samples

Start Frame 10-22-19

10/23/19 Phase 3 Sediment Study p. 60
Yeti PW

0830 Anthony Palmieri and Lisa Rotenink (Jacobs) on site. Received call from Bart Chadwick indicating that we have a delayed start due to fog; push back meeting time to 0930.
0935 Yeti + CNI @ Evans
AECOM:
Gannity: Renee, Emma, CMA: Bart, J. Guerrero
0937 H_2S meeting
1004 Onboard Yeti and Anchored @ EV043. Begin probe decon. and instrument calibration.
1057 Deploy sampler. Confirm correct strata (coarse).
EV043-1
Coordinates → N: 5392717.53
Water depth: 25.9m E: 424734.50
1108 Probe refusal. Move several feet and reattempt.
1121 Probe refusal after 20 blows. Move several meters to reattempt.
1130 Repositioned Coordinates for EV043-2
N: 5392703.96
E: 424733.52 Water depth: 26.0m
~~50~~ 45 blows, probe penetration estimated @ 3.5 inches. Start purge.
1201
1232 Start collecting EV043-PW-1-102319.
1305 Finish sample collection. Begin demobe
1341 Back @ Evans.
1347 Depart for warehouse.
1405 @ Warehouse

End of logbook

10.23.19

Scale: 1 square = _____

Rite in the Rain

#2

warehouse

Rite in the Rain®

ALL-WEATHER

UNIVERSAL

№ 373-MX

9 Sept 2019 1600 - 1730

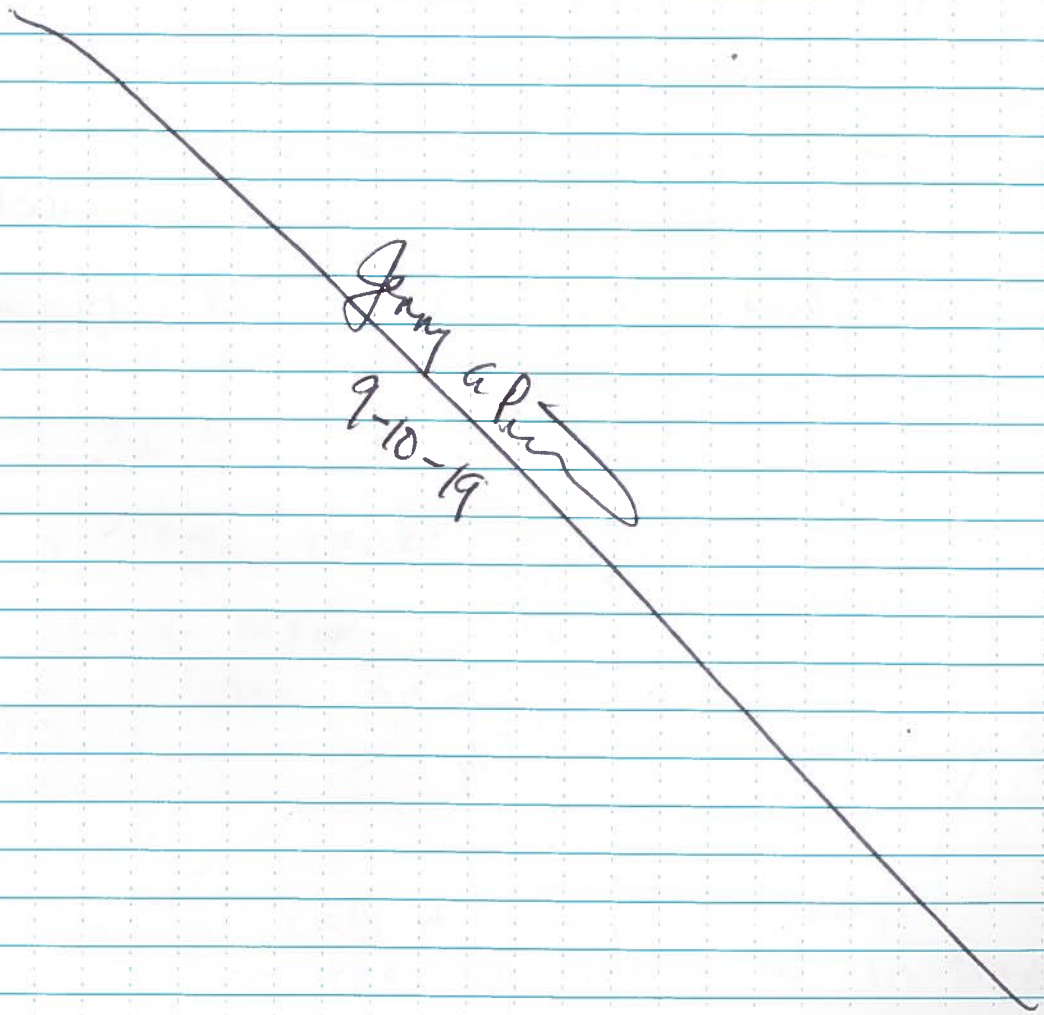
Sample Processing Facility
Phase 3 Sediment Study
Upper Columbia River

Opened sample processing facility
Had Kick off meeting for sediment sampling from 1600 to 1730.

Attendees:

AECOM: J. Pretare, A. Utter, N. Moody, T. Palmieri, M. Stegner
Gravity: J. Wilson, R. Trudeau
ERM: James Keithly
Jacobs (EPA): Frank Dillon
CNI: E. Weatherman, J. Weatherman, D. Hadley, & D. Gross
TAI: Denise Mills

Also did Cultural Resource Briefing.



Scale: 1 square = _____

Rite in the Rain

10 September 2019 p. 1 Page 2
Phase 3 Sediment Study
Upper Columbia River
Notes by J. Pretare, A. Ulter also working.

1100 – Turned on 26 ft. refrigerator truck parked outside warehouse to 4° C, per SOP.

1345 – 1st sediment sample put into reefer truck from location EVQ64.
Reefer truck "on" and cool, locked with padlock.

1700 Samples received from RV Tieton:

EVQ63-BM1-1-091019	5 gal, 5 gal
EVQ63-SE-1-091019	2 gal, 5 gal,
EVQ64-BM1-1-091019	5 gal, 5 gal
EVQ64-SE-1-091019	2 gal, 5 gal

J.P. changed 9-10-19

1-1602 jar, 5-802 jar

1-1602 jar, 5-8 02 jar

1713 Sed samples moved into refrig truck.
BM1 sample left at room temp in warehouse

Data forms, photo, logbooks off loaded to warehouse.

Jennifer Pretare 9-10-19

Scale: 1 square = _____

11 Sept 2019 Phase 3 Sediment Sampling
Upper Columbia River
Notetaker – J. Pretare

0700 H/S Briefing at Warehouse
AECOM – J. Pretare, N. Moody, A. Hiller, T. Palmieri, M. Stegner
Gravity – J. Wilson, R. Trudeau
CNI – Eric Weatherman, J. Weatherman, D. Hadley, D. Gross
Jacobs – Frank Dillon
ERM – James Keithly

No BMI samples to be collected today b/c we are out of ethanol
Mud may be the only substrate that requires 2 buckets because of

order more 250 µm screens? No use wooden box that was delivered yesterday.

H/S Observation: Evans Day use boat ramp is very steep b/c of low water. Better to hand carry up the ramp w/ bucket than to use hand carts.

0813 – checked temperature in reefer truck.
It was 42.2° F (5.5° C)
Goal is ≤ 39° F (4° C)
So we lowered the setting on the truck to 37° F.

1028 – 36.5° F Actual reading in truck.

1116 – Nitrogen tanks delivered.

1632 – Sample arrived back at warehouse & unloaded

EV057	5 gal	2 gal	6 jars	No BMI
EV054	"	"	"	
EV005	"	"	"	
EV075	"	"	"	

1645: 38.4° F – cab display for temp
42° F – temp on thermometer in truck

Scale: 1 square = _____

11 Sept. 2019 Phase 3 Sed Sampling Upper Columbia River

1700 - Samples transferred to refrigerator truck

Jennifer Hill
9-11-19

Scale: 1 square = _____

12 Sept. 2019 Phase 3 Sediment Study
Upper Columbia River

0700 Tailgate at Warehouse - people present:
AECOM: J. Pretare (notes), N. Moody, J. Ray, M. Stegner, T. Palmieri, D. MacDonald
Gravity: Rene Trudeau, Jeff Wilson
CNI: Josh Weatherman, E. Weatherman, D. Hadley, D. Gross
Jacobs: Dan LaVoie, Frank Dillon

Anders Utter driving to Spokane for ethanol

202 460 4162

H/S Obs: - F18 aircraft fly overs very loud - has happened several days in a row.
- Fishing boats very close by at one point in time.

Additional boats arriving tonight
CMA starting set up tomorrow

1050 - Reefer truck temp on inside digital thermometer = 42.2°F
1445 - REEFER TRUCK TEMP ON INSIDE DIGITAL THERMOMETER = 36.9°F TRUCK CAB THERMOMETER 37.7°F
1530 - 30 PW SAMPLE KITS MADE
1830 - Samples arrived back to warehouse to unload

EV010	5gal	2 gal	5gal	HBMI	6 jars - (Volumes on Fld form)	
Redo - EV005	NA	NA	"		~~NA~~ NA	
Redo - EV075	NA	NA	"		NA	

1845 - 38.8°F CAB THERMOMETER
6.2°C TRAILER THERMOMETER
SAMPLES TRANSFERRED TO REFRIGERATOR TRUCK

9/12/19

Scale: 1 square =

13 September 2019 Phase 3 Uth Sed Sampling Upper Columbia River P1

0700 Tailgate meeting at warehouse People present:
AECOM: J. Peetare, A. Utter, M. Stegner, D. MacDonald, N. Moody, A. Palmer, J. Ray
Jacobs: D. Lavoie, F. Dillon
Gravity: R. Trudeau, J. Wilson
CNI: J. Weathermon, D. Hadley, G. Schematch, D. Gross,

H+S observation: reminder about tripping hazards
-overhead hazards - doorway on boat
-space on boat when sieving, be aware of surroundings/workspace
-use different ethyl alcohol spray bottle
- lifting and help with handling heavy buckets
-Friday recreational traffic, expect higher due to one of last fair weather weekends of season

Planning freeze grab tomorrow
Monday kickoff meeting ~40 people. Field crew staying on to next week will rest/no field work Sunday.

0715 38.8° F Cab Thermometer
5.8° C Trailer Thermometer

0815 Tailgate with CMA, now onsite to load/unload PW equipment + materials.
Hand tool safety, wear gloves
Loading Yeti, need 0 steps to
Cell phone policy reminder
Personnel present: AECOM - S. Peetare, A. Utter, J. Ray
CMA: A. Sims, S. Moore, C. Smith, B. Chandler

0850 CMA + S. Peetare mob to other warehouse to load/unload PW equipment + materials

0930 Ethyl Alcohol delivery arrived - 4 - 55 gal drums

1100 39.0° F Cab Thermometer
4.2° C Trailer Thermometer

Scale: 1 square = _____

13 September 2019 — Phase 3 Sed Sampling
~~1320~~ ~~W~~ — Upper Columbia River
AM 9-13-19

1320 Weighed Samples (buckets only) in Reefer truck

EV063-BMI-1-091019	already sent to lab
EV063-SE-1-091019	53 lbs (5 gal) 21 (2.5 gal)
EV064-~~BMI~~ SE-1-091019	66 lbs (5 gal) 24 (2.5 gal)
EV064-BMI-1-091019	already sent to lab
EV057-SE-~~0~~1-091119	48 lbs (5 gal) 27 (2.5 gal)
EV054-SE-1-091119	39 lbs (5 gal) 26 (2.5 gal)
EV005-SE-1-091119	53 lbs (5 gal) 35 (2.5 gal)
EV075-SE-1-091119	65 lbs (5 gal) 25 (2.5 gal)
EV010-BMI-1-091219	72 lbs
EV005-BMI-1-091219	25 lbs
EV075-BMI-1-091219	45 lbs
EV010-SE-1-091219	84 lbs (5 gal) 36 (2.5 gal)

1520 Samples arrived back at warehouse + unloaded

		Container	Volume	Weight	
EV012	BMI	5 gal (1)	2.5 gal	51 Lbs	+ fresh water sponge
EV013	BMI	5 gal (2)	4.0 gal	~~48~~ + 44 = 92 Lbs	
EV012	Bioassay	5 gal (1)	6.0 gal	84 + 35 = 119 Lbs	
EV012	Bioassay	2.5 gal (1)	+ 2.5 gal		
EV013	"	5 gal (1)	5.6 gal	86 + 35 = 121 Lbs	
EV013	"	2.5 gal (1)	+ 2.5 gal		
EV012	"	8 oz (5)	+ 16 oz (1)		
EV013	"	"	"		
EV013	Equip Blank	EV013-SE-4-091319			

*EV012-BMI had additional sample in 8 oz. jar including ca Spongillidae

1545 Samples transferred to reefer truck

1600 Review sample forms, download photos
Gather supplies and kits for second sediment crew.

1730 38.3°F ~~AAB~~ 5.5°C in trailer
9/13/19

Scale: 1 square = _____

14 September 2019 Phase 3 Seed Sampling Upper Columbia River

0710 Tailgate at Warehouse. RV Cayuse today for freeze grab
AECOM - J. Pretzer, T. Palmieri, N. Mady, D MacDonald, J. Ray
CNI - E. Weatherwax, D. Hadley
Grauty - S. Hinz, J. Wilson, R. Trudeau
Jacobs - D. Lavoie

Freeze grab requires Methanol!
Yesterday obs: Sieving has lots hazards
Don't run grab while sieving
No shaking of sieving
Larger sieves will help
Glass in one of the samples
New method, smaller boat
Pinch hazard w/ "O" ring on freeze grab!
Use gloves with dry ice
Keep methanol in open air; reuse methanol - need funnel and juice pitcher.

0845 - CMA came and took Easy-Up (1)
0855 - REEFER TRUCK TEMP CAB THERMOMETER 39.3°F
CYCLED UNIT ON/OFF
CAB THERMOMETER 36.3°F TRAILER 2.4°C
0945 LOAD MATERIALS/EQUIPMENT FOR SE SAMPLING ONTO INGALLS VESSEL
1100 3 RAM PACKS REMAINING DRY ICE (~15 lbs) AND DELIVERS TO EVANS BOAT RAMP
1215 BEGIN MAKING PW FILTER PACKS TO ADD TO 8 2nd 211414A PW SAMPLE KITS. OPENED BOX 1/4 CAPSULE FILTER LOT FG90139MP
1330 3 RAM DELIVER BMI BUCKET LIDS TO BOAT
1420 - CMA picked up Yeti & Tieton coolers etc.
1556 REEFER TRUCK TEMP CAB 37.7°F
1620 Samples back at warehouse TRAILER 5.2°C
crew processing EV036
1720 EV036-BM1-10091419 11 lbs
5/6 JARS (NO 2nd ARCHIVE) sample watery
1730 SAMPLE TRANSFERRED TO REEFER TRUCK

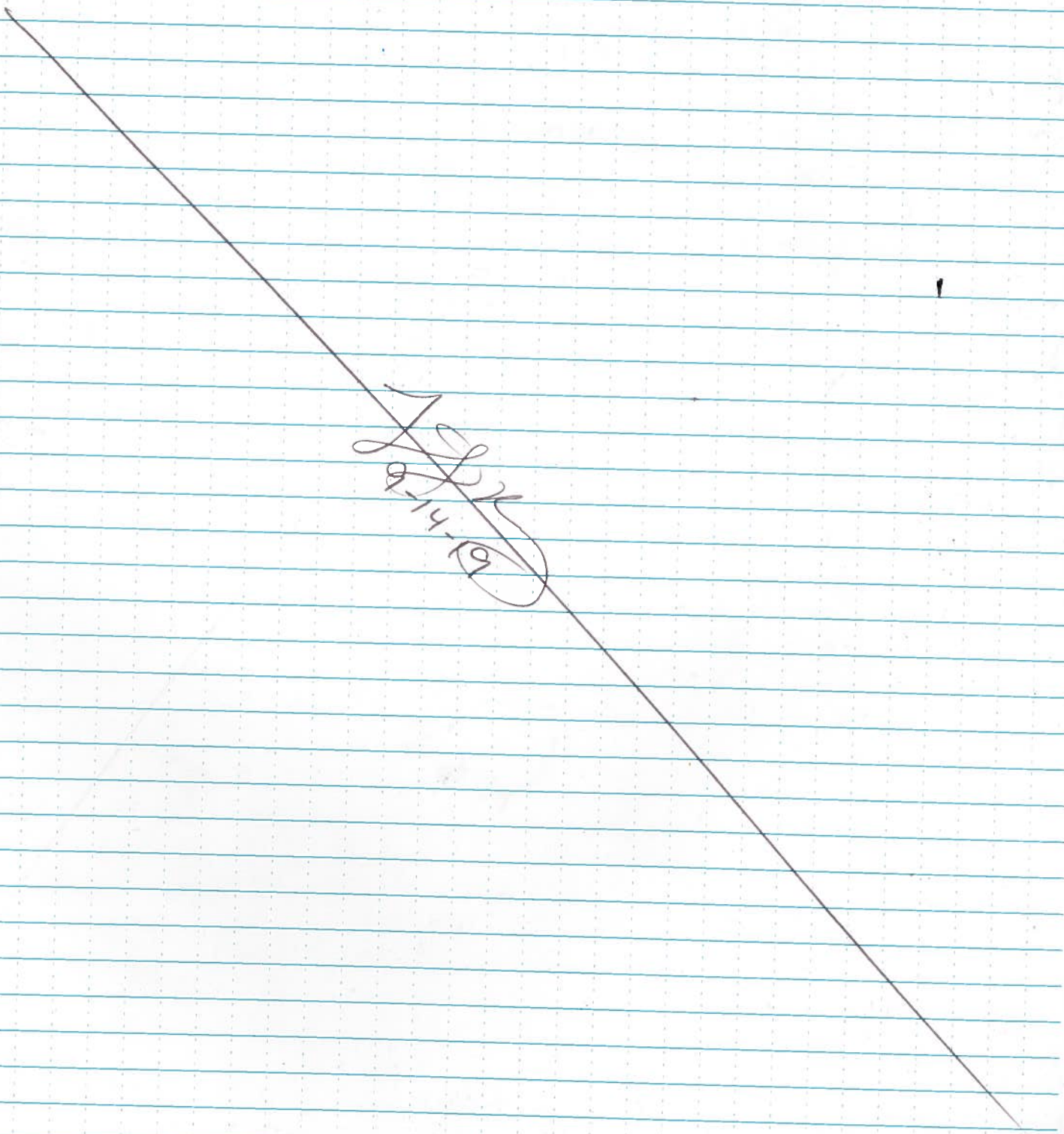
Scale: 1 square = _____

14 September 2019 Phase 3 Sed Sampling
Upper Columbia River

1735 REEFER TRUCK TEMPERATURE 38.6°F CAB
6.0°C TRAILER

SHOULD NOTE REEFER UNIT TURNED ON AFTER CLOSING UP TRAILER.

1800 LOCK UP, LEAVE WAREHOUSE



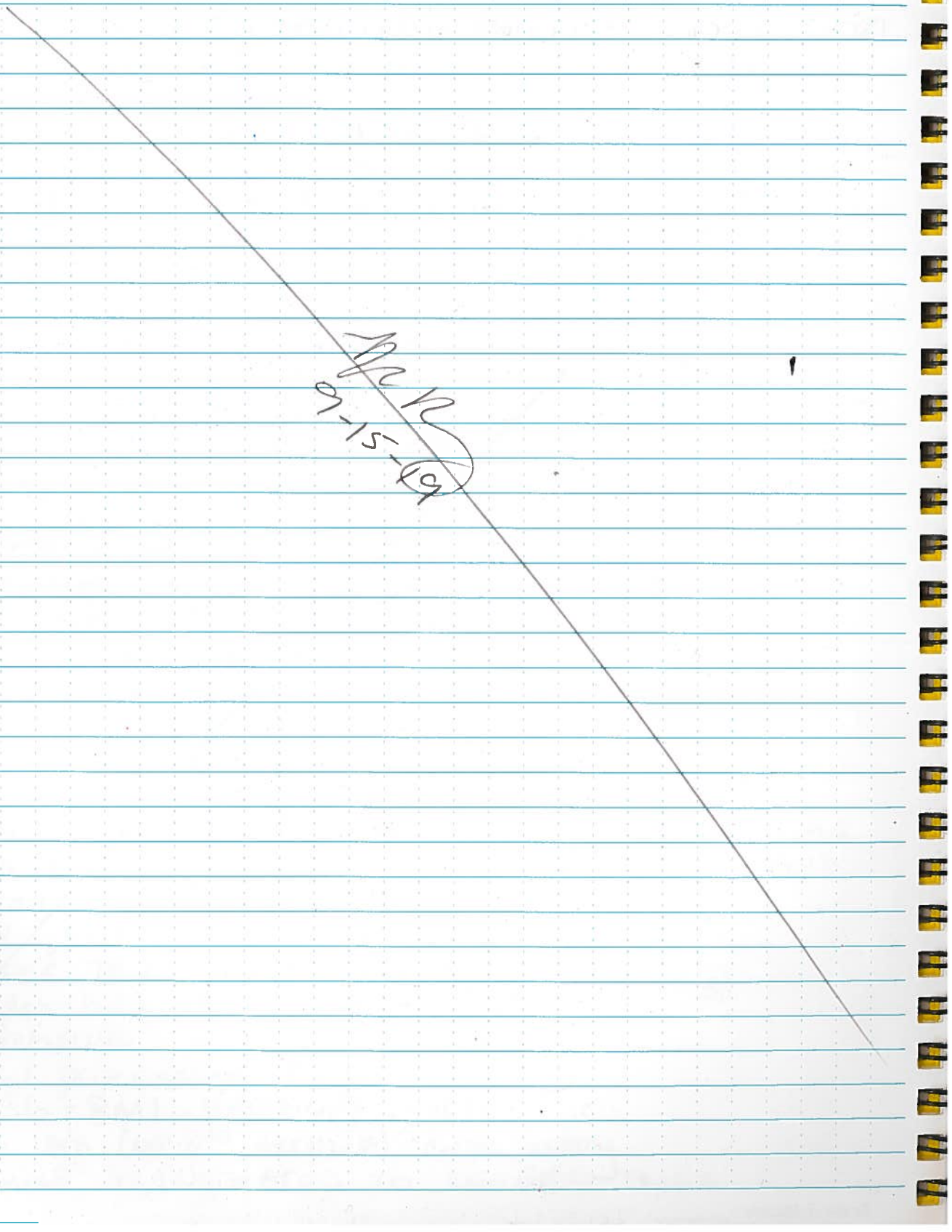
Scale: 1 square =

15 September 2019 Phase 3 Sediment Sampling - UCR 10 PI

1130 Refer truck temp. cab thermometer: 38.1°F
cycled unit on/off trailer thermometer: ~~3.6°C~~ 3.6°C

1300 TEAM MEETINGS SEDT PW

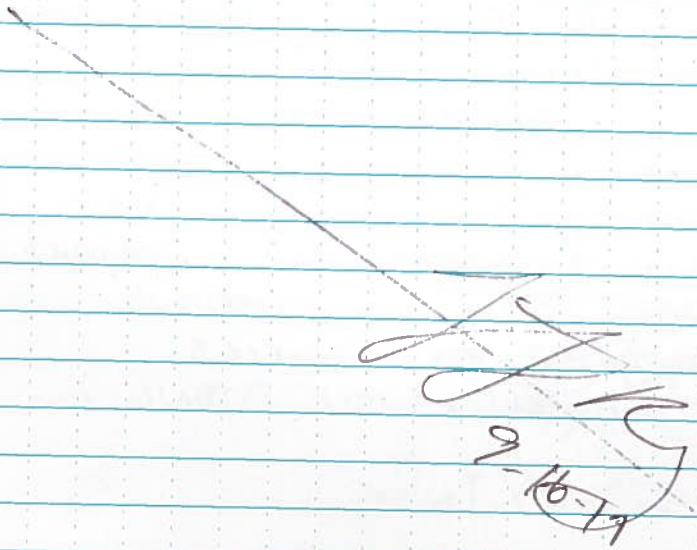
1600 CLOSE UP, OFFSITE



Scale: 1 square =_____

0800 UCR P355 Kickoff Meeting - Miller warehouse
Sign-in sheet lists attendees, Several people attended via phone line / Teams online meeting - names added to sign-in sheet ~~after~~
Cultural Resources Confidentiality Agreements & Health and Safety form completed as necessary.
0935 meeting break
0950 meeting recommenced
* Safety observations are noted in logbooks. Will need to be provided to centralized person for uploading into the AECOM LifeGuard application
1200 Meeting adjourned
1545 ~~REEFER~~ TRUCK TEMPERATURES IN CAB 38.3°F
IN TRAILER 4.6°C
1415 UNIT CYCLED OFF/ON
AL ON SUPPLY / DRY ICE RUN, RETURNED AND RAN ETHANOL SUPPLY TO EVANS RAMP.

1930 AL + JR OFFSITE



Scale: 1 square = _____

17 September 2019 Phase 3 Sediment Sampling - UCR

0830 WAREHOUSE TAILGATE MEETING

ATTENDEES: AECOM - B. FLETCHER, J. KAY, M. McCABE, N. MOODY, M. STEGNER, A. THATCHER
~~JACOBS~~ S. HOLMES, L. HOWALD,
~~CNTR~~ JACOBS - D. LAVOIE, J. JOHNSON, J. CULLEY, J. GONDEK, R. ZASAL
CMA - B. CHANDLER, A. SIMS, J. MOORE, C. SMITH
~~LEC~~ - W. FRASER ERM - K. LUNDMARK

- SAFETY STANDDOWN DUE TO NEAR MISS THAT OCURRED YESTERDAY. VESSELS BEING INSPECTED AND INGALLS BEING LOAD TESTED.
- UNESSENTIAL PERSONNEL WILL BE ON SUPPORT ~~VESSEL~~ VESSELS
- SAFETY OBSERVATIONS:
  - WILDLIFE
  - ACTIVE TRAIN CROSSINGS,
  - IMPORTANCE OF DOING CHECKLISTS AND INSPECTIONS (EXAMPLE POPPED WELD ON SAMPLER)
  - CUT RESISTANCE GLOVES/SUPPLY ONBOARD FOR SIEVING
  - WEATHER, TRACK AND IF LIGHTNING/THUNDER GET OFF WATER FOR AT LEAST 30 MINUTES.
  - COOLER WEATHER POSSIBLY CHANGING, BRING LAYERS

JACOBS WOULD LIKE TO BE ONBOARD TO OBSERVE PW AND SED OBSERVATIONS, MORE FOR PW INSIDE OPERATIONS

- DISCUSSION OF SAMPLING-CREWS W/ K. LUNDMARK ON CLARIFICATION OF QAPP LOCATION/STATIONS
- PUBLIC INTERACTION/RESPONSE TO INQUIRIES
- ALLOW PUBLIC TO USE LAUNCHES WHILE PUTTING IN.

1140 - 38.4°F - Built-in / 5.4°C - Interior / Trailer
Truck fuel > 3/4

1300 Sample kits generated for PW, Sediment, EPA splits (PW), rinsate blank (cruise crew)

1200 AL THATCHER LEAVES FOR NORTHPORT

1525 AL THATCHER RETURNS FROM NORTHPORT / COLVILLE

1500 BOTTLE CONSUMABLE SUPPLY INVENTORY COMPLETED

1730 - Reefer Truck check: Fuel > 3/4 // Temp Interior gauge: 3.2 C // Temp Built-In 37.5 + alt.
BMI buckets @ ~90

1805 - Porewater samples arrive from vessel Yeti

Scale: 1 square = _____

17 Sept. 2019

1810 EV064-PW-1-091719 4 containers RECIEVED:
- 1-125ml HNO_3 Diss Metals
- 1-125ml H_2SO_4 DOC
- 1-125ml H_2SO_4 TOC
- 1-125ml unpreserved Sulfate/Chloride/Alkanity/pH

1820 SAMPLE TRANSFERED TO REEFER TRUCK

1925 SEO CREW C4YUSE RETURNED
PW CREW RETURNED

1935 DM026-PW-1-091719 RECIEVED:
- 1-125ml HNO_3 Diss Metals
- 1-125ml H_2SO_4 DOC
- 1-125ml H_2SO_4 TOC
- 1-125ml unpreserved sulfate

1955 SAMPLE TRANSFERRED TO REEFER TRUCK

2045 GPS FILES LOADED, LOGBOOKS SCANNED.
CLOSE UP, OFFSITE

9/17/19

Scale: 1 square = _____

18 September 2019 PHASE 3 SEDIMENT SAMPLING UCR p1/3

0700 TAILGATE MEETING
- FIT FOR DUTY, GOOD REST (TURNING CELL PHONES OFF/ PUT IN SLEEP MODE) TO AVOID FATIGUE
- REVIEW THA
  - LAYERS / WEATHER PREPAREDNESS
  - WATER HAZARDS / BOARDING - REMINDER ABOUT EVANS DOCK / STEEPNESS, LOADING VESSEL
  - PROPELLER
  - VESSEL INSPECTIONS - GRAVITY HAS A CHECKLIST TO DOCUMENT. DAILY INSPECTIONS
  - LINE OF FIRE - KEEP CLEAR
  - PPE (SAFETY GLASSES REMINDER)
  - SAFETY VESTS ON WHEN CROSS THRESHOLD OF WATER
- NORTHPORT RAMP - WAIT UNTIL BOAT DOWN RAMP / IN WATER BEFORE TEAMS UNLOAD ETC. NOT A LOT OF ROOM AND CURVED APPROACH.

SAFETY OBS
- TIETON - DECK REARRANGED TO ALLOW PATH ON/OFF
  - OUT TOO LATE. 1 HR FROM PULLING ANCHORS TO OFF WATER, AT NORTHPORT.
  - SHOULD WE HAVE CUT OFF TIME?
  - PW TEAMS SHOULD ASSESS, COULD DO RECON ON SAMPLE LOCATIONS INSTEAD
- YETI - ~~FOOD~~ NUMBER OF PEOPLE ON BOAT
  - LANDING PADS ON PW DEVICE ARE A POINT TO WATCH WHILE LANDING / RETRIEVING
- CAMUSE - LARGE SAMPLES ON SMALL VESSEL WITH PERSONNEL ONBOARD. CHALLENGE FOR DECK SPACE

ATTENDEES: AECOM - B. FLETCHER, N. MOODY, P. HAMILOI, S. HOLMES, M. McCOOL, D. YEE, M. STEGNER, K. MITCHELL, L. HOWARD, J. PRETAKE, A. THATCHER, J. RAM
CMA - B. CHADWICK, J. MOORE, A. SIMS, C. SMITH ELM - K. LUNDMARK
CNI - E. WEATHERMAN
JACOBS - J. JOHNSON, R. ZAJAC-FAY, D. LAVOIE, J. GONDEK
GRAVITY - P. JENKINS, J. SCHAFER, R. TRUDEAU, J. WILSON, C. FOLLIE, E. SLOAN, S. HINZ, M. MCKEON, E. RIBBY
LOUDERBACK ENV CONS - W. FRASER

0720 PW + SEDIMENT TEAMS BROKE UP TO DISCUSS TECHNICAL APPROACH / ISSUES / QUESTIONS WITH K. LUNDMARK (ELM)

Scale: 1 square = _____

18 September 2019 Phase 3 Sediment Sampling UCR
0815 REEFER TRUCK TEMPERATURES: 37°F CAB
4.2°C TRAILER

0830 - Forms review, re-stock Modify
RVW Cultural & H2S forms for completion by personnel.
DRAFTING COCs
EDITING FORMS (PW/SED)

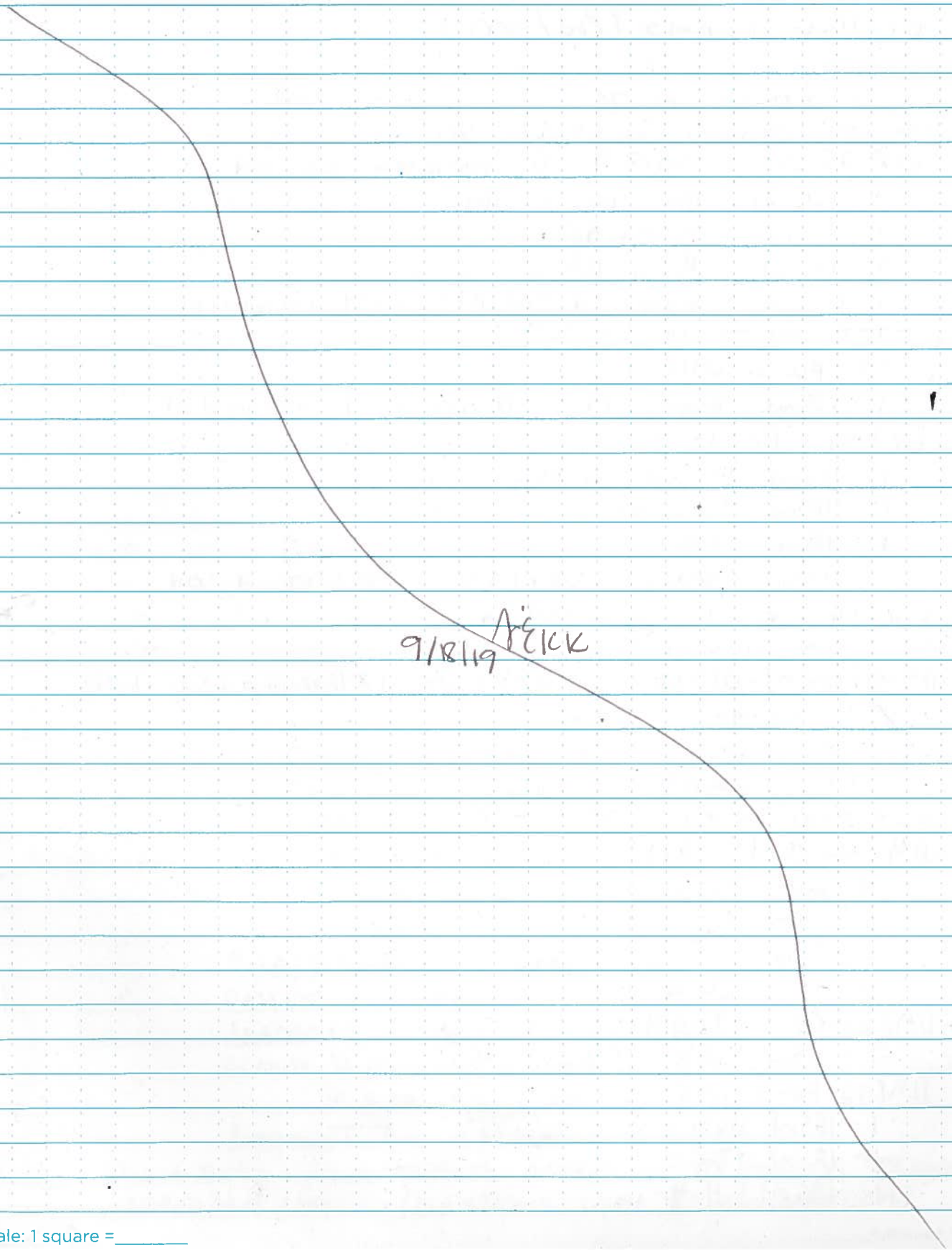
1620 Sarah Kuntner arrived
1730 Porewater samples arrived from Yeti
1735 EV075-PW-1-091819 5 containers received
1 - 125 ml HNO3 Diss metals
1 - 125 ml H2SO4 DOC
1 - 125 ml H2SO4 TOC
1 - 125 ml unpreserved sulfate/chloride/alkalinity/pH
~~1 - 125 ml~~ SEKC 09/18/2019
EV075-PW-2-091819
1 - 125ml unpreserved sulfate/chloride/alkalinity/pH
1744 EV054-PW-1-091819
1 - 125ml HNO3 Diss metals
1 - 125ml H2SO4 DOC
1 - 125ml H2SO4 TOC
1 - 125ml Unpreserved sulfate/chloride/alkalinity/pH
1748 Samples transferred to Reefer truck
1800 Sediment samples arrive from Cayuse
DM057-SE-1-091819 5X8oz. jars, 1X16oz jar & 1X2gal. bucket
~~1~~ 5X8oz jars
1X16oz jar
1X2gal bucket
1810 Porewater samples arrive from Tieton - 8 bottles
DM022-PW-1-091819
1-125ml Metals
1-125ml DOC
1-125ml TOC
1-125ml Sulfate
DM022-PW-2-091819
1-125ml Metals
DM022-PW-4-091819
1-125ml Metals
1-125ml TOC
1-125ml Sulfate

Scale: 1 square = _____

18 Sept 2019 UCR Ph 3 Sed Sampling

1815 packed samples for delivery to laboratory tomorrow
- sediment, porewater, bioassays

2000 close-up, offsite



Scale: 1 square =_____

19 Sept. 2019 UCR ph3 Sed sampling

0900 Sack & Kettle

0920 - Arr @ Kettle - Michelle S., Michaela, Brian, Sarah K + Al Thatcher present

0940 - Safety Tailgate check temp on Reefer truck inbox: 3.9 incab 38.6 gas: 5314 tch

1000 - Inventory, prep for ethanol dispensing, organize whse, ,

1100 - Communic. w/Seattle

1150 - Denise + Jenny P arrive

1300 - Preparing Sample Kits (Sed + PW)

1435 - Eric Weatherman moved the drums of ethanol outside whse

1455 - Yet ~~Cayuse~~ crew arrives w/ samples - Porewater. acc. 9/19

EV063 - PW-1-091919 - 4 bottles received (1030 - NM)

1-125ml Metals

1-125ml DOC

1-125ml TOC

1-125ml Sulfate

EV057 - PW-1-091919 - 5 bottles received (1247 - NM)

1-125ml Metals

1-125ml DOC

1-125ml TOC

1-125ml Sulfate

EV057 - PW-~~2~~ acc. 9/19 4-091919 (1405 - NM)

1600 - Michelle S. provides Cultural Resources Awareness briefing to: Sarah K., Denise Y.

1525 - Checked temp on Reefer truck - In cab display: 39.9°F // In box display: 4.2C.

1555 - Staff finished PW kits assembly, now basically out of PW bottles of all kinds.

56 PW kits are ready and 24 Sed kits

16oz bottles: 2 boxes of 12 each

1650 - Tieton crew arrives with PW samples

DM023 - PW-1-091919 - 5 bottles received (0945 - LH)

1-125ml Metals

1-125ml DOC

1-125ml TOC

1-125ml Sulfate

DM023 - PW-2-0919

1-125ml TOC

1705 - Cayuse crew arrives with Sed samples

DM045 - SE-1-091919 - ~~1012~~ acc. (1012 - SH, KM)

8oz jars - 5

16oz. jars - 1

2gal bucket - 1 Bio 27#s

5gal. Bucket - 1 BMI

1740 - Moved samples to Refrig. truck

1805 acc. 9/20

~~1750~~ - Leaving Kettle

Scale: 1 square =

20 Sept 2019 UCR Ph3 Sed Sampling

0825 - Arrived @ Kettle warehouse - Denise, Sarah K, Al T.

0855 - Tailgate

0905 - Checking Temps on Refrigerator Truck

Built-in thermo: 37.4°F Standalone thermo: 3.4°C

BMI sample buckets in reefer truck: 7+1 x 5 gall buckets

Weights of buckets:

EV012 - BMI	51 lb	5-gall buckets
EV013 - BMI	55 lb	
EV013 - BMI	43 lb	
EV010 - BMI	69 lb	
EV006 - BMI	23 lb	
EV036 - BMI	10 lb	
EV076 - BMI	42 lb	
DM045 BMI	25 lb	

The above are gross weights including bucket weight

0940 - Glassware/buckets+lids inventory + communic with ChelseyCook

16oz. jars - 2 boxes of 12 jars each

8oz jars - 6 " " 24 " "

5 gall buckets w/lids = 50 each

2.5 gall " " = 42 "

Bioassay Kits prepared = 16

Rinsate bottles = 20

Porewater - 28 Kits made up

BMI = 11 (5 gall yellow)

Sed Kits = 24

1050 - During review of field forms from yesterday, it was discovered that 1 set of PW samples was not logged-in. The sample set received includes:

DM008 - ~~1 PW - 1~~ 9/14/19 PW-1-091919

1-125ml Metals

1-125ml DOC

1-125ml TOC

1-125ml Sulfate

DM008 - PW-2-091919

1-125ml TOC

1110 - Al to OxArc for Dry Ice; + other stores for supplies

1255 - Back @ Kettle. Warehouse communiccations with other Staffs

- With Chelsey Cook
- SED EB analytes continue to be only metals
- PW EB are now metals, Sulfate & TOC
- COC Updates

Scale: 1 square = _____

UCR P3 Sed Sampling 20 Sept. 2019

- Sediment COC from 9/18
  - "EV003-SE-1-091019 taken at 1500"
    Replaces the duplicated EV004-SE-1-091019
  - "EV013-SE-4-091319" is the corrected version of water sample previously listed as "EV013-SE-1-091319"

with Nicky Moody, also told to Chelsey Cook & Tony Palmieri

- EPA field splits require an additional 2.5 gallon bucket (NM)
- Chelsey said this will not impact our bucket inventory - originally both a 5 gallon & 2.5 gallon bucket were ordered for EPA split

with dual hose

- Canada Rinsates: 2 Sediment & 1 porewater
  - Porewater rinsate samples: 1 metals, 2 PCBs, 4 PAHs, 4 pesticides
  - Sediment Rinsates: total metals (1)

1606 - Staff arrives from Yeti

~~EV011-PW-4~~

EV014-PW-4-092019 @ 0900 NM
- 1 125mL TOC
- 1 125mL metals
- 1 125mL sulfate

EV012-PW-1-092019 @ 1421 NM
- 1 125mL metals
- 1 125 ml DOC
- 1 125mL TOC
- 1 125ml sulfate

EV013-PW-1-092019 @ 1232 NM
- 1 125 mL metals
- 1 125 ml DOC
- " TOC
- " Sulfate

EV014-PW-1-092019 @ 1013 NM
- 1-125ml Metals
- 1-125ml DOC
- 1-125ml TOC
- 1-125ml Sulfate

EV013-PW-2-092019 @ 1236 NM
- 1-125ml metals

1630 - Checking temps of refrigerator ~~the~~ truck
Built-in: 38.4°F // Stand-alone: 4.7°C

1650 - Crews from Tieton & Cayuse arrive ↓
DM050-SE-1-092019
5X8oz jars
1X16oz jar
DM050-~~SE~~ QES 9/19 BMI-4-092019
6X 125ml bottle
DM050-BMI-1-092019 // DM050-~~BMI~~ QES SE-1-092019
2X 5gall. bucket BMI and Bioassay (27.1 Kg KM) //
DM050-SE-1-092019 @ 0908
1X 2gal. bucket - Bioassay
~~QES 9/19/19~~ QES 9/20/19 - Cayuse
DM046-SE-1-092019
5X8oz jars
1X16oz jars
DM046-SE-1-092019 1X2gal bucket @1217 SH, KM
2X2gal bucket - Bioassay
1X5 gal. bucket - Bioassay
DM046-BMI-1-092019
1X5gal. bucket

QES. 092019 Tieton
DM015-PW-1-092019 @ 0946 LH
1 X 125ml Metals
1 X 125ml DOC
1 X 125ml TOC
1 X 125ml Sulfate
DM015-PW-2-092019
1 X 125 ml Sulfate
DM018-PW-1-092019 @ 1338 LH
1X 125ml Metals
1X 125ml DOC
1X 125ml TOC
1X 125ml Sulfate
1812 - Samples received have been placed in refrigerator truck
Rvw 'Whse Activities' form
1825 - Ingalls staff arrives w/samples from 2 locations
EV026-SE-1-092019 @ 1431 MM
5X8oz jars
1X16oz jars
EV026-BMI-1-092019 @ 1431 MM
1X5gall bucket
(continued on next page)

Scale: 1 square = _____

UCR P3 Sed Sampling 20 Sept. 19

EV026-SE-1-092019
1 X 5 gal Bioassay 68#s
1 X ~~2 gal~~ 2 gal Bioassay 17#s

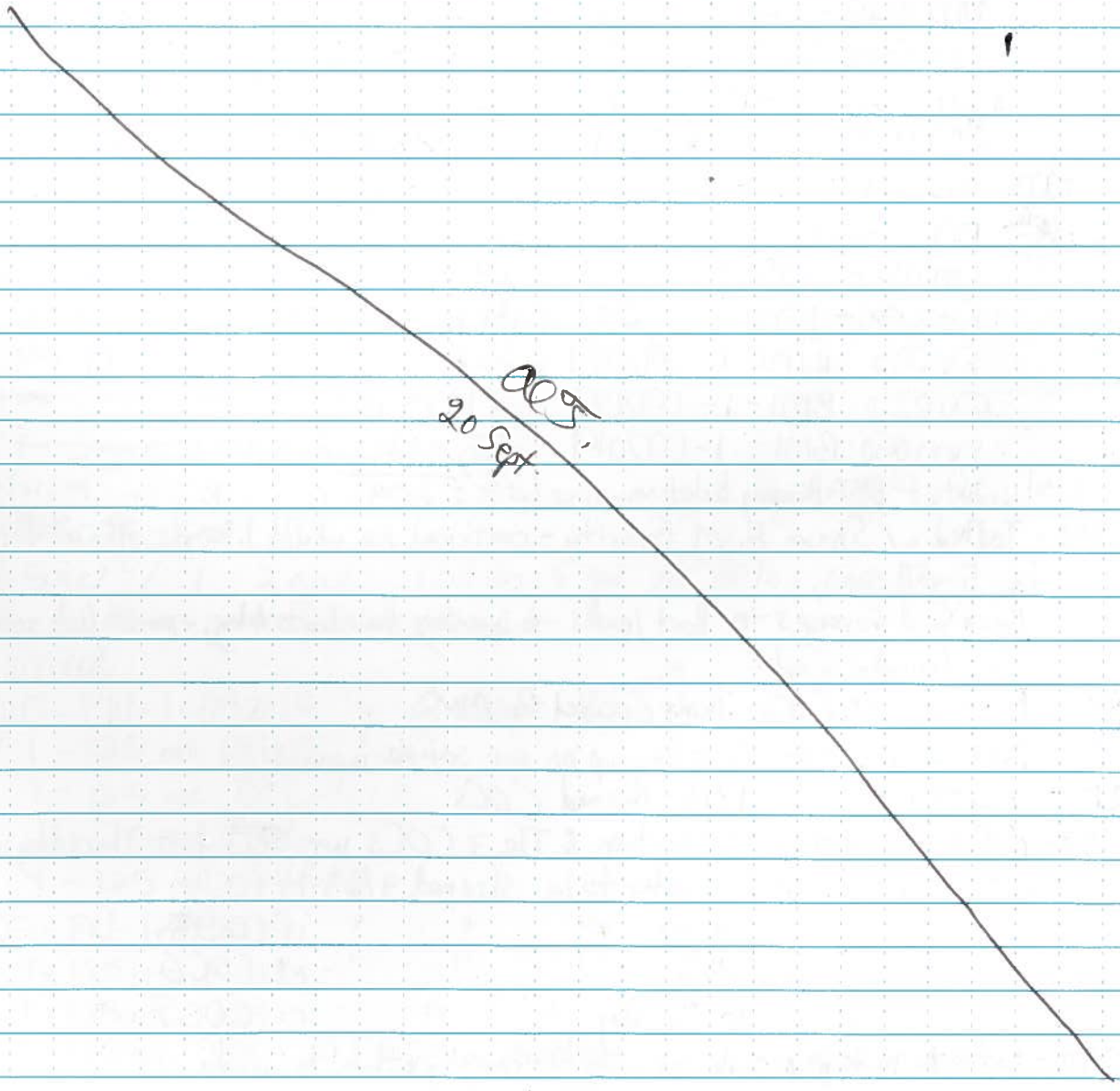
EV003-SE-1-092019 @ 1002 MM
5 X 8 oz jars
1 X 16 oz jar

EV003-SE-1-092019
1 X 2 gal Bioassay 28#s
1 X 5 gal " 68#s

EV003-SE-1-092019 BMI-1-092019
2 X 5 gal buckets

1915 - Samples have been moved into refrig. truck
Discussion

~2000 - Left Kettle



Scale: 1 square = _____

Rite in the Rain

21 Sept. 2019 UCR P3 Sediment Sampling

0800 - Whse staff arrived: Sarah K., Denise Y, Al T.
0810 - Prep + conduct tailgate
0830 - All reviewed plan for the day, prioritizing
0845 - Check temps in refrig. truck and fuel - 3/4 tank fuel
Built-in thermo: 39.7 °F Stand-alone: 2.6°C
Inventory yellow buckets: 103 in refrig truck
BMI buckets full w/ sample: ~~12~~ 13 as of 9/5/19
0900 - Weighing buckets: 5gal in refrig truck
Select 09/20/19 DM050-SE-1-092019 103 lb
DM044-SE-1-092019 12 ↓
EV026-SE-1-092019 15
EV003-SE-1-092019 08 / 158 subtotal

2gal:
EV026-SE-1-092019 13 lb
EV003-SE-1-092019 29 ↓
DM045-SE-1-091919 27
DM046-SE-3-092019 27
DM046-SE-1-092019 28
DM050-SE-1-092019 32 / 312 subtotal

BMI buckets:
DM046-BMI-1-092019 50 lb
DM045-BMI-1-091919 27 ↓
EV003-BMI-1-092019 49 bucket 212
EV003-BMI-1-092019 34 bucket 111
EV026-BMI-1-092019 11
DM050-BMI-1-092019 58 / 229 subtotal

Total weight of BMI+Bioassay buckets new since last COC: 609

0940 - Talked w/ Shaun H. of Gravity - confirmed he would like the ethanol for Canada in 5-gall cans.
0945 - Prep + Send messages to Boat leads - to inventory their boats today, + provide lists so we can restock for Canada work
1000 - Prep to create COCs, then created for PW
1105 - Packing PW cooler, follow-up on one sample ingestion
1210 - Going to L 1315 - Resumed COCs
1338 - COC numbering convention: The 3 COCs we sent last Thursday were COCs 1-3. Porewater to be shipped 9/23 is COC 4.
Sediment " 4 " is COC 5.
BMI " " " is COC 6
Bioassay " " is COC 7
1350 - Left to pick up portable containers for carrying ethanol to Canada

Scale: 1 square = _____

21 Sept 2019 UCR P3 Sediment Sampling
- Assembling Kits for Canada
1515 - AI returned from diesel container procure
1540 - Ingalls Team arrived.
EV027-SE-1-092119 (@9:25 mm)
5 X 8oz
1 X 16oz
Dry 9/21/19
Bioassay EV027-SE-1-092119
1-5gal (57lbs)
1-2gal (25lbs)
Bioassay EV027-SE-3-092119
1-2gal (21lbs)
BMI EV027-BMI-1-092119
2-5gal (45lbs // 40lbs)
Dry 9/21/19
EV060-SE-1-092119 @ 12:55 mm
5 X 8oz
1 X 16oz
Rinsate EV060-SE-4-092119
1-125ml
Dry 9/21/19
BMI EV060-BMI-1-092119
2-5gal. (35lbs and 36lbs)
Dry 9/21/19
~~BMI EV060-BMI-2-092119~~ ~~Dry 9/21/19~~
~~1-5gal~~ ~~Dry 9/21/19~~
Dry 9/21/19
Bioassay EV060-SE-1-092119
1-5gal / 1-2gal (58lbs 5-gal // 30lbs 2gal)
1612 - Marylyn Gauthier arrived to warehouse
1550 - Yeti arrived
EV010-PW-1-092119 @1034 ~~Dry 9/21/19~~ NM
Dry 1-125 mL Metals
1-125 mL DOC
1-125 mL TOC
1-125 mL Sulfate
EV005-PW-1-092119
1-125mL Metals
1-125mL DOC
1-125 mL TOC // 1-125mL Sulfate @1230 NM

Scale: 1 square = _____

21 Sept. 2019 UCR P3 Sed Sampling

EV002-PW-1-092119 @1406 NM
1-125 mL Metals
1-125 mL Sulfate
1-125 mL DOC
1-125 mL TOC

Rinsate EV010-PW-4-092119 @09:30 NM
1-125 mL Metal
1-125mL Alk, Chloride, Sue Fate
1-125mL TOC

DUP EV002-PW-2-092119.
1-125 mL DOC

1645 ~~Ingalls~~ Team arrived // Cayuse Team Arrived

TIETON
DM016-PW-1-092119 @ 1308 RH
1-125mL Metals
1-125mL DOC
1-125mL TOC
1-125mL Sue Fate

DM010-PW-1-092119 @1030 RH
1-125mL Metals
1-125mL DOC
1-125mL TOC
1-125mL Sue Fate

EPA split ~~Rinsate DM010-PW-4-092119~~ DM010-PW-3-092119 @1030 RH
1-125mL Metals

1702 - Checking temps on refig truck. Built-in: 37.7 F In Box: 3.3 C

1717 - Cayuse Sediment Samples

DM022-SE-1-092119 @1234 KM
5-8oz
1-16oz
1-2 gal 26.4 lbs
1-5 gal 73 lbs.

BMI DM022-BMI-1-092119
1-5gal 57.4 lbs.

DM023-SE-1-092119 @0815 SH, KM
5-8oz
1-16oz
1-5gal 64 lbs
1-2 gals 21.4 lbs

BMI DM023-BMI-1-092119
1-5gals 57.4 lbs

Scale: 1 square = _____

21 Sept 2019 UCR P3 Sediment Sampling

DM026-SE-1-092119 @ 1008 SH, KM
5-8oz
1-16oz
1-2gal 25 lbs
1-5gal 69 lbs

DUP DM026-SE-2-092119 @ 1045 SH, KW
5-8oz
1-16oz

EPA Split DM026-SE-3-092119
1-2 gal 25 lbs

BMI DM026-BMI-1-092119
1-5gal 59.4 lbs

Filling ethanol
Prepping supplies + sampling kits for all boats for next week
~~0720~~ Leaving Kettle
1930 DS 9/21/19

09/21/2019
Jenan Kunner

Rite in the Rain

22 Sept. 2019

1615 denise yee & sarah kummer arrive @ warehouse
- converse w/ Josh Weatherman
~~system~~ 09222019 SECIC Building alarm was not activated when he arrived. The green light ("Ready") must be on when locking the building. The alarm system will count down even if the Ready light isn't on - and the building alarm system will not be activated.

1630 sarah & denise update paper work & sample tracking forms from field work on previous day.

1645 - Dave Lewis + Al Thatcher arrived for turnover i.e. Warehouse activities
Refrigerator truck temperatures : Built-in thermo = 42. °F // Stand alone thermo = 3°C
Fuel level in truck slightly < 3/4 tank
Al + ~~Dave~~ leaving. 9/23

1800 Canada Team Meeting started by Dave Hose

1845 meeting ended // AECOM team QC'd Porewater and BMI COC for delivery on Monday, Sept. 23, 2019. Prep Coolers/buckets

1930 leaving Kettle Foods

Denise Yee 9/22/19

23 September 2019

0440 Sarah Kintner and Denise Yee arrived at Kettle Falls Warehouse to load and pack ice into 2 pow ered coolers. BMI Buckets were loaded into vehicle night before Dropping coolers in Spokane and BMI buckets to Moscow, Id.

0515 Leaving Kettle Falls

0700 Dave Lewis on site, open warehouse, crews showing up, tailgate meeting, canada crews loading up,

0745 local crews leaving for boats

0815 Refrigerator truck temperatures: Built in Thermo = 36°F Stand alone thermo = 3.1°C Fuel tank = just below 3/4

0833 Delivering supplies to Evans Campground crew.

0935 Dave Lewis returned to Warehouse.

0945 Begin wrapping sediment samples in bubble bags and recording on COC.

1015 More sample jars arrived VIA FedEx addressed to Dave Hase 24 each of 125ml amber + 125ml poly

1025 Package arrived via Amazon addressed to Sarah Kintner Rite-in-Rain paper + pens, and ink cartridges.

1205 Finish wrapping samples + recording on COC.

1500 Refrigerator truck temperatures: Built in Thermo = 36.8°F Stand alone thermo = 4.0°C Fuel Tank = just below 3/4

1550 Denise and Sarah return to Warehouse, Denise working on COCs, Dave + Sarah making sample kits and general organizing.

1718 Ingalls crew returning to warehouse

1721 EV037-SE-1-092319 1228
5 8oz jars
1 16oz jar

1726 EV008-SE-1-092319 0943
5 8oz jars
1 16oz jar.

1732 EV037-SE-2-092319 1300
5 8oz jars
1 16oz jar

1735 EV008-SE-1-092319 0943 ~~29~~ 092319 SEKK
1 2 gallon 29lb
1 5 gallon 73lb
EV008-BMI-1-092319
2 5gallon buckets (29) 9-23-19
~~40~~ 35 lbs

Scale: 1 square = _____

p2 9-23-19

1737 EV037-SE-1-092319 ~~27lb.~~
1 2gal. bucket 27lbs
1 5gal bucket 58lb.
EV037-BMI-2-092319
1 5 gal bucket 48lb.
EV037-BMI-1-092319 54lb
1 5gal bucket "
1746 EV054-BMI-1-092319 1551
1 5gal bucket 42lbs.
1748 EV057-BMI-1-092319 1510
1 5gal Bucket 40lbs.
09232019 SEICK
1800 Al Thatcher (Yeti) arrives
1808 EV005-PW-1-092319 1253
1 dis metals
1 toc
1 doc
1 sulfate
1814 EV046-PW-1-092319 1548
1 dis metals
1 doc
1 toc
1 sulfate
1825 sediment, bmi & pw samples in reefer
1845 everyone leaving warehouse

Doreen Reintna
09/23/2019

Scale: 1 square =_____

24 September 2019

0750 On site, open packages for Columbia Navigation at Erie Weathermans resident. Cameras and accessories for Cayuse + Ingalls.

0815 Check Refrigerator Truck Temperatures:
Stand alone Thermo: 6.8°C Built in Thermo: 41.1 F
Fuel Tank: < 3/4
Turn engine on to let run for awhile

0857 Checked stand alone Thermo: down to 5.6°C

1300 Called Jenny Prefare about high temp in box. She suggested driving it to Colville + filling tank.

1255 Denise left to Evans Campground to deliver empty BMI buckets (6) and received AM samples (4 cts. Ingalls)

1340 Denise arrived at warehouse. Checking Ingalls Samples

EV002-SE-1-092419 @0831 CP
1-16oz
5-8oz
1-5gal 78#
1-2 gal 20#

EV002-SE-3-092419 #21 lbs
1-2gal

EV002-BMI-1-092419 ~~2~~ 65#
1-5gal

EV044-SE-1-092419 @ 1001 CP
1-16oz
5-8oz
1-2 gal 16#
1-5 gal 39#

EV044-BMI-1-092419
2-5gal 27# and 26#

EV044-SE-3-092419
1-2gal 16#

EV048-SE-1-092419 @ 1137 CP
1-16oz
5-8oz
1-5gal 78#
1-2gal 20#

EV048-BMI-1-092419
2-5gal (41# and 48#)

1628 Ingalls crew arrived.
Sample logging on next page. DF 9/24/19

Scale: 1 square = _____

24 September 2019
Ingalls Afternoon Sample
EV051-SE-1-092419 @1300 CP
1-1602
5-8 oz
1-5gal 75#
1-2gal 30#
EV051-BMI-1-092419 @1300 CP
2-5gal (43# and 41#)
1639 Check Refrigerator Truck Temperature: Built-in Thermometer: 39.2F
Stand-alone thermo: 7.4C
Fuel level > 3/4 Full
1711 Yeti Boat crew arrived.
EV026-PW-1-092419 @1123 AT
1-125ml Metals
1-125ml DOC
1-125ml TOC
1-125ml Sulfate
EV037-PW-1-092419 @1454 AT
1-125ml Metals
1-125ml DOCs
1-125ml TOC
1-125ml Sulfate
EV037-PW-3-092419 @1454 AT
1-125ml Metals (Total) (West + EPA)
1-125ml MSD (EPA picked up)
1-125ml MS (EPA picked up)
EV037-PW-4-092419 @1545 AT
1-125ml Metals
1-125ml Sulfate
1-125ml TOC
1633 Denise left the warehouse and locked up
1905 Dave & Sarah return from Canada, put samples in truck
1920 Leave site

Dave Lewis
9/24/19

Scale: 1 square = _____

9-25-19 25 September 2019
0810 on site
0825 Took readings in Refrigerator Truck:
Built in Thermo: ~~40 °F~~ Stand alone Thermo: 4.3°C Fuel level: 7/8
(DE 9-25-19) 37.4°F
0913 Recording samples collected in Canada, brought back yesterday on 9/24/19
REF013-SE-1-09242019 1129
1 16oz jar 1129
5 8oz jars 1129
1 5gal bucket 1129 69.4 lbs
1 2gal bucket 1129 28.2 lbs.
REF013-BMI-1-09242019 1301
2 5gal buckets 43.8 lbs. + 37.4 lbs.
REF015-BMI-1-09242019 1428
2 5 gal buckets 33.2 lbs, 33.8 lbs.
REF014-PW-1-0924-19
4 125 ml containers
REF014-PW-2-092419
1 disc. metals.
REF015-PW-1-092419
4 125 ml containers
1200 Dave Lewis left to Evans to deliver ethanol / BME Labels
1250 Dave Lewis arrived back to warehouse with Ingalls AM samples
EV065-SE-1-092519 @0816 CP
1-16oz
5-8oz
1-2gal (25#)
1-5gal (72#)
EV065-SE-2-092519 @0855 CP
1-16oz
5-8oz
EV066-SE-1-092519 @0928 CP
1-16oz
5-8oz
1-2gal (27#)
1-5gal (92#)
EV069-SE-1-092519 @1049 CP
1-16oz
5-8oz
1-2gal (21#)
1-5gal (65#)

Scale: 1 square = _____

25 Sept. 2019

EV069-SE-3-092519 @10:49
1-2gal (27#)

EV065-BMI-1-092519 @0816
2-5gal (42# and 27#)

EV066-BMI-1-092519 @0928
2-5gal (36# and 39#)

EV069-BMI-1-092519 @1049
2-5gal (32# and 35#)

EV069-BMI-2-092519 @1215 cf
2-5gal (32# and 35#)

1640 Boat teams return to warehouse

- EV051-PW-2-092519 0859
  1 DISSOLVED METALS
- EV051-PW-1-092519 0859
  4 125ml containers
- EV059-PW-1-092519 1243
  4 125ml containers

EV071-BMI-1-092519 1453
2 5gal buckets 32+31#

- EV071-SE-1-092519 1453 @9/25/19 ~~32#~~ 76#
  1 ~~5~~gallon bucket 28#
  1 2gallon bucket
  1 1463
  5 803

1709 Refrigerator truck readings.
Built in Thermo: 42.0°F Standalone thermo: 4.1°c fuel tank: 7/8

1709 samples in Reefer.

1815 Dave and Sarah left warehouse

2015 Sarah and Denise arrived at warehouse to unload samples from Canada.

2050 Sarah and Denise left Kettle Falls.

NOTE: Refer to logbook entry Oct 9, 2019 for samples from Canada !! DY 10/9/19

DY 9/25/19

26 September 2019

0545 Kenjong & JD Brooks arrived at warehouse w/ Denise, Dave and Sarah to pack their Refrig. truck with Porewater, Sediment, and Bioassay samples to be delivered to AES-Kelso later this afternoon.

0635 Ken and JD left warehouse

0640 Dave and Sarah left warehouse

0645 Ingalls Boat Team Arrived

0835 Refrigerator truck temperatures: Built in Thermo: 37.9F
Stand alone Thermo: 1°C Fuel Tank: 7/4

1205 Dave Nent to Evans to meet Ingalls crew to drop off Flash drive and pick up morning samples
logging in Ingalls Samples:

4-B6-2019-BMI-1-092619 @0942 CP
2 x 5gal (30#/27#

4-B1-2019-BMI-1-092619 @ 0831
2 x 5gal (34#/32#

EV001-BMI-1-092619 @ 1103 CP
2x5 gal (42#/36#)

EV001-SE-1-092619 @ 1103 CP
1-5gal 78#
1-2gal
5-8oz
1-16oz

4-B1-2019-SE-1-092619 @0813
1-5gal 78#
1-2gal 30#
5-8oz
1-16oz

4-B6-2019-SE-1-092619 @0942
1-2gal 29#
1-5gal 74#
5-8oz
1-16oz

EV001-SE-2-092619 @1133 CP
1-16oz
5-8oz

1400 Packing SE samples from Ingalls

1443 Refrigerator truck check: Built in Thermo: 37.9F Standalone Therm: 1.4°C
fuel > 3/4

1445 Inventory samples in

Scale: 1 square = _____

26 September 2019 (cont)

1620 Yeti Team arrived

1625 Ingalls Team arrived

Ingalls sample logging:

EV052-SE-1-092619 @ 1226 CP
- 1-5gal (69#)
- 1-2gal (30#)
- 1-16oz
- 5-8oz

EV072-BMI-1-092619 @ 1449 CP
- 2-5gal (35#/39#)

EV052-BMI-1-092619 @ 1226 CP
- 2 1-5gal 60#

EV072-SE-1-092619 @ 1449 CP
- 1-5gal
- 1-2gal
- 1-16oz
- 5-8oz

EV072-SE-2-092619 @ 1520 CP
- 1-16oz
- 5-8oz

Yeti Sample logging:

EV060-PW-1-092619 @ 1358 AT
- 1-125 mL DOC
- 1-125 mL TOC
- 1-125mL Sulfate
- 1-125 mL Diss. Metals

EV060-PW-2-092619 @ 1358 AT
- 1-125mL Sulfate

EV066-PW-1-092619 @ 1143 AT
- 1-125mL TOC
- 1-125mL DOC
- 1-125mL Diss. Metals
- 1-125mL Sulfate

EV066-PW-2-092619 @ 1143 AT
- 1-125 mL TOC

EV069-PW-1-092619 @ 0916 AT
- 1-125mL Sulfate
- 1-125 mL Diss. Metal
- 1-125 ml TOC

~~EV09-PW~~ EV069-PW-2-092619 @ 0916 AT
- 1-125 mL DOC

Scale: 1 square = _____

26 September 2019 (cont)

1620 Yeti Team arrived

1625 Ingalls Team arrived

Ingalls sample logging:

EV052-SE-1-092619 @ 1226 CP
- 1-5gal (69#)
- 1-2gal (30#)
- 1-16oz
- 5-8oz

EV072-BMI-1-092619 @ 1449 CP
- 2-5gal (35#/39#)

EV052-BMI-1-092619 @ 1226 CP
- 2 1-5gal 60#

EV072-SE-1-092619 @ 1449 CP
- 1-5gal
- 1-2gal
- 1-16oz
- 5-8oz

EV072-SE-2-092619 @ 1520 CP
- 1-16oz
- 5-8oz

Yeti Sample Logging:

EV060-PW-1-092619 @ 1358 AT
- 1-125 mL DOC
- 1-125 mL TOC
- 1-125mL Sulfate
- 1-125mL Diss. Metals

EV060-PW-2-092619 @ 1358 AT
- 1-125mL Sulfate

EV066-PW-1-092619 @ 1143 AT
- 1-125mL TOC
- 1-125mL DOC
- 1-125mL Diss. Metals
- 1-125mL Sulfate

EV066-PW-2-092619 @ 1143 AT
- 1-125mL TOC

EV069-PW-1-092619 @ 0916 AT
- 1-125mL Sulfate
- 1-125mL Diss. Metal
- 1-125ml TOC

~~EV09-PW~~ EV069-PW-2-092619 @ 0916 AT
- 1-125 mL DOC

Scale: 1 square = _____

26 September 2019

1650 Stu H. went to take a Rinsate BMI (Ingalls)
EV072-BMI-4-092619 @ 1650 SH
1-125ml Total Metals

1745 Sarah returned from Canada

1747 unloading to Reefer

REF013-PW-1-092619 @ 1108 AU
~~3 bottles metals, TOC, Sulf~~ SEKK 09262019
4 bottles

REF018-PW-4-092619 ~~@ 1108 AU~~ DAS @0905
3 bottles

REF014-SE-2-092619 @ 1142 DH
6 jars SEKK 092619

REF014-SE-1-~~092019~~ 092620 19 @ 1142 DH
SEKK 09262019
6 jars
1 2 gal
1 5gal

REF014-SE-4-09262019 @ 1422 DH
1 125mL poly (metals)
2 1L amber
2 500mL amber
4 125 ml amber

REF015-SE-1-09262019 @ 0920 DH
6 jars
1 2 gal
1 5gal

REF014-BMI-1-09262019 @ 1340 DH
2 5gal buckets

REF015-SE-3-09262019 @ 0920 DH
1 2 gal bucket

1818 all warehouse crew leaving

Sarah Kuntner
09/26/19

Scale: 1 square =

27 September 2019

0815 on site
Check Refrigerator truck!
Built in Thermo: 38.6°F Standalone Thermo: 5.3C° Fuel: > 3/4

1013 Changing date nomenclature on Canada samples from "2019" to "19"

1460 Dave Lewis left to Canada to pick up samples and deliver supplies

1014 Ingalls back w/ samples

EV049-BMI-1-092719 CP C 1051
1 5 gallon bucket 15#

EV049-SE-1-092719 CP C 1051
1 16 oz jar
5 8 oz jar
no buckets

1654 EV003-PW-1-092719 AT @ 1415 Yeti
4 bottles
plus EV052-PW-3-092719 PW 10/11/19
EV052-PW-1-092719 AT @ 0933 4 bottles
4-BI-2019-PW-1-092719 AT @ 1151 4 bottles!

1735 Dave Lewis arrived from Canada w/ samples

Canada Sample Logging:
REF003-SE-1-092719 @ 0950 DH
1-16 oz
5-8 oz
1-5 gal 81.4#
1-2 gal 29.8#
REF003-BMI-1-092719 @ 0950
2 - 5 gal 43.6# / 38.4
mgb 10/11/19
REF003-BMI-2-092719 @ 0950
2-5 gal 42.2# / 37.0#
REF004-SE-1-092719 @ 1154 DH
1-16 oz
5-8 oz
1-5 gal 67#
1-2 gal 25.8#
REF004-BMI-1-092719 @ 1154 DH
2-5 gal 51.6# / 47.8#
REF004-SE-3-092719 @ 1154 DH
1-2 gal 26#

Tilton Sample Logging:
REF001-PW-1-092719 @ 13:40 AU
1-125ml TOC

Scale: 1 square =

27 September 2019

1 - 125 ml DOC
1 - 125 ml Sulfate
1 - 125 ml Diss metals
REF002 - PW - 1 - 092719
1 - 125 ml TOC
1 - 125 ml DOC
1 - 125 ml Diss. metals
1 - 125 ml Sulfate
REF001 - PW - 2 - 092719 @ 1056 AU

REF001 - PW - 1 - 092719 continued

~~@ 1056 AU~~ ms 9/27/19
@ 1056 AU

1808 Putting samples in reefer, checking Reefer temperatures
41.5 °F 7.4 °C ~~cms~~ > 3/4 tank Fuel
2030 Denise left the warehouse

ms 9/28

Scale: 1 square = _____

28 September 2019
0730 at warehouse
0746 Reefer truck readings: fuel: > 3/4
Built in Thermo: 36.3°F Stand alone: 5.1°C
1555 Urgalls crew back at warehouse CP, SH
EV022-SE-1-092819 1200
1 8oz jar total metals

EV011-SE-1-092819 1419 CP, SH
3-8oz jars T-metal, GS, Organics
1630 Reefer truck readings fuel tank: 3/4
Built in Thermo: 37.2°F stand alone thermo: 4.1°C
1710 Yeti crew in w/ Porewater Samples.

EV001-PW-1-092819 @ 1457 AT 4 bottles
EV008-PW-1-092819 @ 0943 AT 4 bottles
EV027-PW-1-092812 @ 1220 AT 4 bottles
1830 Crew arive with REF area samples
1c Cayuse Glen + Anders
~~REF002-SE-1-092819 @0857 DH~~ 9-28-19
REF001-SE-1-092819 @ 1014 DH
5-8oz jar
1-16oz jar
1 x 5 gal 65.0 lbs.
1 x 2 gal 26.2 lbs.
REF002-SE-1-092819 @ 0857 DH
5-8oz jar
1-16oz jar
1 x 5 gal 67.4 lbs.
1 x 2 gal 26.2 lbs.
REF002-BMI-092819 @ 0857 DH

2 x 5 gal 38.6 lbs / 39.8 lbs.
REF001-BMI-1-092819 @ 1014 DH
2 x 5 gal 37.6 / 38.6 lbs.
Tieton
REF003-PW1-092819 @ 1121 AU 4 bottles
REF003-PW-3-092819 @ 1121 AU 1 bottle
REF004-PW-1-092819 @ 1417 AU 4 bottles
1907 ~~28~~ 30 Dave Lewis depart warehouse with Glen + Anders
1925 Josie + Mason Depart warehouse EOD
9-28-19

Scale: 1 square = _____

29 (DZ) 30 September 2019
0900 arrive at Warehouse
Start processing samples from Canada.
Reefer truck readings fuel: 3/4
Built in Thermo: 36.6°F = Standalone thermo: 2.6°C
Dave Lewis, Josie Smith, Mason Struna
1500 Clifford Pearson & Paul Hamidi arrive at warehouse, get supplies for Canada
1515 Loading empty nitrogen tanks in mini-van.
1543 Checking COCs w/ PID samples + wrapping up coolers.
1630 Depart Warehouse EOD

9|29|19

Scale: 1 square = _____

30 September 2019

0500 Dave Lewis leave for Spokane
0711 Dave drop off porewater samples with courier in Spokane, ~~Heidi~~ leave for moses Lake to pick up nitrogen.
0750 Josie and Mason depart Hotel to p/u dry ice, gas vehicle
0810 Dry ice not available yet, will be delivered to Oxarc ~1000.
0815 Arrive back at hotel to wait for dry ice delivery.
1030 Return to Oxarc to p/u 2 coolers with 80# each dry ice
1130 Depart Oxarc, drive to Evans
1220 Meet Col Nav Support boat @ Evans CG dock.
1230 Depart Evans CG for Kettle Falls
1300 Break for lunch
1330 Complete refrig. Truck check list
Fuel Tank 3/4 full) Temps: 37.7°F, 2.0°C
1400 Daily check-in call with Denise Yee & Denyre Mcdonald
1520 Josie leaves to get samples from Canada team.
1550 Dave arrives back at Warehouse from ~~Argus~~ Airgas in Moses Lake w/5 tanks nitrogen
1645 9/30/19 Jenny Ray returns with porewater samples

Yeti
~~EV048-PW-093019 @ 1132 JR~~ MS 9/30
~~4~~ MS 9/30 EV048-PW-1-093019 @ 1132 JR
4 - Bottles
EV048-PW-2-093019 @ 1132 JR - 1 Bottles - Total metals Dupe
EV072-PW-1-093019 @ 1434 JR - 4 Bottles
EV072-PW-2-093019 @ 1434 JR - 1 Bottle - TOC Dupe

1655 Nicky moody Returns to warehouse
Ingalls
EV022-BMI-1-093019 @ 1307 NM - 24#
1720 Refrigerator Truck readings fuel: 3/4
Built in Thermo: 36.6 standalone Thermo: 2.6
1810 Dave Lewis leaving warehouse
2005 Josie Smith arrive w samples from Ref Area
~~2010~~ Area JR 9/30/19 Josie & Mason Depart Warehouse EOD

Scale: 1 square = _____

1 October 2019

0825 Josie Smith arrive warehouse. Dave Lewis and Mason Struna to Oxarc to p/u dry Ice

0840 Mason + Dave arrive warehouse with dry ice

0859 Complete refrig truck check Tank fuel 3/4 full
Temps: Built-in Thermo 37.5°F Standalone Thermo 3.6°C

0900 Morning check-in with Denise Yee + Chelsey Cook
Discuss yesterday's activity
Issues with nitrogen delivery, had to get 5 cylinders of higher grade nitrogen with SP approval
Dave will go Thursday Am to p/u 9 cylinders
May not have to p/u samples in Canada on Thursday as crews will be coming back
Dave + Mason picked up Dry ice this morning ~ 150 # ~~JMS 10-1-19~~
~~Today Oxarc will have~~ Gravity needs 150 #
Denise will forward email from Sean Hinz regarding dry ice needs
→ Call Shawn Hinz to see if they need us to deliver dry ice to Canada
Maybe bring 2 sets of cards + Thumb drives so they will also
→ 2 video cards Ingalls #2 ~~SE #2 JMS 10-1-19~~
we did not get these back from boats
Ask Nicki Mobdy where these are
→ Mason to buy 2TB hard drive + large flash Drive.
→ Josie to update COCs this morning + notify Chelsey when ready to check
Chelsey ordered more BMI buckets should have been delivered Monday ref Chelsey know if they come
→ update inventory of Kits. Check quantity of bioassay buckets. 2 gal + 5 gal buckets
Watch for package for gravity today?
→ Take Kits For PW to Canada Sey

1020 Samples from 9-30-19
REF007-BMI-1-093019 @ 1301 DH
2x 5 gal buckets 38.8 / 37.4 #
REF008-BMI-1-093019 @ 1501 DH
2x 5 gal buckets 37.0 / 35.4 #
~~REF009-SE-1-093019 @ 1141~~ JMS 10-1-19
~~5 8oz, 1-16oz, 2-2gal 38.8#/28#, 1-5 gal 65.0#~~
~~JMS 10-1-19~~

Scale: 1 square = _____
Rite in the Rain

1 October 2019 (cont)

REF008-SE-1-093019 @ 1420 DH
5-8oz, 1-16oz, ~~1 2gal 25.4/2 #~~ DHS 10-1-19
1 - 2gal 25.4 #
1 - 5gal 57.6 #

REF009-PW-1-093019 @ 1352 CP
4 bottles 1- metals, 1-sulfate, 1-TOC, 1-DOC

REF007-PW-1-093019 @ 1632 CP
4 bottles 1-metals, 1-sulfate, 1-TOC, 1-DOC

REF007-SE-1-093019 @ 1141 DH
5-8oz, 1-16oz, 1x2gal 28.8 #, 1x5gal 65 #

REF007-SE-3-093019 @ 1141 DH 1x2gal 28.0 #

1530 Dave Hose depart for Trail to p/u samples & drop off supplies

1606 Refrig. truck P/M check
Tank 3/4 full Built in Thermo. 37.7°F Stand Alone 3.9°C

1705 US Team arrive with samples

EV036-BMT-1-100119 @ 1326 1.2 Gal sed 35 # 1x5gal
cc 10-7-19

EV011-BMT-1-100119 @ 1124 2.25 gal sed ~~31.5~~ 24.5 # 1x5gal
DHS 10-1-19

EV049-PW-1-100119 @ 1506 4 bottles

EV071-PW-1-100119 @ 0944 4 bottles

1915 Dave Lewis arrive w/Samples from Ref area - put samples in refer. truck

1940 Masan & Josie Depart Warehouse EOD

10-1-19

Scale: 1 square =

2 October 2019

0730 Dave Lewis Arrive Warehouse
0805 Mason Struna Arrive warehouse
0815 Josie Smith Arrive Warehouse
0820 H+S Meeting
0830 Morning check in meeting. with Seattle Denise Yee, Sara Kintner, Chelsey Cook Mason Struna, Dave Lewis, Josie Smith
BMI Bucket delivery today
Get dry Ice
Delivery Truck should be here ~4:00
Canada Samples for today, should be sent with truck. They will have refer truck fuel:
0920 Dave Lewis taking readings in Refrigerator truck: Built in Thermo: 35.4°F Standalone thermo:
0925 Logging samples from Canada from yesterday
REF011-SE-1-100119 @1030 by DH
1 5gal bucket 67.8 lbs
1 2gal bucket 28.6 lbs
REF011-BMI-2-100119 @1315 by DH
2 5gal buckets 34.6/34.8 lbs.
REF011-BMI-1-100119 @1250 by DH
2 5gal buckets 35.6/36.0 lbs.
(P2 100119) ~~REF011~~
REF011-SE-1-100119 @1030 by DH
1 16oz jar
5 8oz jars
REF011-SE-2-100119 (DIS 10-2-19) @~~1135~~ 1153 by DH
1 16oz jar
5 8oz jars
REF005-PW-1-100119 @1544 by CP
4 containers
REF008-PW-1-100119 @1259 by CP
4 containers
REF008-PW-2-100119 @1259 by CP
1 container for TOC
REF011-SE-4-100119 @1630 by DH
9 containers
1430 JD Brooks arrived with Cider truck and Khan Jiang
1500 Qxarc deliver 2-50 gal drums of ethanol
1522 Dave Lewis depart for Canada to P/U samples.

Scale: 1 square = _____

2 October 2019

0730 Dave Lewis Arrive Warehouse
0805 Mason Struna Arrive warehouse
0815 Josie Smith Arrive Warehouse
0820 H+S Meeting
0830 Morning check in meeting. with Seattle Denise Yee, Sara Kintner, Chelsey Cook Mason Struna, Dave Lewis, Josie Smith
BMI Bucket delivery today
Get dry Ice
Delivery Truck should be here ~4:00
Canada Samples for today, should be sent with truck. They will have refer truck fuel:
0920 Dave Lewis taking readings in Refrigerator truck: Built in Thermo: 35.4°F Standalone thermo:
0925 Logging samples from Canada from yesterday
REF011-SE-1-100119 @1030 by DH
1 5gal bucket 67.8 lbs
1 2gal bucket 28.6 lbs
REF011-BMI-2-100119 @1315 by DH
2 5gal buckets 34.6/34.8 lbs.
REF011-BMI-1-100119 @1250 by DH
2 5gal buckets 35.6/36.0 lbs.
(2 100119) ~~REF011~~
REF011-SE-1-100119 @1030 by DH
1 16oz jar
5 8oz jars
REF011-SE-2-100119 @~~1135~~ 1153 by DH (DMS 10-2-19)
1 16oz jar
5 8oz jars
REF005-PW-1-100119 @1544 by CP
4 containers
REF008-PW-1-100119 @1259 by CP
4 containers
REF008-PW-2-100119 @1259 by CP
1 container for TOC
REF011-SE-4-100119 @1630 by DH
9 containers
1430 JD Brooks arrived with Cider truck and Khan Jiang
1500 @xarc deliver 2-50 gal drums of ethanol
1522 Dave Lewis depart for Canada to P/U samples.

Scale: 1 square = _____

2 October 2019

1530 Afternoon Refrig. Truck check Tank 3/4 37.5°F
Stand alone 3.8°C

1636 Transfer EPA Spl. 7 REF003-PW-3-092819 9/28/19 1121
to Brad Sample

1550 US Crew arrive warehouse
EV018-PW-1-100219 @ 1403 JR 4 Bottles
~~EV018-PW-1-100219~~ 10-2-19

JAB 10-2-19 ~~EV~~ 4-86-2019-PW-1-100219 @ 1009 JR 4 bottles
EV020-SE-1-100219 @ 0935 NM, AC 1 jar

1920 Dave Lewis back from Canada
REF009A-SE-1-100219 @0956 by DH
1 5gal bucket 65.6 lbs.
1 2gal. bucket 27.0 lbs.
REF006-SE-1-100219 @1400 by DH
1 5gal bucket 70.0 lbs ~~10-7-19~~
1 2gallon bucket 29.2 lbs.
REF009A-BMI-1-100219 @1212 by DH
1 5gal. bucket 50.6 lbs.
REF006-BMI-1-100219 @1615 by DH
1 5gal bucket 57.2 lbs.
REF011-PW-2-100219 @1129 by CP
1 container alk.
REF011-PW-1-100219 @1124 by CP
4 containers
REF012-PW-1-100219 @1537 by CP
4 containers
REF009A-SE-1-100219 @0956 by DH
1 16oz jar
5 8oz jars
REF006-SE-1-100219 @1400 by DH
1 16oz jar
5 8oz jars
Rinsate from US Boat
EV020-SE-4-100219
1 metals bottle

~~0815~~ 2015 JD + Ken depart Warehouse
JAB 10-2-19 Dave Lewis, Josie Smith, Mason Strand
Depart Warehouse EOD

10-2-19

Scale: 1 square =

3 October 2019

0830 Josie Smith, Mason Struna arr. warehouse

0837 Dave Lewis arrive warehouse

0845 H+S meeting

0900 Morning Checkin with Seattle Staff

1140 Refrigerator truck readings: Fuel < 3/4
Built in Tstemo: 36.5°F Standalone thermo: 3.7°C
Dave Lewis depart to p/u thumb Drive and Vinyl gloves

1530 Josie Smith depart for Canada to p/u samples & drop off supplies

1625 Jenny Ray in from Yeti w/ 3 PW samples
EV022-PW-1-100319 @ 1203 by JR
4 containers
~~EV0~~ EV011-PW-1-100319 @ 1431 by JR
4 containers
EV036-PW-1-100319 @ 0940 by JR
4 containers

1724 Refrigerator Truck readings Fuel: < 3/4
Built-in Tstemo: 36.5°F Standalone thermo: 5.1°C

1740 Ingalls crew in w/ samples
CB035-SE-1-100319 @0940 by NM
1 ~~8oz~~ 16oz jar
5 8oz jars
CB035-SE-2-100319 @ 0945 by NM
1 16oz jar
5 8oz jars
CB035-BMI-1-100319 @1235 by NM
1 5gal bucket 24lbs.

1915 Josie back from Canada with samples, will log tomorrow

1945 Dave, Josie, Mason depart Warehouse
EOD

10-3-19

Scale: 1 square = _____

Rite in the Rain

4 October 2019

0830 Mason Strung, Josie Smith
Arrive Warehouse, Dave Lewis en route to p/u nitrogen cylinders in Spokane
Morning Check-in call with Seattle ~~Data~~ ORS Jenny P, Denise Yee, Chelsey Cooke
TO do from meeting: Fill Tank in refer truck
→ Leave note on truck in ziplock bag with Jenny Pretare's contact info in case of emergency. Weathermans will be Checking on Truck over the weekend
→ Make sure bottle kits are stacked

1100 Refrig. Truck Temperature check Tank 2 3/4
Built in therm. 39.3°F Stand alone therm. 4.2°C
Check in samples from canada
REF005-SE-1-100319 @ 1000 DH
1-16oz jar
5-8oz jar
1-5gal 28.8# 5.4 gal
1-2gal 28.8# 2.14 gal
REF010-SE-1-100319 @ 1430 DH
1-16oz jar
5-8oz jar
1-5gal 76.2# 5.4 gal
1-2gal 30.4# 2.14 gal
REF005-BMI-1-100319 @ 1250 DH
1-5gal 51.6# 2.5 gal
REF010-BMI-1-100319 @ 1630 DH
1-5gal 39.4# 2.0 gal
REF009A-PW-1-100319 4 bottles @ 1136 CP
REF009A-PW-2-100319 @ 1136 1 bottle CP diss met
REF006-PW-1-100319 @ 1405 CP 4 bottles

1150 Dave Lewis arrive with Nitrogen gas
1600 Canada crew Arrive w/ Samples
REF010-PW-1-100419 @ 1021 by CP 4 bottles
REF012-SE-1-100419 @ 0930 by DH
1-5gallon 65.0#
1-2gallon 16.2#
REF012-BMI-1-100419 @ 1115 by DH
1-5gallon 50.0#
REF012-SE-1-100419 @ 0930 by DH, MH 6 Jars

Scale: 1 square = _____

4 October 2019

REF012-SE-1-100419 @ 0930 continued

5-8 oz Jars

1-16 oz Jar

~~E 1625 US~~ JAS 10-4-19

1625 Jennie Ray return to Warehouse w/ US porewater samples

EV024-PW-1-100419 @ 1340 JR 4 bottles

EV023-PW-1-100419 @ 1117 JR 4 bottles

1700 Ingalls Crew arrive Warehouse w used samples.

CB036-BMI-1-100419 @ 1254 NM 1-5gal 32.5#

CB036-SE-1-100419 @ 1110 NW

1-16 oz

5-8 oz

Brad Sample collect EPA Splits for Ref011 sediment & Porewater for metals REF011-SE-3-100119. 1 jar metals

REF011-PW-3-100219 1 bottle dissmetals

1745 Refrigerator truck readings: fuel 7/8

Built in Thermo: 36.8°F ~~Stand alone thermo~~: 3.4°C

1840 Dave L & Josie S. Depart Warehouse

Mason Stmna Depart Warehouse ED

MS 10/4/19

Scale: 1 square =

7/October 2019

Ration Truck Daily Check
Fuel 7/8 Tank+
Truck Thermometer Reading 37.4°F @ 1575 Hrs
Stand Alone Thermometer Reading 5.3°C @ 1590 Hrs

Jennifer [illegible]

Signed for 11-21-19
10-7-19 [illegible]

Scale: 1 square =_____

8 October 2019

AM: Took BMI sample buckets to Spokane & handed off to EcoAnalyst - Denise + Al

Sarah K arrived, Denise + Al also proceeded to K. Falls Whse

1525 - Checking Reefer truck: Fuel in 7/8 tank. Built-in thermo = 39°F

Free standing = 3.0°C,

62 BMI buckets are present containing sample

Inventorying

1640 - Jenny P. arrives from Yeti

1643 Ingalls crew arrives - Michelle, Michaela & Linda

CB046-SE-1-100819 MM @ 1048

1 X 16 oz jar

5 X 8 oz jars

CB046-BMI-1-100819

1 X 5 gal bucket - 30 #s

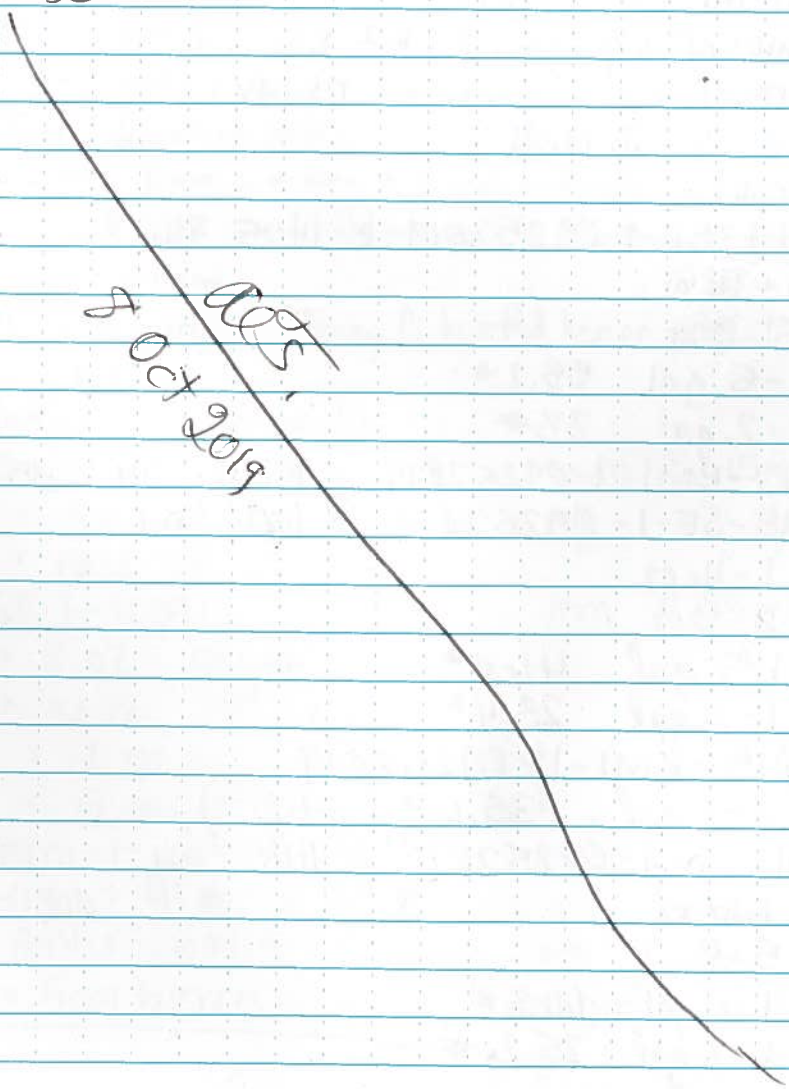
1750 - Anders U arrives from Tieton

DM050-PW-1-100819 AU @ 1124

2 X 125 ml poly bottles Metals & Sulfate

2 X 125 ml amber bottles DOC & TOC

1820 - Leaving whse



Scale: 1 square = _____

9 October 2019 UCR Ph.3 Sed Sampling

0910 - Staff arriving - Denise Y, Sarah K, Chelsey C., + Al T.
0920 - Providing intro to whse ops, HASP briefing + general discussion with Chelsey C., since first full day here.
0930 - Safety Tailgate, discussed especially dry ice storage
0955 - Refrig. truck check: Gas tank at ~ 7/8 full. Built-in thermometer at 35°F. Free-standing thermo not checked due to dry ice storage in box
1040 - Moved dry ice out of refrig. truck to remove potential concern of CO_2 venting to inside refrig box
1120 - Prepping samples for transport tomorrow. Matching contents of coolers with COCs
1210 - Receiving supplies (buckets + lids, gloves). Inventory buckets
1230 - Got BM1 samples together for turnaround & Friday's shipment
1330 - Prep COCs & sample kits
1500 - Dave L and Ken Y arrive with refrigerator truck
1530 - Chelsey transcribing notes from Canada logbook 09-25-19

25 September 2019
1547 Denise Y leaves for Castlegar, Canada to pick up samples
1730 Need to print more PW forms
Tilton has "B" SD card
Cayuse has "A" SD card
Tilton gave me "3" SD card
TOOK pictures of logbooks on #3 SD card
Cayuse "Gravity video" San Disk 128 GB
Cayuse gave "6" SD cards
Cayuse samples:

REF017-SE-1-09252019 @ 1405 DH
1-16 oz
5-8 oz
1-5 gal 58.2#
1-2 gal 33#

REF017-BM1-1-09252019 @ 1505 DH 35.2#

REF018-SE-1-09252019 @ 1007 DH
1-16 oz
5-8 oz
1-5 gal 46.4#
1-2 gal 23.4#

REF018-BM1-1-09252019
2-5 gal (35.6# / 34.8#)

REF016-SE-1-09252019 @ 1140 DH
1-16 oz
5-8 oz
1-5 gal 66.8#
1-2 gal 25.2#

Scale: 1 square = _____

9. October 2019 UCR P3 Sed Samples

REF0116-BMI-1-092520 19 @ 1307 DH
2-5 gal (38.2# / 36.8#)

1800 Log in Tiffon Samples
REF0116-PW-1-092519 @ 1028 AM
4-125 mL
REF0117-PW-1-092519 @ 1220 AM
4-125 mL
REF0118-PW-1-092519 @ 1442 AM
4-125 mL
REF0118-PW-3-092519 @ 1442
1-125 mL metals-dissolved
(DO NOT SEND TO LAB) EPA Split

END 25 September 2019 Transcription

Samples receiving from vessels on 9 Oct 2019
1555 - Jenny P. arrives from Yeti
EV0115-PW-1-100919 - 4 bottles: JP @ 1024
1 X 125 ml Metals
1 X 125ml DOC
1 X 125ml TOC
1 X 125ml. Sulfate
EV0115-PW-3-100919 - 1 bottle: JP @ 1024
1 X 125 ml Dissolved metals
1515 (entry from earlier) Dave L. + Ken Y. arrive to transport samples to lab tomorrow
Dave + Ken help us load BMI samples for transport to Eco Analyst tomorrow
1630 - Forms processing, restocking.
Kayla with Jacobs arrives, Jenny P. briefed her on project
1655 - Prep Bioassay Kits
1740 - Ingalls staff arrives with samples
CB018-SE-2-100919. NM @ 1546
5 x 8 oz sed. jars
1 x 16 oz Sed jars
CB018-SE-1-100919 mm @ 1540
5 x 8 oz sed jar
1 x 16 oz sed jar
10100919SCKK 1 x 2 gallon bucket 28#
~~CB~~ 1 x 5 gallon bucket 78#
CB0000-BMI-1-100919 mm @ 1012
Weights: 41# + 39# 2 x 5gal buckets
CB012-BMI-1-100919 mm @ 1136
2 x 5gal buckets weights: 42# + 51#

10 09 19 SCKK

Rite in the Rain

9 Oct. 2019 UCR P3 Sed Sampling

CB006-SE-1-100919 mm @ 1012
- 5 x 8 oz jar
- 1 x 16 oz jar
- 1 x 2 gal bucket 27#
- 1 x 5 gal bucket 55#

CB007-BMI-1-100919 mm @ 1336
- 1 5 gal bucket weight: 42#

CB012-SE-1-100919 mm @ 1136
- 5 x 8 oz jar
- 1 x 16 oz jar
- 1 x 2 gal bucket 29#
- 1 x 5 gal bucket 69#

CB007-SE-1-100919 mm @ 1336
- 1 x 16 oz jar
- 5 x 8 oz jar
- 1 x 2 gal bucket [no 5 gal] 16#

1800 Cayuse staff come in with samples
~~B~~ "10-9-19

DM018-SE-1-100919 DH @ 1530
- 1 x 16 oz jar
- 5 x 8 oz jars
- 1 x 2 gal bucket 31.6#
- 1 x 5 gal bucket 77.4#

DM002-SE-1-100919 DH @ 1255
- 1 x 16 oz jar
- 5 x 8 oz jars
- 1 x 2 gal bucket 28.8#
- 1 x 5 gal bucket 75.4#

DM013-BMI-1-100919 DH @ 1530
- 1 5 gal bucket 60.4#

DM002-BMI-1-100919 DH @ 1255
- 1 5 gal bucket 63.6#

1815 Tilton crew came in with Samples

DM046-PW-1-100919 AH @ 1202
- 1 x 125 mL Diss metals
- 1 x 125 mL Amber DOC
- 1 x 125 mL Amber TOC
- 1 x 125 mL Sulfate

1830 Update COCs, prep samples
1850 - Final check + pack of sed + bioassay samples 1920 - Parking in truck for tomorrow
1930 - Leaving

ALS.

Scale: 1 square =

UCR 10 Oct 2019 P3 Sed Sampling

0920 - Denise Y + AIT present onsite. Sarah K. + Chelsey C. are in transit bringing BMI samples to EcoAnalyst lab in Moscow ID

0935 - Conducted safety tailgate meeting. Discussed plan for today

0955 - Checking refrigerator truck: Fuel is at > 3/4 tank
Built-in thermometer indicates 34.5°F, which is less than 35.6° lower limit. This is likely due to low temperature outside. While writing this, ~~Jen~~ DAS 10/10 refrigeration unit started, and temperature dropped lower (to 31.1°F). Confirmed unit set to 37°F. Refrig. unit shut off and temperature is rising.
~~Glass~~ DAS 10/10 Stand-alone thermometer inside truck box = 1.7°F
Only items inside refrig truck are BMI samples, no Chem or Bioassay

1010 - ~~Left~~ roll-up door to refrig area open for a few minutes, and temp is at 37.5°F per built-in thermo
We discussed this potential yesterday + can consider possibility of icing samples + turning refrigeration off to prevent freezing, while outdoor ambient temperatures are dropping to below freezing.

1015 - Loading some spare empty coolers into refrig truck

1027 - Built-in thermo = 35.7°F // Stand alone = 1.7. Communicated to Jenny P. + Dave H.

1055 - Assembling sed kits

1135 Checked refrig truck - refrig unit seems to be constantly running. Turned refrig unit off/on cycled.
Built-in thermo = 33.7 // Stand-alone = 1.7

1140 - Refrig unit cycled itself off
Assembling sed kits, data entry

1330 - Checked truck fridge temps: Built-in = 40.2°F // Stand-alone = 2.4°C - both in good range

1345 - Prep for PW kit assembly

1445 - Moving empty BMI buckets to refrig truck for storage.
Load BMI samples to vehicle

1550 - Cleaning whse

1605 - Sarah + Chelsey return from sample transport trip to EcoAnalyst

1640 - ~~Mov~~ DAS 10/10/19 Checking refrig truck: Fuel @ > 3/4 tank
Built-in thermo = 40.4°F // Stand-alone thermo = 2.6 °C

1655 - Loaded BMI samples to 2nd vehicle for transport tomorrow

1709 - Ingalls Team arrived.

JS 002-SE-1-101019	mm	@	1234
5 x 8 oz jar			
1 x 16 oz jar			
1 x 2 gal bucket	18 #		
1 x 5 gal bucket	35 #		
JS 002-BMI-1-101019	mm	@	1234
1 x 5 gal bucket	38 #		
JS 001-BMI-1-101019	mm	@	1022
1 x 5 gal bucket	52 #		

101019 SECK

Scale: 1 square = _____

10 October 2019 UCR P3SS

JS001-SE-1-101019 mm @ 1022
5 x 8 oz jar
1 x 14 oz jar
1 x 2 gal bucket 28 #
1 x 5 gal bucket 36 #

JS001-SE-3-101019 mm @ 1027
1 2 gal bucket — HOLD THIS SAMPLE!
23 #

1140 Tieton crew in with samples
DM045-PW-1-101019 AU 1354
4 x 125 mL
DM002-PW-1-101019 AU 1155
4 x 125 mL

1750 Cayuse crew in with samples
DM016-SE-1-101019 DH @ 1035
5X8oz jar
1X16ozjar
1 x 2 gal bucket 29.6 H
1 x 5 gal bucket 79.4 H

DM015-SE-1-101019 DH @ 1445
5 x 8oz jar
1 x 16oz jar
1 x 2 gal 30.8 H
1 x 5 gal 75.0 H

DM015-BM1-1-101019 DH C 1545
1 x 5 gal 47.4 H

DM015-BM1-2-101019 DH C 1611
1 x 5 gal 49.6 #

DM016-bm1-1-101019 ~~DH~~ DH @ 1400
1 x 5 gal 59.4 H SEKIC 101019

DM016-SE-2-101019 DH @ 1300
1 x 16 oz
5 x 8 oz

1755 Yeti crew arrives w samples
CB018-PW-1-101019 JP @ 1535 ~~JP @ 1100~~ SEKIC 101019
4 x 125ml polys
CB006-PW-1-101019 JP @ 1100
4 x 125 ml polys

CB012-PW-1-101019 JP @ 1323
4 x 125 ml polys

1900 - leaving Sarah EK Kuntner October 10, 2019

Scale: 1 square =

11 Oct 2019 UCR P3 Sed Sampling

1725 Ingalls crew arrives

CB016-SE-1-101119 mm 1422
- 5 8 oz jars
- 1 16 oz jars
- 1 2 gal 10#
- 1 5 gal 15#

CB016-BM1-1-101119 mm @ 1422
- 1 5 gal 28#

CB047-SE-1-101119 mm @ 1124
- 5 8 oz jars
- 1 16 oz jar
- 1 2 gal 18#
- 1 5 gal 21#

CB047-BM1-1-101119 mm @ 1124
- 1 5 gal ~~28#~~ SEE 101119 26#

CB039-SE-1-101119 mm @ 0911
- 5 8 oz jar
- 1 16 oz jar
- 1 2 gal bucket 12#

CB018-BM1-1-101119 mm @ 1007
- 1 5 gal bucket 34#

1737 Yeti arrives

CB007-PW-1-101119 JP @ 1547
- 4 125 mL bottles, no sulfide

JS001-PW-2-101119 JP @ 1014
- 1 dissolved metals bottle

JS001-PW-1-101119 JP @ 1014
- 4 125 mL bottles, no sulfide

JS002-PW-1-101119 JP @ 1311
- 4 125 mL bottles, no sulfide

1740 Teton crew arrives

DM044-PW-2-101119 AU @ 1232
- 1 dissolved metals bottle

DM044-PW-1-101119 AU @ 1132
- 4 125 mL bottles, no sulfide

DM061-PW-1-101119 AU @ 1522
- 4 125mL bottles, no sulfide

1804 additional Ingalls sampled located on truck

CB047-SE-3-101119 mm @ 1124
- 1 2 gal bucket 15#

1825 - Whse crew leaving

Scale: 1 square = _____

12 Oct 2019 UCR P3 Sed Sampling

0910 Denise Y + Al T. arrive @ Whse.

0920 - Checking refrig truck: Full @ > 3/4 tank
Built-in thermo. = 35.9 °F // Free-standing thermo = 2.6 °C.

0935 - Sorting BMI buckets to groups of < 440 #s

1015 - Filing completed forms

1020 - Building sample kits: PW, Sed Kits, Bioassay

1215 - Truck Built-in = 36.5 °F // Free standing thermo = 3.7 °C

1330 - Sample container inventory

1410 - BMI " " Sent bottle inventory to Chelsey

1435 - Filling ethanol dispensing jugs

1550 - Yeti crew arrives - Sarah K.

CB047-PW-1-101219 JP @ 1048
2 X 125ml poly bottles
2 X 125ml amber bottles

CB016-PW-1-101219 SK @ 1331
2 X 125ml poly bottles
2 X 125ml amber bottles

CB016-PW-4-101219 JP+SK @ 1225 Rinsate for Driveframe
1 X 125ml poly - Total metals
1 X 125ml poly - Sulfate
1 X 125ml amber - ~~Aroclors~~ TOC

1715 Ingalls and Cayuse Team arrived @ warehouse
Ingalls Sample logging

CB009-SE-1-101219 mm @ 1123
1 - 16oz
5 - 8oz
1 - 2gal. bucket · 12.5 #

CB009-BMI-1-101219 mm @ 1123
1 - 5gal. 35#

CB010-SE-1-101219 MM @ 1425
1 - 16oz
5 - 8oz
1 - 5gal. bucket 40#
~~1~~ 2 - 2gal. buckets 12#

CB010-SE-1-101219 ~~005~~ BMI-1-101219 @ 1425
2 ~~1~~ - BMI 5 gal. bucket 45# / 30#

CB039-BMI-1-101219 @ 0952
1 - 5gal. bucket 22#

CB010-SE-4-101219 LH @ 1622
1 - 125ml poly

Rite in the Rain

UCR 10/11/2019 Phase 3 Sediment Sampling

0930 Denise Yee & Sarah Kantner arrive @ warehouse
morning tasks:
- COCs
- Scanning & filing yesterday's paperwork
- H&S meeting

Al Thatcher & Chelsey Cook departed hotel @ 9 A.M to bring 24 BMI buckets to Teck's office in Spokane

1115 Check Reefer temp
Cab: 38.1 F
trailer: 1.8 C

1135 SEKK brings ~~empty~~ 10117 full nitrogen tank to Chinamen's boat launch for Yeti crew

1240 SEKK Returns with 2 empty nitrogen tanks from Yeti

1425 Al Thatcher returns from BMI Bucket Delivery in Spokane
Filling forms, building PW kits

1615 - Check Refrig truck: Fuel > 3/4 tank
Built-in thermo = 39.2°F // Stand-alone = 3.1 °C

1625 - Gathering BMI buckets for next shipment

1705 - Cayuse crew arrives

DM008-SE-1-101119 @ 1320 DH
1-1602
5-802
1-5 gal 81#
1-2 gal 32#

DM008-BMI-1-101119 @ 1520 DH
1-5gal 39.2#

DM010-SE-1-101119 @ 1028 DH
1-1602
5-802
1-5gal 78.2#
1-2gal 29.2#

DM008-SE-3-101119 @ 1320 DH (2-gal EPA Split)
1-2 gal 33.6#

DM010-BMI-1-101119 @ 1125 DH
1-5gal 54.2#

DM010-SE-3-101119 @ 1028 DH (EPA Split)
1-802

Scale: 1 square = _____

12 Oct 2019 UCR P3 Sed Sampling

Cayuse samples logging:

DM025-SE-1-101219 DH @ 1448
- 1-16oz jar
- 5-8oz jars
- 1-5gal. bucket bioassay 72.2#
- 1-2gal. buckets " 28.8# DMS 10/12/19

DM025-SE-4-101219 DH @ 1550
- 1-125ml poly bottle Total Metals

DM025-BMI-1-101219 @ 1520
- 1-5gal. bucket 61.8#

DM061-SE-1-101219 DH @ 1145
- 3-8 DMS 10/12/19 8oz jars
- 1-16oz jar
- 1-2gal bioassay 11.4#

1730 - Kaila with Jacobs arrives and picks up EPA Split sample from DM008 collected 11Oct

CB010-SE-3-101219 @ 1425 (EPA Split)
- 1-2 gal 12#

DM025-SE-3-101219 (EPA Split)
- 1-2gal 28.8#

1810 - Tipton crew arrives - Anders V.

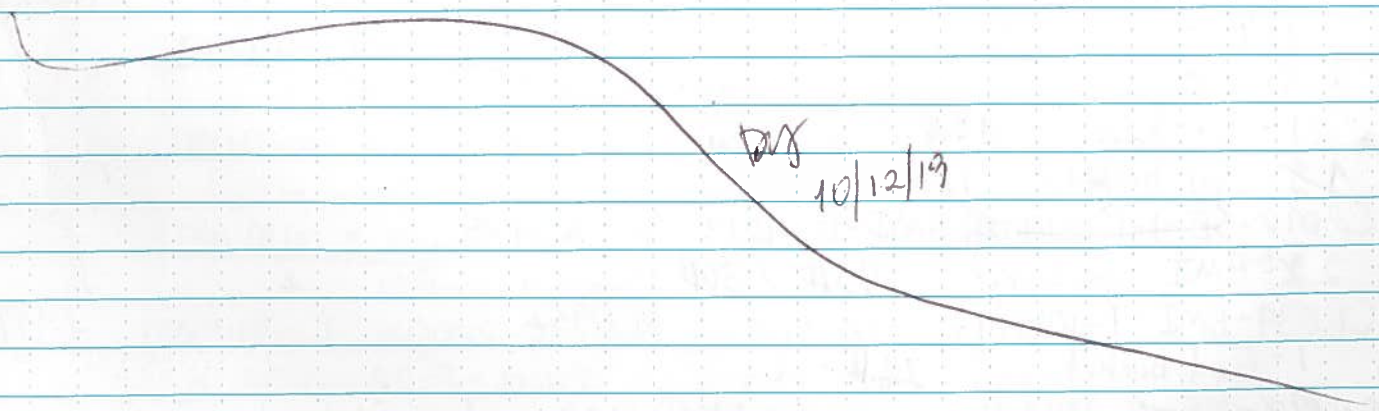
DM027-PW-1-101219 AV @ 1130
- 2-125ml poly bottles
- 2-125ml amber "

DM019-PW-1-101219 AV @ 1600
- 2-125ml poly bottles
- 2-125ml amber "

1850 - Porewater COC QC

1910 leaving Kettle Falls

DMS 10/12/19



Scale: 1 square =

October 14 2019

0915 Josie Smith + Denise Yee arrive Warehouse

0920 H+S meeting weather 38°F Foggy

0927 check refer/Truck temps
Fuel = 3/4 tank Built in Thermo = 36.3°F
Free standing thermo = 2.9°F

1018 Anders Utter arrive warehouse from dropping off porewater samples.

1530 BMI Bucket sorting and loading into vehicles for Delivery to Eco Analyst tomorrow in Moscow, ID
Sediment Sample packaging and prepare for sample pick up for Wednesday evening.

1717 Yeti "crew" return with PW samples
CB010-PW-1-101419 ~~1#~~ 1235 SK
1-DOC, 1-TOC, 1-diss Metals 1-sulfate
CB010-PW-2-101419 1235 SK
1-DOC
CB009-PW-1-101419 1575 SK
1-DOC, 1-TOC, 1-diss metals, 1-Sulfat
CB039-PW-1-101419 1011 SK
1-DOC, 1-TOC, 1-diss metals, 1-Sulfate
DM019-SE-1-101419 1328 ~~SE~~ SH
5-8oz / 1-5gal 74#
1-16oz / 1-2gal 29.2#
DM020-SE-1-101419 1125 SH
5-8oz / 1x5gal ~~66.5#~~ 68.5# by 10/15/19
1-16oz / 1x2gal 30.2#
DM027-SE-1-101419 1500 SH
5-8oz / 1-5gal 72#
1-16oz / 1-2gal 31.6#
CB028-SE-1-101419 1019 MM
5-8oz / 1-2gal 29#
1-16oz / 1-5gal 66.5#
CB021-SE-1-101419 1237 MM
5-8oz / 1x5gal 73#
1-16oz / 1x2gal 23#
CB024-SE1-101419 1357 MM
5-8oz / 1-2gal 24#
1-16oz / 1-5gal 62#
CB027-SE-1-101419 1530 MM
5-8oz, 1-16oz, 1-2gal ~~23#~~ 24# by 10/15/19, 1-5gal 65#

Rite in the Rain

October 14 2019 (cont)

DM020-PW-1-101419 1507 LH
1-TOC, 1-DOC, 1-diss metals, 1-sulfate

DM025-PW-1-101419 1232 LH
1-TOC, 1-DOC, 1-diss metals, 1-sulfate

DM019-BMI-1-101419 1414 SH
2 x 5 gal 41.8#/33#

DM020-BMI-1-101419 1227 SH
1 x 5 gal 45.6#

DM027-BMI-1-101419 1535 SH
2 x 5 gal 48#/34.2#

CB020-BMI-1-101419 1115 MM
~~2 x 5 gal 61.0#/46#~~ 1 x 5 gal 46#

CB20-BMI-2-101419 1144 MM
61# 1 x 5 gal

CB021-BMI-1-101419 1328 MM
2 x 5 gal 31#/46.5#

CB024-BMI-1-101419 1440 MM
1 x 5 gal 42#

1840 check refer Truck Fuel Tank 3/4 full
Built in Thermo = 36.6°F Free standing thermo 4.2°C
1850 Anders, Denise, Josie Depart Warehouse EOD

10-14-19

Oct 15, 2019

0715 Josie Smith / Anders Utter drove to EloAnalyst Labs (Moscow, ID) to deliver BMI buckets.

0900 Denise Yee arrived at warehouse Kettle Falls.

0945 Check Temp in Reefer Truck: Fuel 3/4 TANK
Built-in Temp: 36.5°F Stand-Alone Temp: 2.6°C

1130 Denise Yee Meeting Cayuse to bring up Ethanol to Northport

1330 Denise Yee, Shannon Couch, Andrew Paynter arrived at Warehouse in Kettle Falls.
Shannon and Andrew performed Safety checks around warehouse.
Shannon / Andrew will be bring 1-2gal and 2-2gal lids to Inga#1s crew.

1600 Josie Smith & Anders Utter arrive warehouse

1615 Sarah K arrive w yeti PW samples
CB020-PW-1-101519 0959 SK
1-TOC, 1-DOC, 1-diss metals, 1-sulfate,
CB024-PW-1-101519 1402 SK
1-TOC, 1-DOC, 1-diss metals, 1-sulfate
CB027-PW-1-101519 1214 SK
1-TOC, 1-DOC, 1-diss metals, 1-sulfate
CB014-SE-1-101519 1312 mm
5-8oz 1 x 2gal 21.5#
1-16oz 1 x 5gal 65#
CB014-SE-2-101519 1317 mm
5-8oz
1-16oz
CB029-SE-1-101519 0940 mm
5-8oz 1 x 2gal 15#
1-16oz 1 x 5gal 32.5#
CB044-SE-1-101519 1149 mm
5-8oz 1 x 2gal 22#
1-16oz 1 x 5gal 60#
3-R7-2019-SE-1-101519 1431 mm
5-8oz 1 x 2gal 17.5#
1-16oz 1 x 5gal 39.5#
CB014-SE-3-~~101519~~ 101519 1312 mm
1 x 2gal 22# JDS 10-6-19
CB029-SE-3-101519 0940 mm
1 x 2gal 15#

Scale: 1 square = _____

October 15, 2019

1-B5-NRT-PW-1-101519 1132 LH
1-TOC, 1-DOC, 1-diss metals, 1-Sulfate
1-B6-NRT-PW-1-101519 1337 LH
1-TOC, 1-DOC, 1-diss metals, 1-Sulfate
~~1-B6-NRT~~ JMS 10-15-19
DM024-PW-1-101519 1525 LH
1-TOC, 1-DOC, 1-diss metals, 1-Sulfate
DM024-PW-2-101519 1525 LH
1-TOC, 1-DOC
DM007-SE-1-101519 1252 SH
5-8oz 1 x 2 gal 27#
1-16oz 1 x 5gal 67.2#
DM024-SE-1-101519 0950 SH
5-8oz 1 x 2 gal 29.8#
1-16oz 1 x 5 gal 67.8#
DM024-SE-2-101519 1005 SH
5-8oz ~~1 x 2 gal~~ JMS 10-16-19
1-16oz ~~1 x 5g~~
1-B5-NRT-SE-1-101519 1528 SH
5-8oz 1 x 2 gal 16.6#
1-16oz 1 x 5 gal 45.8#

1820 Check Reefer truck temps: Bluefin temp: 38.8°F Stand-Alone: 4.9°C

DM024-SE-3-101519 0950 SH
1 x 2 gal 29.2#
CB014-BMI-1-101519 1358 mm
1 x 5gal 49#
CB029-BMI-1-101519 ~~1050~~ 1024 mm ~~2~~ JMS x 5gal ~~39/49#~~
CB029-BMI-2-101519 1050 JMS mm ~~2~~ x 5gal 39# ~~49#~~ JMS
CB044-BMI-1-101519 1228 mm 1 x 5gal 57#
~~SK~~ CB027-BMI-1-101519 0852 mm 2x5gal 36#/36#
1B5-NRT-BMI-1-101519 1607 SH 2x5gal 48.2#/48#
DM007-BMI-1-101519 1343 SH 2x5gal 54.6#/53.8#
DM024-BMI-1-101519 1105 SH 2x5gal 56#/56.4#
DM024-BMI-2-101519 1140 SH 2x5gal 48.6#/52.6#
3-RT-2019-BMI-1-101519 1575 mm 4x5gal 23.5#

1850 Depart warehouse EOD

10-15-19

October 16, 2019

0830 Denise Yee arrived at the Warehouse, unloaded Distilled water / Supplies.

0915 Anders Utter arrive warehouse

0930 Josie Smith arrive warehouse

0945 H+S meeting

0955 check temps on refridgerator truck
Built in thermo = 41.5 Stand alone thermo = 5.4°C
Fuel Tank = 3/4

0950 Kris McCaig + Rob Orr arrive warehouse
Denise Yee depart warehouse

1100 Kris McCaig + Rob Orr depart warehouse

1115 Anders Utter depart warehouse for Northport to take ethanol to PW boat.

1530 Reefer Truck for Sample Delivery Arrived: Michelle Brownell and JD Brooks

1545 Ingalls Boat Crew arrived

CB002-SE-1-101619 @ 1353 mm
5-80z
1-16oz
1-2gal 22#
1-5gal 54#

CB002-BMI-1-101619 @ 1431 mm
1-5gal 58#

3-R8-2019-SE-1-101619 @ 0954 mm
1-16oz
5-80z
1-2gal 17#
1-5gal 26#

3-R8-2019-BMI-1-101619 13# @ 1116 mm
1-5gal

DM059-PW-1-101619 1400 LH
1-TOC, 1-DOC, 1-diss metals, 1-Sulfate

DM057-PW-1-101619 1057 LH
1-TOC, 1-DOC, 1-diss metals, 1-Sulfate

DM007-PW-2-101619 1057 LH
1-~~diss metals~~ ORB 10-18-19 Sulfate

1715 Yeti boat crew arrived

CB002-PW-1-101619 @ 1539 SK
1-125ml DOC, 1-125ml TOC, 1-125ml Diss Metals, 1-125ml Sulfate

continued on next pg

Scale: 1 square =

October 16 2019

CB044-PW-1-101619 @ 1350 SK
1-125mL Diss Met.
1-125mL Sulfate
1-125mL DOC
1-125mL TOC

CB029-PW-1-101619 @ 1130 SK
1-125mL TOC
1-125mL DOC
1-125mL Sulfate
1-125mL Diss Met

CB021-PW-1-101619 @ 0921 SK
1-125mL DOC
1-125mL TOC
1-125mL Sulfate
1-125mL Diss. Met.

CB021-PW-2-101619 @ 0921 SK
1-125mL TOC

1-B6-NRT-BMI-1-101619 @0942 SH 2x5gal 52.6 ~~70.8~~ #/50.2#
DM061-BMI-1-101619 @ 1035 SH 2x5gal 44.4# / ~~44.4#~~ 44# DY
DM044-BMI-1-101619 @ 1615 SH 1x5gal 42.4# 44#

1808 Cayuse crew arrived

1-B6-NRT-SE-1-101619 @ 0912 SH
1-1602
5-802
1-5gal 70.8#
1-2gal 28.4#

~~DM044 DM004-BMI-1-101619 @ 1615 SH~~ DY 10/16/19
~~1-5gal 42.4#~~

~~DM061-BMI-1-101619 @ 1035 SH~~ DY 10/16/19
~~2-5gal 44.4# / 44#~~

~~1-B6-NRT-BMI-1-101619 @ 0942 SH~~ DY 10/16/19
~~2-5gal 50.2# / 52.6#~~

DY 10/16/19 ~~DM00~~ DM044-SE-1-101619 @ 1625 SH
1-1602
5-802

1840 Leaving Kettle Falls

DY 10/16/19

October FT 17, 2019

0830 Anders JAS Utter + Denise Yee arrive warehouse

0845 Josie Smith arrive warehouse

0850 H+S meeting

0855 Anders Utter depart to pu dry ice ~~+ transport~~ + JAS 10-17-19

0940 Anders Utter arrive warehouse w/ dry ice

0945 Anders Utter depart for China Bend to take dry ice and other supplies to boats

1435 Check refrig. truck temp + fuel tank fuel = 3/4 tank Built in thermo = 40.4 standalone thermo =

1600 Tony Palmieri arrived w/ 300 lbs of dry ice

1645 Tilton Boat crew arrived

DM063-PW-1-101719 @ 1152 LH 1-TOC, 1-DOC, 1-diss met, 1-sulfate

1650 Yeti Boat crew arrived

JAS 10-17-19 ~~DM064-PW-1-101719~~ DM064-PW-1-101719 @ 1413 LH

1-TOC, 1-DOC, 1-diss metals, 1-sulfate

CB046-PW-1-101719 @ 1451 SK

1-TOC, 1-DOC, 1-diss met, 1-sulfate

CB046-PW-2-101719 @ 1451 SK 1-sulfate

CB035-PW-1-101719 @ 1241 SK 1-TOC, 1-DOC, 1-diss met, 1-Sulfate

Check refrig. truck temp + fuel tank fuel = 3/4 tank Built in thermo = 36.8 °F Standalone thermo = 4.8 °C

3-BT-2019-PW-1-101719 @ 1035 SK 4 bottles

1700 Ingalls Boat crew arrived

CB056-SE-1-101719 @ 1146 MM

1-16 oz

5-8 oz

CB056-BMI-1-101719 @ 1404 MM 1X5 gal 44lbs

1800 Cayuse Boat Crew arrived

DM039-SE-1-101719 @ ~~1410~~ 1410 SH

3-8oz TOC, Metals, Grain size, Org. Crew

DM039-BMI-1-101719 @ 1445 SH

1-5gal 28#

1835 Josie Smith, Denise Yee Depart Warehouse

10-17-19

Scale: 1 square = _____

October 18, 2019

1000 Josie Smith arrive warehouse
1050 Check Refrigerator Truck Fuel Tank = 3/4
Built in Thermo. = 41.7°F Stand alone Thermo = 6.2°C
1200 Denise Lee arrived @ Warehouse
1400 Josie Smith left to pick up dry ice @ Or Arc.
1647 Ingalls crew arrive with sediment samples
CB005-SE-1-101819 @ 0858 MM
5-8oz
1-16oz
CB040-SE-1-101819 @ 1204 MM
5-8oz
1-16oz
CB005-SE-4-101819 @ 1115 MM
1- Total metals
CB040-BMI-1-101819 @ 1415 MM 20# 1x5 gal
PM
1715 CB005-BMI-1-101819 @ 1037 MM 16# 1x5 gal
1515 Yeti Crew arrive warehouse w PW Samples
CB036-PW-1-101819 @ 0949 SK
4-125ml TOC, DOC, Diss. Mets, Sulfate
CB056-PW-1-101819 @ 1201 SK
4-125ml TOC, DOC, Diss metals, Sulfate
CB055-PW-1-101819 @ 1407 SK
4-125ml TOC, DOC, Diss. Metals, Sulfate
1733 Cayuse and Tieton Boat crews arrived
DM039-PW-1-101819 @ 1109 LH
4-125ml TOC, DOC, Diss. Met, Sulfate
DM043-PW-1-101819 @ 1320 LH
4-125ml TOC, DOC, Diss Metal, Sulfate
DM030-PW-1-101819 @ 1527 LH
4-125ml TOC, DOC, Diss. Mets, Sulfate
Cayuse Samples:
DM047-SE-1-101819 @ 1334 AP/SH
4-8oz
1-16oz
DM036-SE-1-101819 @ 0952 AP/SH
3-8oz
DM047-BMI-1-101819 @ 1434 AP/SH 1x5gal 53#
DM036-BMI-1-101819 @ 1236 AP/SH 1x5gal 6.8#
1753 Check Refer truck Temps Fuel Tank = 3/4
Built in Thermo = 40.8°F Stand alone Thermo = 6.0°C
1810 Josie + Denise depart Warehouse EOD

Scale: 1 square = _____

October 19, 2019

0800 Josie Smith arrive warehouse
0810 Check Refer Truck Fuel Tank = 3/4
Built in Thermo = 39.7 °F Stand alone thermo = 5.6 °C
Start packing up excess Lab container
~~+3~~ DM 10-19-19 For shipment back to Lab
1350 Cayuse team return to warehouse with sed samples.
DM038-SE-1-101919 @ 0930 AP/SH 5-8oz 1-16oz
~~DM038-SE-BMI~~ DM 10-19-19
DM038-BMI-4-101919 @ 1210 AP/SH 1-125 mL
DM038-BMI-1-101919 @ 1111 AP/SH 1-5gal 29.2#
1535 Tieton Crew (Linda Howard) return to warehouse with pore water samples.
DM047-PW-1-101919 @ 1309 LH
1-TOC, 1-DOC, 1-diss metals, 1-sulfate
1600 Josie Smith Depart Warehouse
1711 Yeti Boat Crew arrived
Yeti Samples:
3-R8-2019-PW-1-101919 @1456 SK
4-125ml DOC, TOC, Diss. Met., Sulfate
CB005-PW-1-101919 @ 1203 SK
1-125ml - DOC
1-125ml - TOC
1-125ml - Diss. Met.
1-125ml - Sulfate
CB014-PW-1-101919 @ 0930 SK
1-125ml - DOC
1-125ml - TOC
1-125ml - Diss Met.
1-125ml - Sulfate
1730 Check Reefer Temp: Built-in Temp: 39.3° F Stand-Alone Thermo - 4.4°C
3/4 Full of Fuel
1815 left Warehouse

DM 10-19-19

Scale: 1 square = _____

Rite in the Rain

October 19, 2019

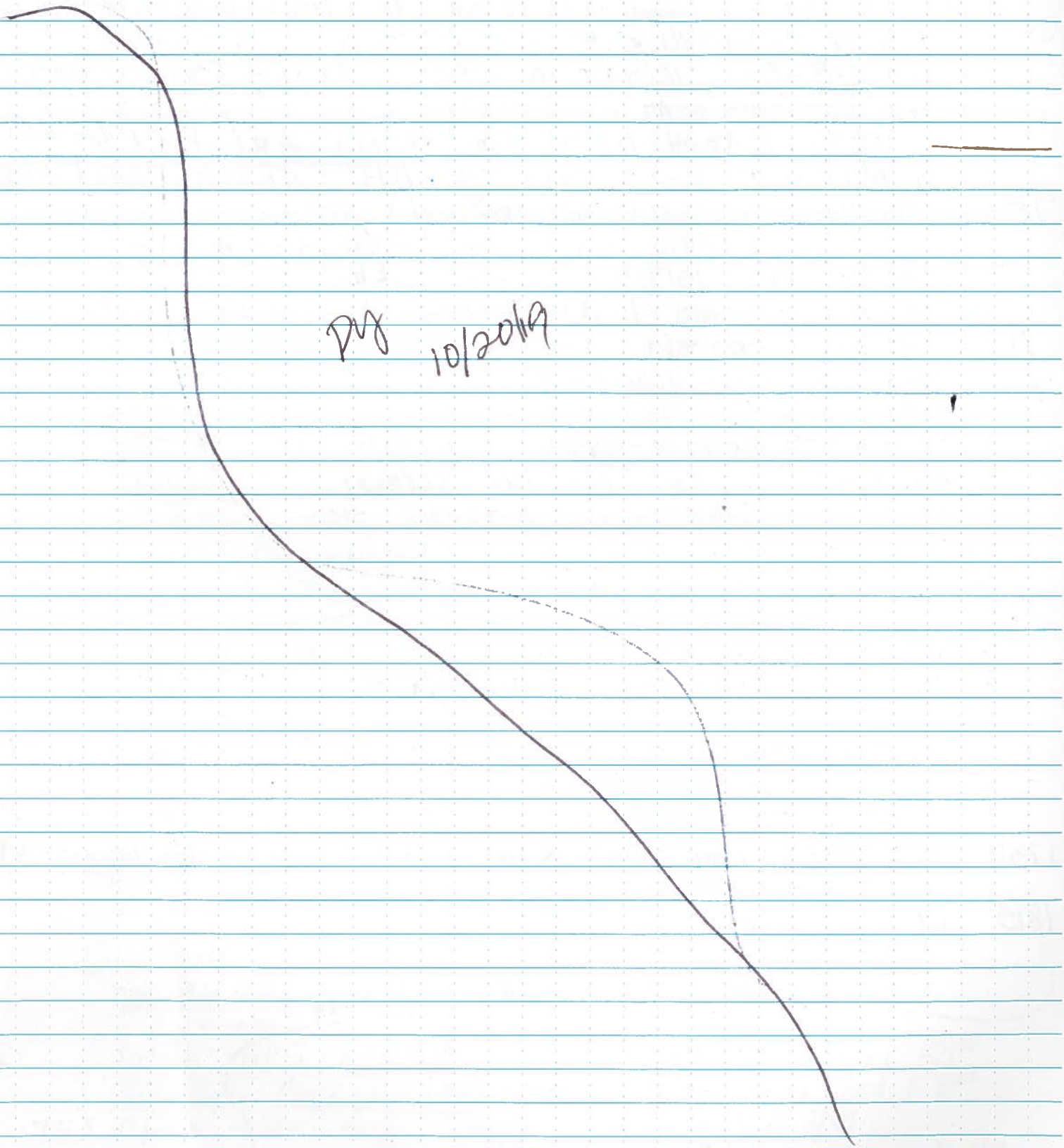
0800 Josie Smith arrive warehouse
0810 Check Refer Truck Fuel Tank = 3/4
Built in Thermo = 39.7 °F Stand alone thermo = 5.6 °C
Start packing up excess Lab container
~~+3~~ DM 10-19-19 For shipment back to Lab
1350 Cayuse team return to warehouse with sed samples.
DM038-SE-1-101919 @ 0930 AP/SH 5-8oz 1-16oz
~~DM038-SE-BMI~~ DM 10-19-19
DM038-BMI-4-101919 @ 1210 AP/SH 1-125 mL
DM038-BMI-1-101919 @ 1111 AP/SH 1-5gal 29.2#
1535 Tieton Crew (Linda Howard) return to warehouse with pore water samples.
DM047-PW-1-101919 @ 1309 LH
1-TOC, 1-DOC, 1-diss metals, 1-sulfate
1600 Josie Smith Depart Warehouse
1711 Yeti Boat Crew arrived
Yeti Samples:
3-R8-2019-PW-1-101919 @1456 SK
4-125ml DOC, TOC, Diss. Met., Sulfate
CB005-PW-1-101919 @ 1203 SK
1-125ml - DOC
1-125ml - TOC
1-125ml - Diss. Met.
1-125ml - Sulfate
CB014-PW-1-101919 @ 0930 SK
1-125ml - DOC
1-125ml - TOC
1-125ml - Diss Met.
1-125ml - Sulfate
1730 Check Reefer Temp: Built-in Temp: 39.3° F Stand-Alone Thermo - 4.4°C
3/4 Fuel or Fuel
1815 left Warehouse

DM 10-19-19

Scale: 1 square = _____

Rite in the Rain

October 20 2019
1659 Check Reefer Truck Temp: Built in 39.2°F standalone 2.7°C
1700 Fuel is less then 3/4 Full
800 Left warehouse



Scale: 1 square =

October 21 2019

0500 Dave Hoe & Dave Lewis went to Spokane to meet up with Purewater courier for ALS-Kelso and carried on to Moscow, ID to EcoAnalyst to drop off BMI samples

1500 Dave H & Dave L returned to Colville.

1530 Dave H, Dave L and Denise Lee arrived at Kettle Falls warehouse

1600 Check Reefer Truck Temp: Built-in Temp: 41.5°F stand alone 3.0°C Fuel less than 3/4 Full

1630 Tieton Boat Crew arrived

DM036-PW-1-102119 @1400 AP
- 1-125 ml TOC
- 1-125 ml DOC
- 1-125 ml Diss Met.
- 1-125 ml Sulfate

DM038-PW-1-102119 @1145 AP
- 1-125 ml TOC
- 1-125 ml DOC
- 1-125 ml Diss. Met
- 1-125 ml Sulfate

1635 Yeti Boat Crew Arrived

CB040-PW-1-102119 @0947 SH
- 1-125 ml TOC
- 1-125 ml DOC
- 1-125 ml Diss Met
- 1-125 ml Sulfate

CB043-PW-1-102119 @1429 SH
- 1-125 ml TOC
- 1-125 ml DOC
- 1-125 ml Diss. Met.
- 1-125 ml Sulfate

CB043-PW-2-102119 @1500 SH
- 1-125 ml Sulfate

CB041-PW-1-102119 @1203 SH
- 1-125 ml DOC
- 1-125 ml TOC
- 1-125 ml Diss. Met
- 1-125 ml Sulfate

1735 Leaving warehouse

DM 10-21-19

Scale: 1 square = _____

Rite in the Rain

October 22, 2019

0900 Arrived at warehouse - Dave H., Dave L. & Denise Ge.
0930 Dave Hoe left to donate whole buckets to Habitat to Humanity; Dave Lewis left to take one Nitrogen tank to China Bend.
005 Eric Weatherman stopped by warehouse
1025 Dave Lewis returned and need to bring out a full tank to China Bend.
1120 Check temp in Reefer Truck: Built in Temp: 38.8°F Stand-alone Temp: 2.0°C
Fuel level ≤ 3/4 tank
1530 Tieton Boat Crew Arrived
EV032-PW-1-102219 @ 1110 AP
1-125 ml DOC
1-125 ml TOC
1-125 ml Sulfate
1-125 ml Diss Mets
EV038-PW-1-102219 @ 1320 AP
1-125 ml DOC
1-125 ml TOC
1-125 ml Sulfate
1-125 ml Diss. Metals
1730 Yeti Boat Crew Arrived
CB052-PW-1-102219 @ 1513 SH
1-125 ml DOC
1-125 ml TOC
1-125 ml Diss. Met
1-125 ml Sulfate
CB049-PW-1-102219 @ 1300 SH
1-125 ml Diss Met
1-125 ml Sulfate
1-125 ml DOC
1-125 ml TOC
CB048-PW-1-102219 @ 0954 SH
1-125 ml DOC
1-125 ml TOC
1-125 ml Sulfate
1-125 ml Diss. Met.
1755 Leaving warehouse

DJ 10-22-19

Scale: 1 square = _____

October 23, 2019

0930 Dave Lewis and Denise Yee arrive @ warehouse

0935 Dave L. shut off Reefer Refrigerator Truck; no need to keep Refrigerator Truck running, no samples need it on to keep cool.

1405 Yeti Boat Crew Arrived

EV043-PW-1-102319 @ 1232 by AP

4 containers

1700 Tieton Boat Crew Departed

1730 Loaded Vans for Delivery to Rocks Point, Took Storage and Dinegas in Moses Lake.

1830 Depart Warehouse for The Day

David R. Hom

10/23/19

Scale: 1 square = _____

October 24 2019 PM 10/24/19

0940 Stu Holmes and Denise Lee arrived at warehouse.
1010 OK Arc picked up Ethanol
1200 CAA picked up supplies.
1400 Delivery Crew Returned from Spokane
Stu Holmes and Denise Yee Depart to Return Rofor Truck and Travel to Seattle
1600 Two Mini Vans Loaded for Sample Delivery on Friday and Departed Warehouse for Hotel.
Stopped By Westhampton's Yard to Check status of equipment Move out. Gate was closed and no one was around.
RV Tuton is no longer at site. Yeti (Erik) is still present.

1630 Arrive at Hotel

Scale: 1 square = _____

UCR Phase III Sediment Sampling 10/25/19

0500 Two mini Vans Depart Colville for Spokane to Dorivon The last samples for transport to The Analytical Laboratories

0705 Transferred Samples and Coolers To Courier for Transport to ALS in Kelso, WA.

0920 Transferred BMI Samples to EcoAnalyst courier

0940 Dropped off Keys To Tuck's Storage at Tuck Office Met Dorivon Mills Briefly.

0950 Departed Spokane for Colville

1170 Arrive in Colville

1145 Load Remaining Supplies bound for Seattle into The Two Mini Vans.

1200 Checked in With Coastal Monitoring at The Woodhouse's shop. All Their Equipment has been shipped or is crated for Shipment on Monday 10/28/19.

1230 All project activities are completed That relate to Field Sampling.

David R. Hart
10/25/19

Scale: 1 square =

Appendix F

Field Forms by Location

NOTE ON RIVER MILE DESIGNATIONS:

On January 8, 2018, EPA defined the upper reaches of the riverine portion of the Site as the Upper Reach OU encompassing "the upper reaches of the Columbia River between Marcus at river mile (RM) 708 and the international border just north of RM 744." However, the RM designations used by EPA in the January 8, 2018 letter differ from the RM designations conventionally used by the National Oceanic and Atmospheric Administration (NOAA) and the United States Geological Survey (USGS). As explained in the Final Baseline Ecological Risk Assessment Work Plan (Page 2-3, footnote 7; Exponent et al. 2011), the discrepancy in RM designations used by USGS and those used by EPA dates back to the 2005 EPA Phase I sampling reports. USGS RMs increase from RM 680 to RM 682 over a river segment that is less than one RM in length when transitioning between the Inchelium and Rice USGS quadrants, whereas the EPA RMs increase from RM 680 to RM 681 over the same segment. As a result, above RM 680 the EPA RMs are *one less than* the USGS RMs. In this report, the USGS RM designations are used, by which the Upper Reach OU encompasses the Columbia River between RM 709 and RM 745.

THESE FIELD FORMS MAY CONTAIN RM ENTRIES INCONSISTENT WITH THE USGS RM DESIGNATIONS.

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/26/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV001
Vessel Crew: Jeff Schut (JS), Pete Jenkins (PJ)
Sampling Crew: Michelle Stegner (ms), Cliff Pearson (cp), Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (ms)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1058
Departure Time: 1205

River Stage:
Water Surface Elev. (ft): 1297.14
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 58 Wind (mph): 2
Clouds/Precipitation: Mostly cloudy, occasional light rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 707.9
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
0

Sampling Information

Sampler Used: Van Veer
2 attempted, 2 accepted

# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted: EV001-SE-1-092619
#2 accepted: EV001-BM1-1-092619

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CP Date: 9/26/19
Field Supervisor Initials JAP Date: 1-17-20

FV SV

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV001-1

Attempt # 1 Cast Time: 1103 Water Depth (m): 24.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV001-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 422462.42 Sampler Penetration (inches): 8.5

Northing: 5391533.95 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine-coarse SAND Redox Boundary: None

Presence of debris: None

Color: 10 YR 2/1 Biological Structures: None

Stratification: Fining upwards. (fining upwards) J.P. 11-21-19 Shells: Trace

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Abundant Other Notes: Video: 0926_110219A (Alt for EV058)

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	EV001-SE-1-092619	Time: 1103	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
			Bioassays	1 x 5 gallon white bucket 3.4 gallons
				1 x 2.5 gallon white bucket 2.15 gallons
SE Duplicate Sample ID:	EV001-SE-2-092619	time: 1133	SEM-AVS	8 oz WMGJ (no headspace) sediment bucket
			Total Metals & TOC	8 oz WMGJ volumes
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	—	Time: —	8 oz WMGJ	
EPA TX Split Sample ID:	—	Time: —	2.5 gallon white bucket	— gallons
BMI Primary Sample ID:	EV001-BMI-092619	Time: 1103	Yellow 5-gallon bucket	1.25 | 2.0 gallons
BMI Duplicate Sample ID:	—	Time: —	Yellow 5-gallon bucket	— gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CJ Date: 9/26/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? ~~NO~~ YES **Location ID:** EV001

Attempt # 2 Cast Time: 1142 Water Depth (m): 24.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV001-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 422458.33 Sampler Penetration (inches): 8

Northing: 5391534.41 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	~~Accepted~~	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Same as Attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: Video: 0926_114041A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

~~Attempt #s~~ in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): ~~Total Mass of Sediment (kg):~~

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EV001-BMI-1-092619	Time:	1103	Yellow 5-gallon bucket	17.5 17.0 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CL Date: 9/26/19 Field Supervisor Initials JAP Date: 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 28Sept. 19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV001
Vessel Crew: Rene Trudeau + Brett Walburn **Sampling Crew:** Bart Chadwick, Joel Guerrero + AT Thatcher
EPA Observer: DT Moore
Arrival Time: 1412 **Departure Time:** 1620

River Stage:
Water Surface Elevation (ft):
Elevation Source: Rivercast
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:
Temp (°F): 37°F Wind (mph): ~5MPH
Clouds/Precipitation: Continued rain

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 707.9 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic Occasional
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Campground approx. 0.1 mi. south. Undeveloped shoreline to N approx. 0.2 mi. to N.

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 24.8
Easting: 422465.40
Northing: 5391534.39 Water Sample Color:

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV001-PW-1-09289 Time: 1457
QC5, 9/28/19

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: No Time:
EPA Split Sample ID: No Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 28Sept.19 Field Supervisor Initials MS Date: 9/28/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/24/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV002
Vessel Crew: Pete Jenkins (PJ), Jeff Shutz (JS)
Sampling Crew: Stuart Holmes (SH) Cliff Pearson (CP), Michelle Stegner (MS)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 820
Departure Time: 938

River Stage:
Water Surface Elev. (ft): 1298.05
Water Surface Elevation Source: waterdata.usgs.gov

Weather Conditions Upon Arrival:
Temp (°F): 47 Wind (mph): 4
Clouds/Precipitation: partly cloudy, sunny, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ∅

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Evans Campground (MS)

Sampling Information

Sampler Used: Van Veen (2 attempted, 2 accepted)
# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted (6 SE jars, 2 TX buckets, 1 TX split)
#2 accepted (1 BMI bucket)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-24-19
Field Supervisor Initials JM Date: 9-24-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV002

Attempt # 1 Cast Time: 0831 Water Depth (m): 24.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV002-1-Chem Estimated Hydrowire angle (degrees): ←

Easting: 422496.98 Sampler Penetration (inches): 8

Northing: 5391672.90 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: f-med SAND w/ trace SR gravel. (<1%) Redox Boundary: Not observed

Presence of debris: 1 stick

Color: 10YR 2/2 Biological Structures: None

Stratification: <1cm silt on top of Shells: None

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Abundant Other Notes: —

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID:	EV002-SE-1-092419	Time: 0831	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	5.2 gallons
				1 x 2.5 gallon white bucket	1.6 gallons
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ		
EPA TX Split Sample ID:	EV002-SE-3-092419	Time: 0831	2.5 gallon white bucket		1.6 gallons
BMI Primary Sample ID:	EV002-BMI-1-092419	Time: 0831	Yellow 5-gallon bucket		3.5 gallons
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket		_____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9-24-19 Field Supervisor Initials [illegible] Date: 9-24-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV002

Attempt # 2 Cast Time: 0913 Water Depth (m): 24.0

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV002-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 422493.08 Sampler Penetration (inches): 8.5

Northing: 539672.57 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #1 Redox Boundary:

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EV002-BMI-1-092419	Time:	0831	Yellow 5-gallon bucket	3.5 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/24/19 Field Supervisor Initials DM Date: 9-24-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/21/19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: RT & BW
EPA Observer: JJ
Arrival Time: 1340
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole (Vibraframe) Driveframe

Area of Interest: Evans
Location ID: EV002.
Sampling Crew: NM
CS, AS
Departure Time: 1500
Weather Conditions Upon Arrival:
Temp (°F): 78 Wind (mph): 4
Clouds/Precipitation: Clear Sunny

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Water in-take structure.

GPS Target Parameters and Water Depth

GPS Name: EV002-PW-1
Easting: 422494.88
Northing: 5391672.00
Water Depth (m): 23.8
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: EV002-PW-1-092119 Time: 1406
Duplicate Sample ID: EV002-PW-2-092119 Time: 1406
EPA Split Sample ID: N/A Time: N/A
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: DOC Disc Filter 125mL Amber w/ H2SO4
~~1B. Dissolved Metals~~ ~~With Same Capsule Filter - 125 mL Poly with~~ HNO3

Sample Lead Initials NM Date: 9/21/19
Field Supervisor Initials JJ Date: 09-21-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/2019

Project Number: 60612698
Area of Interest: Evans EV014
Vessel: Ingalls
Location ID: EV003 (alternate)
Vessel Crew: SH, ES
Sampling Crew: MS, MM, BF
C.R. Observer: MS
EPA Observer: MG
Arrival Time: 955
Departure Time: 1400
River Stage: (85 ft deep)
Water Surface Elev. (ft): 1298.41 ft
Water Surface Elevation Source: USGS
Weather Conditions Upon Arrival:
Temp (°F): 58 Wind (mph): 2
Clouds/Precipitation: partly cloudy; ø dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Campground on east shoreline

Sampling Information

Sampler Used: Hamon
SE and BMI collected
# of Sampling Attempts (Accepted vs. Rejected):
4 attempts; 4 accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 9-20-19
Field Supervisor Initials DM Date: 09-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of ~~4~~ 3 (BF)
Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV003

Attempt # 1 Cast Time: 1002 Water Depth (m): ~~4~~ 86

GPS Target Parameters (CHEM) Sheave Counter Depth (m): -

Name: EV003-SE-1-092019 Estimated Hydrowire angle (degrees): -

Easting: 422514.20 Sampler Penetration (inches): 6

Northing: 5391495.04 Sample Interval (0 to X inches bss): 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ~~8~~

Sediment Characteristics

Sediment Type / Texture: Gravelly Med. SAND with coarse sand rounded to sub-rounded.

Color: 7.5YR 4/1

Stratification: Homogenous

Density: Loose

Presence/Absence silica glass: Yes

Redox Boundary: No

Presence of debris: Y, sticks

Biological Structures: Y, mussels, shells

Shells: Y

Sheen/Odor: N

Other Notes: Seemingly ideal sample

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2, 3 (BMI from attempt 4) SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): (17.3 - 2.8 = 14.5 kg) (BF) See Page 3 Total Mass of Sediment (kg): See Page 3

Mass of Sediment 5 mm to 3 inches (gravel) (kg): ~~14.8 - 3.3 - 2.8 = 8.7 kg~~ (11.8 - 2.8 = 9.0 kg) See Page 3

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: EV003-SE-1-092019 Time: 1002 # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials mm Date: 9-20-19 Field Supervisor Initials ~~BF~~ Date: 9-20-19

AVS from 1st grab; others from attempts 1, 2, 3 (SE) 4 (BMI)

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV003

Attempt # 2 Cast Time: 1121 Water Depth (ft): 83.2

GPS Target Parameters Sheave Counter Depth (m): -

Name: EV003-CHEM-2 Estimated Hydrowire angle (degrees): -

Easting: 422514.13 Sampler Penetration (inches): 6

Northing: 5391490.47 Sample Interval (0 to X inches bss): 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: Sandy Gravel; med Sand Rounded to sub-grounded fine to coarse

Color: —

Stratification: Homogenous

Density: Loose to med. Dense

Presence/Absence silica glass: Y

Redox Boundary: No

Presence of debris: Sticks

Biological Structures: Mussels

Shells: Y.

Sheen/Odor: No

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2, 3 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): See Page 3 Total Mass of Sediment (kg): See Page 3

Mass of Sediment 5 mm to 3 inches (gravel) (kg): (16.6 − 3.3 = 13.3 kg) See Page 3

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials ~~DRJ~~ DR mm Date: 9-20-19 Field Supervisor Initials DRJ Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 3 of ~~3~~ 4 (BF)
Date 9/20/19

Project Number: 60612698
Area of Interest: Evans
Anchored? (NO) YES
Location ID: EV003
Attempt # 3
Cast Time: 1203
Water Depth (m): ~~ft~~ 82.1 ft

GPS Target Parameters
Sheave Counter Depth (m): -
Name: EV003-3-CHEM
Estimated Hydrowire angle (degrees): -
Easting: 422510.30
Sampler Penetration (inches): 6
Northing: 5391487.96
Sample Interval (0 to X inches bss): 6

Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): ~~0~~

Sediment Characteristics

Sediment Type / Texture: See Attempt 1 EV003-1
Redox Boundary: NO
Presence of debris: Sticks
Color:
Biological Structures: mussels
Stratification:
Shells: Y
Density:
Sheen/Odor: No
Presence/Absence silica glass: Yes
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2, 3
SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No
Removed by Hand > 5mm? Yes (No)
Mass of Sediment < 5 mm (kg): 48.5 - 2.8 = (45.7 kg)
Total Mass of Sediment (kg): (80.2 kg)
Mass of Sediment 5 mm to 3 inches (gravel) (kg): (14.5 - 3.3 = 12.2 kg) 12.2 + 13.3 + 9.0 = (34.5 kg)
Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: EV003-SE-1-092019 Time: ~~1203~~ 1002 (BF) # and type of Containers: 6 jars and 5 gal + 2.5 gal buckets
Duplicate Sample ID: Time: # and type of Containers:
EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials mm Date: 9-20-19
Field Supervisor Initials DM Date: 9-20-19

5 gal = 4.7 gal collected
2.5 gal = 1.84 gal collected

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV003

Attempt # 4 Cast Time: 1308 Water Depth (m): 84.3 ft

GPS Target Parameters BM1-092019

Name: EV003-4-~~Ellen~~ Sheave Counter Depth (m): —

Easting: 422507.39 Estimated Hydrowire angle (degrees): —

Northing: 5391498.76 Sampler Penetration (inches): 6

Sample Interval (0 to X inches bss): 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ∅

Sediment Characteristics

Sediment Type / Texture: Same as attempt 1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information: N/A

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: EV003-BM1-1-092019 Time: ~~1308~~ (MS) 1002 # and type of Containers: 2 (BF) 5gal buckets

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials mm Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 27Sept19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: Reae Trudeau + Brett Walburn
EPA Observer: DJ Moore
Arrival Time: 1332

Area of Interest: Evans
Location ID: EV003
Sampling Crew: Al Thatcher, Bart Chadwick + Joel Guerrero
Departure Time:

River Stage:
Water Surface Elevation (ft): 1281 msl
Elevation Source: RiverCast Map

Weather Conditions Upon Arrival:
Temp (°F): 41°F Wind (mph): 45 MPH
Clouds/Precipitation: Cloudy, no precip

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) circled 11/20/19 MEB
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 707.9
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
North shoreline has small picnic area ~0.1 mi. away. South shoreline is undeveloped, with houses set back above and beyond

GPS Target Parameters and Water Depth

GPS Name: Trimble
Easting: 429506.57
Northing: 5391490.49

Water Depth (m): 25.5
Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

9/27/19

Sample Identification Information

Primary Sample ID: EV003-PW-1-092719 Time: 1415

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: NA Time:
EPA Split Sample ID: NA Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 27Sept19
Field Supervisor Initials DM Date: 9-27-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EVO05

Date: 9/11/19 **Vessel:** ~~SIET~~ ~~Tieton~~ Cayuse 12-2-19 J.A.P.

Sampling Crew: NM + AV + AP **Vessel Crew:** RT + JW

EPA Observer: FD **C.R. Observer:** MS

Arrival Time: 1502 **Departure Time:** 1550

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 75°F
Wind (mph): 5 mph
Clouds/Precipitation: mostly cloudy.

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708 Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes No N/A.

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

Work done on Tieton
Field notes in Cayuse
logbook.
J.A.P. 12-2-19

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.11.19

Sample Lead Initials AP Date: 9.11.2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV005

Attempt # (1) 2 3 Cast Time 1503 **Water Depth (feet):** 23.9 m

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude~~: 422601.61 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 5391705.16 **Sampler Penetration (inches):** 33.5-15 cm = 18.5 = 7.3 inches sampled 0-6

Sample Type: (Physical/Chemical) (Bioassay) BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Silt 0-1 cm olive gray

Texture: > 1 cm SAND → F-C

Color: Black w/ brown speckles

Stratification: massive

Density: loose

Presence/Absence silica glass: Present

Redox Boundary: 0-1 cm

Presence of debris: None

Biological Structures: scattered Surface tho / 5.1 ft had blood worms

Shells: None

Sheen/Odor: None

Other Notes: None

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES (NO)

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: EV005-SE-1-091119 Time: 1515 # and type of Containers: 6 jars 2 buckets

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials JP Date: 9.11.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV005

Date: 091219 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: FD, DL **C.R. Observer:** MS

Arrival Time: 1415 **Departure Time:** 1455

River Stage:
Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 72°F

Wind (mph): 0-3 mpg

Clouds/Precipitation: partly cloudy, 0 precip

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: .709 Boat Traffic: 0

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

- Work done on Tieton
- Field notes in Cayuse logbook

J.A.P. 12-2-19

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.13.19

Sample Lead Initials AP Date: 9.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/2019

Project Number: 60612698
Area of Interest: Evans
Anchored? (NO) YES
Location ID: EV 005
Attempt # 1 (2) 3 Cast Time 1422
Water Depth (feet): 23.8 m
Sample Location:
Sheave Counter Depth (feet):
E Latitude: 422611.03
Estimated Hydrowire angle (degrees): 0
N Longitude: 5391704.29
Sampler Penetration (inches): ~~7~~ 6 inches (NM 9/12)
Sample Type: Physical/Chemical Bioassay (BMI)
Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type:
Texture: see EV005-SE
Color:
Stratification:
Density:
Presence/Absence silica glass:

Redox Boundary: ~~None~~. 1mm silt redox layer.
Presence of debris: None.
Biological Structures: 1 clam - very small
Shells: ~~N/A~~ 1 piece of grass
Sheen/Odor: None
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples: N/A.
Total Sample Mass (kg):
> 2mm removed by hand: YES NO
Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg):

BMI Samples
Seived (250 µm)? (YES)
↳ H2O

Primary Sample ID: ~~EV005~~ EV005-BMI-1-091219 Time: 1440 # and type of Containers: 1 5-gal bucket
NM 9/12/19
Duplicate Sample ID: Time: # and type of Containers:
Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials AP Date: 9.13.19

volume of sed. => 3 inches = 1.4 gallons
filled w/ ethanol to 6 inch line.

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: RV Yeti **Location ID:** EV005
Vessel Crew: RT, BT **Sampling Crew:** NM
CS, AS
EPA Observer: JJ
Arrival Time: ~~1135~~ NM 1154 **Departure Time:** 1305
River Stage:
Water Surface Elevation (ft): **Weather Conditions Upon Arrival:**
Temp (°F): 67 Wind (mph): 2
Elevation Source: Clouds/Precipitation: Clear, Sunny
Trident Sampler Type: Push Pole (Vibraframe) Driveframe

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No) ~~N/A~~ NM
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Camper + Sturgeon fisherman on shore.

GPS Target Parameters and Water Depth

GPS Name: EV005-1-PW → "PM" in computer Water Depth (m): 24.3
Easting: 422602.54
Northing: 5391707.41 Water Sample Color: clear, No color

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

NM

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV005-PW-1-092119 Time: 1230

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: N/A Time: N/A Analyte and Bottle Type: N/A
EPA Split Sample ID: ↓ Time: ↓ ~~1B. Dissolved Metals~~ ~~With Same Capsule Filter - 125 mL Poly with HNO3~~
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 9/21/19 Field Supervisor Initials [illegible] Date: 09-21-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/23/2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV08.8

Vessel Crew: Jeff Shultz (JS), Pete Jenkins (PJ) **Sampling Crew:** Stuart Holmes (SH) Clyde Carson (CP), Michelle Stegner (MS)

C.R. Observer: Michelle Stegner (MS) **EPA Observer:** Marilyn Gautier (MG)

Arrival Time: (MS) 708 920 **Departure Time:** 1210

River Stage: Depth: 26 m

Weather Conditions Upon Arrival:

Water Surface Elev. (ft): 1296.83 Temp (°F): 55 Wind (mph): 4

Water Surface Elevation Source: waterdata usgs.gov Clouds/Precipitation: Mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (MS) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708.0 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: 0

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional cliff on ~~west~~ (MS) east shoreline, small pumphouse on west shoreline

Sampling Information

Sampler Used: Van Veen SE/Tx from #1; BMI from #4

# of Sampling Attempts (Accepted vs. Rejected): #1 accepted (SE + bioassay)
4 attempts, 2 accepted #2 no recovery (incorrect facies polygon); #3 " ; #4 accepted: BMI

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 9-23-19 Field Supervisor Initials MS Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV008

Attempt # 1 Cast Time: 0943 Water Depth (m): 26.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV008-1 Estimated Hydrowire angle (degrees): —

Easting: 427708.81 Sampler Penetration (inches): 8

Northing: 5391655.43 Sample Interval (0 to X inches bss): 0-6"

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 750

Sediment Characteristics

Sediment Type / Texture: Fine-med SAND
1cm layer FLET on top

Color: 5Y 2.5/2

Stratification: 1cm silt, massively bedded sand to bottom

Density: loose

Presence/Absence silica glass: Abundant

Redox Boundary: Not observed

Presence of debris: None

Biological Structures: None

Shells: None

Sheen/Odor: None

Other Notes: —

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: EV008-SE-1-092319 Time: 0943

SE Duplicate Sample ID: — Time: —

EPA SE Split Sample ID: Time:

EPA TX Split Sample ID: Time:

BMI Primary Sample ID: EV008-BMI-1-092319 Time: 0943

BMI Duplicate Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SE Primary	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	5.2 gallons
		1 x 2.5 gallon white bucket	2.0 gallons
SE Duplicate	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split		8 oz WMGJ	
EPA TX Split		2.5 gallon white bucket	____ gallons
BMI Primary		Yellow 5-gallon bucket	2 x 2 gallons
BMI Duplicate		Yellow 5-gallon bucket	____ gallons

Sample Lead Initials CP Date: 9/23/19 Field Supervisor Initials US Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV008

Attempt # 2 Cast Time: 1046 Water Depth (m): 26.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV008-2 Estimated Hydrowire angle (degrees): —

Easting: 472708.59 Sampler Penetration (inches): 0

Northing: 5391655.04 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical/Bioassay~~ BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

No recovery

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor: NO RECOVERY

Presence/Absence silica glass: Other Notes: sampler appeared tilted during grab

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/23/19 Field Supervisor Initials MS Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? ~~NO~~ YES **Location ID:** EV008

Attempt # 3 Cast Time: 1058 Water Depth (m): 26.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV008-3 Estimated Hydrowire angle (degrees): —

Easting: 422704.42 Sampler Penetration (inches): 0

Northing: 5391161.23 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical/Bioassay~~ ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ ~~NO~~

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**	
2. Overlying water present?	**YES**	NO	
3. Overlying water excessively turbid?	YES	**NO**	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO	
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**	
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO	
8. Sample is:	**Accepted**	~~Rejected~~	

No recovery

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 350

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if ~~Composite of Multiple Attempts~~: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/23/19 Field Supervisor Initials MS Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES **Location ID:** EV008

Attempt # 4 Cast Time: 1121 Water Depth (m): 26.4

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV008-4 Estimated Hydrowire angle (degrees): —

Easting: 422717.26 Sampler Penetration (inches): 8

Northing: 5391655.47 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

SEE ATTEMPT #1

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket ____ gallons
	1 x 2.5 gallon white bucket ____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons

BMI Primary Sample ID: EV008-BMI-1-092319 Time: 0943 Yellow 5-gallon bucket 2 x 2 gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/23/19 Field Supervisor Initials MS Date: 9.23.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 28 Sept 2019

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV008
Vessel Crew: Rene Trudeau + Bret Walburn **Sampling Crew:** Al Thatcher, Bart Chadwick, Joel Guerrero
EPA Observer: DJ Moore
Arrival Time: 0815 **Departure Time:** 1057

River Stage:
Water Surface Elevation (ft):
Elevation Source: Rivercast

Weather Conditions Upon Arrival:
Temp (°F): 40°F Wind (mph): ~5 MPH
Clouds/Precipitation: Rain steady

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) circled 11/26/19 MEB

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Periodic - fishing derby occurring today

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Water intake pump house, and pipe extending underwater

GPS Target Parameters and Water Depth

GPS Name: Trimble
Easting: 422711.84
Northing: 5391652.40

Water Depth (m): 26.0
Water Sample Color: barely yellow tinge

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:

Observations:

GPS Name:
Easting:
Northing:

Observations:

Sample Identification Information

Primary Sample ID: EV008-PW-1-092819 Time: 0943

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. ~~Sulfide~~ — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: No Time:
EPA Split Sample ID: No Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 28 Sept 19
Field Supervisor Initials MS Date: 9/28/18

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV010

Date: 0912 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW RT

EPA Observer: FD, **C.R. Observer:** MS

Arrival Time: 1300 **Departure Time:** 1747

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 72°

Wind (mph): 0-3 mph

Clouds/Precipitation: partly cloudy / Ø precip

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709

Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc:) erosional cliffs, one campsite w/ RV

General Notes:

C.R. - cultural resources

Field Supervisor Initials GP Date: 9-13-19

Sample Lead Initials AP Date: 9.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698
Area of Interest: Evans
Anchored? (NO) YES
Location ID: EV010
Attempt # (1) 2 3 Cast Time 1508
Water Depth (feet): 24.6 m
Sample Location:
Sheave Counter Depth (feet):
E ~~Latitude~~: 422660.48
Estimated Hydrowire angle (degrees): Ø
N ~~Longitude~~: 5391528.27
Sampler Penetration (inches): 6 inches.
Sample Type: (Physical/Chemical) (Bioassay) BMI
Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Thin veneer of silt., dark olive brown. on top
Redox Boundary: 0-1 mm Yes
Texture:
Presence of debris:
Color: Black sand w/ ~~scattered~~ mm brown speckles.
Biological Structures:
Stratification: Gravelly fine to coarse Sand w/ trace silt.
Shells: ~~+ dead mus~~ mm
Density: loose
Sheen/Odor: None,
Presence/Absence silica glass: yes - present -
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples
Total Sample Mass (kg): 106.6 kg
Seived (YES/NO)? 2mm (5mm)
Mass of material > ~~2mm~~ 5mm (kg): 40.2 kg
~~5mm~~ > 2mm removed by hand: (YES) NO No only sieve

BMI Samples N/A.
Seived (250 µm)? YES

Primary Sample ID: EV010-SE-1-091219 Time: 1530
and type of Containers: composite of multiple attempts 1, 2, 3, 4, & 6 26 jars + 2 buckets
Duplicate Sample ID: Time: # and type of Containers:
Split Sample ID: Time: # and type of Containers:

Sample Lead Initials: AP Date: 9.12.19
Field Supervisor Initials: AP Date: 9.13.19

~~3 gallons of sediment + 3 gallons Ethanol~~ mm 9/12
Bioassay 5gallons + 2.5gallons = 7.5 gallons?

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/12/19.

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV010

Attempt # 1 (2) 3 Cast Time 1524 Water Depth (~~feet~~): 24.6 m

Sample Location: Sheave Counter Depth (feet):

E Latitude: 422657.47 Estimated Hydrowire angle (degrees):

N Longitude: 5391527.24 Sampler Penetration (inches): 6 inches.

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Same as 1st attempt. Redox Boundary:

Texture: Presence of debris: ~~1 branch stick~~ NM NM

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples See attempt 1 Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples N/A

Seived (250 µm)? YES

Primary Sample ID: See attempt 1 Time: # and type of Containers: Composite of multiple attempts.

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials AP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/12/19

Project Number: 60612698 Area of Interest: Evans

Anchored? (NO) YES Location ID: EV010

Attempt # 1 2 (3) Cast Time 1548 Water Depth (m): 24.5

Sample Location: Sheave Counter Depth (feet):

E Latitude: 422655.43 Estimated Hydrowire angle (degrees): 0

N Longitude: 5391528.60 Sampler Penetration (inches): 6 inches.

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type:

Texture: Same as 1st attempt. except

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris: Sc trace sticks + wood chunks

Biological Structures: ~~Sc~~

Shells: 1 dead mussel.

Sheen/Odor:

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples See attempt 1

Total Sample Mass (kg):

~~5mm~~ > ~~2mm~~ removed by hand: ~~YES~~ ~~NO~~ NM

Sieved (YES/NO)? 2mm (5mm) > 5mm

Mass of material ~~>2mm~~ (kg):

BMI Samples N/A.

Sieved (250 µm)? YES

Primary Sample ID: EV010-SE-1-091219 Time: 1530 # and type of Containers: composite See Attempt 1

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/12/19

Project Number: 60612698 Area of Interest: Evans

Anchored? (NO) YES Location ID: Evo10

4 Attempt # 1 2 3 Cast Time 1622 Water Depth (feet): 24.5 m

Sample Location: Sheave Counter Depth (feet):

E Latitude: 422654.52 Estimated Hydrowire angle (degrees): 0

N Longitude: 5391526.40 Sampler Penetration (inches): 6 inches

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Redox Boundary:

Texture: See attempt 1 Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples: See attempt 1 Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples N/A

Seived (250 µm)? YES

Primary Sample ID: ~~See a mm~~ See attempt 1 composite Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698 **Area of Interest:** Grans

Anchored? (NO) YES **Location ID:** EV010

5 Attempt # ~~1~~ ~~2~~ ~~3~~ Cast Time 1635 Water Depth (~~feet~~ m): 24.6

Sample Location: Sheave Counter Depth (feet):

E Latitude: 422654.47 Estimated Hydrowire angle (degrees): Ø

N Longitude: 5391522.84 Sampler Penetration (inches): < 4 inches

Sample Type: (Physical/Chemical) ~~Bioassay~~ BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: thin layer of gravels Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples: None

Total Sample Mass (kg): _____ Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples: N/A.

Seived (250 µm)? YES

Primary Sample ID: Not used in composite Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: N/A

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials 9.12.19 Date: AP Field Supervisor Initials JP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** Evo10

6 Attempt # ~~1~~ ~~2~~ ~~3~~ Cast Time 1642 **Water Depth (~~feet~~ m):** 24.6

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude~~: 422658.46 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 5391529.54 **Sampler Penetration (inches):** 6 inches.

Sample Type: (Physical/Chemical) Bioassay ~~BMI~~ N/A **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Same as 1st attempt. **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples — See attempt 1

Seived (YES/NO)? (2mm) 5mm

Total Sample Mass (kg): _____

~~5mm~~ ~~2mm~~ removed by hand: YES NO N/A

Mass of material > 2mm (kg): _____

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: Composited into sample. - see attempt 1 Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials ~~SS~~ AP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19.

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV010

7 Attempt # 1 2 3 ~~4~~ cast Time 1654 Water Depth (~~feet~~): 24.6 m

Sample Location: Sheave Counter Depth (feet):

E Latitude: 422656.19 Estimated Hydrowire angle (degrees): 0

N Longitude: 5391528.28 Sampler Penetration (inches): 6 inches

Sample Type: Physical/Chemical Bioassay (BMI) Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Redox Boundary:

Texture: Same as attempt 1 Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? (YES)

On siphon H2O
& remove H2O

Primary Sample ID: EV010-BMI-1-091219 Time: 1700 # and type of Containers: 1 5-gallon bucket

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

3 gallons sediment + 3 gallons Ethanol

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV010
Vessel Crew: RT, BW **Sampling Crew:** NM, CS, AS
EPA Observer: JJ
Arrival Time: 0845 **Departure Time:** 1123

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 49 Wind (mph): 2
Clouds/Precipitation: Clear

Trident Sampler Type: Push Pole (Vibraframe) Driveframe

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None - light

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No) ~~N/A~~ NM

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Pump intake structure at shore / 2 x vibrations VP/ DOWN x2 to set down probes caused

GPS Target Parameters and Water Depth

GPS Name: EV010-1-PW Water Depth (m): 24.7
Easting: 422649.66
Northing: 5391526.43 Water Sample Color: Brown & turbid.

Additional Video Reconnaissance Information

GPS Name: N/A Observations:
Easting: _____
Northing: _____

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: EV010-PW-1-092119 Time: 1034

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~260 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: N/A Time: N/A Analyte and Bottle Type: N/A
EPA Split Sample ID: EV010-PW-3-092119 Time: 1034 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? (Yes) No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 9/21/19 Field Supervisor Initials LH Date: 09/21/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/28/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV011
Vessel Crew: PJ (Pete Jenkins) JS (Jeff Schut)
Sampling Crew: MS, CP, SH (Michelle Stegner, Clibb Pearson, Stuart Hofmeier)
C.R. Observer: MS (Michelle Stegner)
EPA Observer: MG (Marilyn Goldstein)
Arrival Time: 1356
Departure Time: ~~1454~~ 1454

River Stage:
Water Surface Elev. (ft): ~~1298~~ 1298
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 39 Wind (mph): 8
Clouds/Precipitation: cloudy, rainy

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO In places scattered throughout polygon

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No) Circled 11/26/19 per SH's instructions MEB

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Campground

Sampling Information

Sampler Used: Freeze grab w/o hammer (1 attempt accepted, 2 video recon)
# of Sampling Attempts (Accepted vs. Rejected): 1419 attempt #1 accepted (few cobbles & trace fines)

Video Reconnaissance Information

GPS Target Name: EV011-SV-1
Easting: ~~4291~~ 422776.67
Northing: 5391 5391464.73
Observations: Depth=19.5 m

GPS Target Name: SV-2
Easting: 422767.12
Northing: 5391460.88
Observations: Depth=19.5m

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-28-19 Field Supervisor Initials MS Date: 9-28-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9-28-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV011

Attempt # 1 Cast Time: 1419 Water Depth (m): 21.2

GPS Target Parameters: Sheave Counter Depth (m): —

GPS Target Name: EV011-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 427759.28 Sampler Penetration (inches): 5

Northing: 5391459.91 Sample Interval (0 to X inches bss): 0 to 5

Sample Type: (Physical/Chemical) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	YES	(NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
4. Sample is:	(Accepted)	Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Rounded f-c GRAVEL w/ scattered f-med sand, SA. Redox Boundary: None

Presence of debris: None

Color: 10 YR 4/3 Biological Structures: None

Stratification: None Shells: None

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Scattered Other Notes:

Physical/Chemical Samples - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: NC

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (~~kg~~ g): 352.2 Total Mass of Sediment (~~kg~~ g): 1,821.2

Mass of Sediment 5 mm to 3 inches (gravel) (~~kg~~ g): 1469

Mass of Sediment > 3 inches (cobble) (~~kg~~ g): 0

Sample Identification Information

Primary Sample ID: EV011-SE-1-092819 Time: 1419 # and type of Containers: 1 8oz Metals/mercury/TOC, 1 8oz grain size, 1 8oz organic chemical

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

PA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials CR Date: 9/28/19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/01/2019 ac

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EVO-11
Vessel Crew: Pete Jenkins, Jeff Schutz ac
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: ~~Anisa Sheppherd-Becker~~
EPA Observer: Brad Sample
Arrival Time: 0905
Departure Time: ~~1238~~ ac 1255

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 35 Wind (mph): 0
Clouds/Precipitation: overcast

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky, sandy shoreline, upland meadow

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected):
Accepted: #3, #4
Rejected: #2

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials NM Date: 10/1
Field Supervisor Initials NM Date: 10/1/19

Revised 9/18/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/1/19

Project Number: 60612698

Area of Interest: Evans

Anchored? NO (YES) – During boat complications

Location ID: EV0-11

Attempt # 2 – First attempt of day

Cast Time: 0923

Water Depth (m): 20.6

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: EV011-2-~~BMI~~ ac

Estimated Hydrowire angle (degrees): 0

Easting: 422762.47

Sampler Penetration (average) (inches): 0

Northing: 5391456.89

Sample Type: Physical/Chemical (BMI)

Cultural Resource Check Completed? YES ~~NO~~ (NA)

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	YES	(NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
4. Sample is:	Accepted	(Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer)

Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Sample rejected. No sample recovered due to extended deployment because of boat issues.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10/1

Field Supervisor Initials MM Date: 10/1/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/1/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EVO-11

Attempt # 3 Cast Time: 1111 Water Depth (m): 22.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: EVO11-3-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 422757.88 Sampler Penetration (average) (inches): 4

Northing: 5391456.82

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: gravelly sandy silt fine sand

Color: Dark brown

Stratification: homogeneous

Density: Soft

Presence/Absence silica glass: NO

Redox Boundary: NA

Presence of debris: NO

Biological Structures: macro invertebrates observed chironimid larvae red worms (several)

Shells: NO

Sheen/Odor: NO

Other Notes: Discarded one cobble that fell on deck during retrieval

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3, 4 SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	EVO11-BM1-1-100119	Time: 1124		Yellow 5-gallon bucket	2.25 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AEE Date: 10/1 Field Supervisor Initials NM Date: 10/1/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/1/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EVO-11

Attempt # 4 Cast Time: 1148 Water Depth (m): 22.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: EVO11-4-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 422759.04 Sampler Penetration (average) (inches): 4

Northing: 5391455.93

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: gravelly silty sand sand fine-med grained gravels fine + coarse, subrounded to subangular

Color: Dk Brown

Stratification: no

Density: loose

Presence/Absence silica glass: no

Redox Boundary: NA

Presence of debris: no

Biological Structures: trace red worms

Shells: no

Sheen/Odor: slight sulfur odor

Other Notes: no

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: included + composited	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: with EVO11-BM1-1-100119	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AC Date: 10/1 Field Supervisor Initials NM Date: 10/1/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** EVANS

Vessel: YETI **Location ID:** EV011

Vessel Crew: R. TRUDEAU, R. McCLEESE **Sampling Crew:** J. RAY, J. MOORE, J. GUERRERO

EPA Observer: NONE

Arrival Time: 1325 **Departure Time:** 1550

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): CALM ~ 3 mph
Clouds/Precipitation: CLOUDY

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
COBBLE SHORELINE ~~JUSTN~~ N. OF MARCUS CAMPGROUND END

GPS Target Parameters and Water Depth

GPS Name: EV011-1-PW Water Depth (m): 21.1
Easting: 422760.55
Northing: 5391459.87 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: _____ Observations:
Easting: _____
Northing: _____

GPS Name: 10/3/19 Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: ~~EV022-N~~ EV011-PW-1-100319 Time: 1431

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type: _____

EPA Split Sample ID: — Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JM Date: 10/3/19 Field Supervisor Initials JMS Date: 10/3/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: Evans

Location ID: EV012

Date: 9/13/2019

Vessel: Tieton

Sampling Crew: Nicky Moody (NM)

Vessel Crew: Jeff Wilson (JW) Renee Trudeau (RT)

EPA Observer: Anthony Palmedi (AP) Michelle Stegner (ms)

C.R. Observer: Michelle Stegner (ms)

Arrival Time: 9:40

Departure Time: 11:40

River Stage:

Water Surface Elev. (ft):

Water Surface Elevation Source:

Weather Conditions Upon Arrival

Temp (°F): 65° F

Wind (mph): 0-3 mpg

Clouds/Precipitation: Partly cloudy, 0 precip

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Rowered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708

Boat Traffic: 0

1 boat (fishing) in afternoon ~ 100 m South

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes No

Was Vegetation Removed: Yes No

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.13.19

Sample Lead Initials AP Date: 9/13/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/13/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV012

Attempt # (1) 2 3 Cast Time 0944 **Water Depth (~~feet~~ m):** 24.9

Sample Location: **Sheave Counter Depth (feet):** —

E ~~Latitude~~: 4228143.93 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 539157 6.17 **Sampler Penetration (inches):** 6

Sample Type: (Physical/Chemical) (Bioassay) BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: 0-1 mm dark brown Silt, v soft **Redox Boundary:**

Texture: >1 mm F-C Gravelly Sand, black w/ brown speckles. **Presence of debris:** Trace small sticks

Color: Subrounded to subangular **Biological Structures:**

Stratification: homogenous **Shells:** Trace shell fragments.

Density: loose **Sheen/Odor:** None

Presence/Absence silica glass: present. **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): 99.2 kg

Seived (YES/NO)? 2mm (5mm)

Mass of material > ~~2mm~~ 5mm (kg): 43.6 kg

> 2mm removed by hand: YES (NO)

>5 mm ~~<5 mm~~ not used in samples. J.A.P. 3-12-20

BMI Samples N/A

Seived (250 µm)? YES

2.5 gal sed
6 gal sed.

Primary Sample ID: EV012-SE-1-091319 Time: 0955 # and type of Containers: 6 jars x 2 buckets

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9-13-19 Field Supervisor Initials JP Date: 9.13.19

Composite of Attempts 1, 2, 3, 4 & 5 except AVS Jar from Attempt 1

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/13/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV012

Attempt # 1 (2) 3 Cast Time 1010 **Water Depth (feet):** 25 m

Sample Location: **Sheave Counter Depth (feet):** —

E ~~Latitude~~: 422813.69 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 391575.74 **Sampler Penetration (inches):** 6 inches

Sample Type: (Physical/Chemical) ~~Bioassay~~ BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? n/a	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: See EV012 Attempt 1 **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples See EV012 attempt 1

Total Sample Mass (kg): _____ Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: See EV012 attempt 1 Time: used in Composite # and type of Containers: -

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9-13-19 Field Supervisor Initials JP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/13/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV012

Attempt # 1 2 (3) Cast Time 1022 **Water Depth (feet):** 24.9 m

Sample Location: **Sheave Counter Depth (feet):** —

E ~~Latitude~~: 422813.36 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 5391576.66 **Sampler Penetration (inches):** 6 inches

Sample Type: (Physical/Chemical) (Bioassay) BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?		YES	(NO)
2. Overlying water present?		(YES)	NO
3. Overlying water excessively turbid?		YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?		(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?		YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?		(YES)	NO
8. Sample is:		Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: see EV012 attempt 1 **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: used in composite

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.13.19 Field Supervisor Initials JP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: NM ~~DK~~ 09/13/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV012

4 Attempt # ~~1~~ ~~2~~ ~~3~~ Cast Time 1034 Water Depth (~~feet~~ M): 24.9

Sample Location: Sheave Counter Depth (feet): —

E Latitude: 422818.25 Estimated Hydrowire angle (degrees): 0

N Longitude: 5391576.85 Sampler Penetration (inches): 6 inches

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	N/A YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Same as EV012 - Attempt 1 Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples ~~See E~~ Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: Used in composite Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9-13-19 Field Supervisor Initials SP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: ~~10t~~ 9/13/19

Project Number: 60612698 **Area of Interest:** Evan

Anchored? (NO) YES **Location ID:** EV012

5 Attempt # ~~1 2 3~~ Cast Time 1050 Water Depth ~~(feet)~~ (m): 24.9

Sample Location: Sheave Counter Depth (feet): —

E ~~Latitude~~: 422816.16 Estimated Hydrowire angle (degrees): ∅

N ~~Longitude~~: 5391577.03 Sampler Penetration (inches): 6 inches.

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: See EV012 attempt 1 Redox Boundary:

Texture: Presence of debris: 1 piece of glass Amber.

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: used in composite Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9/13/19 Field Supervisor Initials JP Date: 9/13/19

~~36.4~~ NM

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/13/19

Project Number: 60612698
Area of Interest: Evans

Anchored? (NO) YES
Location ID: EV012

6 Attempt # ~~1~~ ~~2~~ ~~3~~ Cast Time 1105
Water Depth (~~feet~~) m: 24.9

Sample Location:
Sheave Counter Depth (feet): ———

E ~~Latitude~~: 422 815.74
Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5391575.46
Sampler Penetration (inches): 6 inches

Sample Type: ~~Physical/Chemical~~ ~~Bioassay~~ (BMI) NM 9/13
Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(~~YES~~)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	N/A YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(~~YES~~)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: See EV012 Attempt 1
Redox Boundary:
Texture:
Presence of debris:
Color:
Biological Structures: 1x fresh H2O sponge w/ trace macrophytes
Stratification:
Shells: trace shell fragments.
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples: N/A
Total Sample Mass (kg): ———
> 2mm removed by hand: YES NO
Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg): ———

BMI Samples
Seived (250 µm)? (YES)
→ Siphon H2O.

Primary Sample ID: EV012-BMI-1-091319 Time: 1130 # and type of Containers: 1 bucket 5-gallon
Duplicate Sample ID: ——— Time: ——— # and type of Containers: ———
Split Sample ID: ——— Time: ——— # and type of Containers: ———

Sample Lead Initials: AP Date: 9.13.19
Field Supervisor Initials: JP Date: 9.13.19

2.5 gallon sediment + 2.5 gallons Ethanol

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698
Area of Interest: EVANS
Vessel: Yeti
Location ID: EV012
Vessel Crew: R.T + B.W
E.R
Sampling Crew: NM
AS, CS
C.R. Observer: N/A
EPA Observer: JJ
Arrival Time: NM ~~1324~~ 1348
Departure Time: 1530
River Stage: Water Depth = 24.8 m
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 73 Wind (mph): 4-6 mph
Clouds/Precipitation: Slightly Cloudy

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes No N/A

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None except H2O intake structure

Sampling Information

Sampler Used: Trident vibra frame
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

N/A Nicely cloudy

Sample Lead Initials NM Date: 9/20/19
Field Supervisor Initials LH Date: 09/20/19

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9/20/19			
Person completing form:	N. Moody		

Sampling date:	9/20/2019	Sampling time:	1236
Weather:	Clear Sunny 70s	Sample collector:	NM
Location ID:	EV01?	Field duplicate collected? (yes)	= FD
Media type (circle one):	(PW) EB FB	Sample ID:	EV013-PW-2-092019
Container Size:	125 mL poly w/ Nitric	Chemical Analysis:	~~Diss~~ Metals only
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Vibraframe.; Clear Water		

Sampling date:	9/20/2019	Sampling time:	1421
Weather:	Partly cloudy	Sample collector:	NM
Location ID:	EV012	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EV012-PW-1-092019
Container Size:	125mL x 3	Chemical Analysis:	All except sulfides
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibraframe.		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

Field Supervisor: NM Date: 9/20/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV013

Date: 9/13/2019 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: FD, DL **C.R. Observer:** MS

Arrival Time: 1215 **Departure Time:** 1400

River Stage:
Water Surface Elev. (ft): 1299.89

Water Surface Elevation Source: waterdata.usgs.gov

Weather Conditions Upon Arrival
Temp (°F): 71°

Wind (mph): 0-1 mpg

Clouds/Precipitation: partly cloudy, 0 precip.

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO ~~Need to confirm if mCs or mFs~~ NM

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile:

Boat Traffic: 0

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

Small wood water pumphouse on east shoreline

General Notes:

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.13.19

Sample Lead Initials AP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/13/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV013

Attempt # (1) 2 3 Cast Time 1211 Water Depth (~~feet~~ m): 24.7 m

Sample Location: Sheave Counter Depth (feet): 48 m

E Latitude: 422909.48 Estimated Hydrowire angle (degrees): 0

N Longitude: 5391593.02 Sampler Penetration (inches): 6 inches [six] JP 9-13-19

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	N/A YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes: target facies

Sediment Characteristics Target Stratum = Sampleable sand mfs

Sediment Type: 0-1 mm dark brown silt. Redox Boundary: None

Texture: > 1 mm black w/ brown specklies gravelly sand Presence of debris: None

Color: f-c f-c Biological Structures: None

Stratification: sub-Angular to sub rounded gravels Shells: None

Density: homogenous Sheen/Odor: None.

Presence/Absence silica glass: loose Other Notes:

Presence/Absence silica glass: present.

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): 104 Kg Seived (YES/NO)? 2mm (5mm)

Mass of material >5mm (kg): 49Kg

> 2mm removed by hand: YES (NO)

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: EV013-SE-1-091319 Time: 1215 # and type of Containers: 6 jars + 2 buckets.

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 7/13/19 Field Supervisor Initials JP Date: 9-13-19

AVS from 1st grab; others from attempts 1, 2, 3, & 4.

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/13/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES **Location ID:** EV013

Attempt # 1 (2) 3 Cast Time 1239 Water Depth (~~feet~~ m): 24.6

Sample Location: Sheave Counter Depth (feet): 49m

E ~~Latitude~~: 422908.68 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5391591.84 Sampler Penetration (inches): 6 inches

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	N/A YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Ramon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: see attempt 1 - EV013 Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples N/A.

Seived (250 µm)? YES

Used in composite

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.13.19 Field Supervisor Initials JP Date: 9-13-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/13/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV013

Attempt # 1 2 (3) Cast Time 1302 Water Depth (~~feet~~ m): 24.80.

Sample Location: Sheave Counter Depth (feet): ~~6 inches~~ No entry this time

E ~~Latitude~~: 422909.46 Estimated Hydrowire angle (degrees): 0 J.P 9-13-19

N ~~Longitude~~: 5391591.34 Sampler Penetration (inches): ~~no~~ 6"

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1.	Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2.	Overlying water present?	(YES)	NO
3.	Overlying water excessively turbid?	YES	(NO)
4.	Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	N/A YES	NO
5.	Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6.	Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7.	Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8.	Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: See EV013 attempt 1 Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples N/A.

Seived (250 µm)? YES

Used in Composite

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.13.19 Field Supervisor Initials AP Date: 9-13-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/13/19

Project Number: 60612698 **Area of Interest:** Evans.

Anchored? NO YES **Location ID:** EV013

4 Attempt # 1 2 3 Cast Time ~~NM 1324~~ 1327 **Water Depth (feet):** 24.8 m

Sample Location: **Sheave Counter Depth (feet):** —

E Latitude: 422906.68 **Estimated Hydrowire angle (degrees):** 0

N Longitude: 5341590.03 **Sampler Penetration (inches):** 6 inches

Sample Type: Physical/Chemical Bioassay BMI **Cultural Resources Observed?** YES NO

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/a	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: See EV013 Attempt 1 **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples — Used in composite

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.13.19 Field Supervisor Initials JP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/13/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV013

5 Attempt # ~~1~~ ~~2~~ ~~3~~ Cast Time 1355. Water Depth (~~feet~~ m): 24.9

Sample Location: Sheave Counter Depth (feet): —

E ~~Latitude~~: 422908.31 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5391590.00 Sampler Penetration (inches): 6 inches

Sample Type: Physical/Chemical Bioassay (BMI) Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	N/A YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Same as EV013 attempt 1 Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples N/A

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? (YES)

Sieved siphon H2O

Primary Sample ID: EV013-BM1-1-091319 Time: 1400 # and type of Containers: 2x buckets 5-gallons

Duplicate Sample ID: ~~_____~~ Time: _____ # and type of Containers: ~~_____~~

Split Sample ID: ~~_____~~ Time: _____ # and type of Containers: ~~_____~~

Sample Lead Initials AP Date: 9/13/19 Field Supervisor Initials AP Date: 9-13-19

2.0 gallons of sediment. +2 g ethanol

2.0 gallons of sediment +2 g ethanol

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/2019

Project Number: 60612698
Area of Interest: Evans A01
Vessel: Yeti
Location ID: EV013
Vessel Crew: RT ER BW
Sampling Crew: NM AS, CS
C.R. Observer: N/A
EPA Observer: JJ
Arrival Time: 1142
Departure Time: 1318
River Stage: Water Depth = 24.90m
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 71 Wind (mph): 3
Clouds/Precipitation: Sunny

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Vibraframe trident probe
# of Sampling Attempts (Accepted vs. Rejected): 1 attempt ✓ successful.

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

N/A Moved

Sample Lead Initials NM Date: 9/20/19
Field Supervisor Initials [illegible] Date: 09/20/19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9/20/19			
Person completing form: N. Moody			

Sampling date:	9/20/2019	Sampling time:	1236
Weather:	Clear Sunny 70s	Sample collector:	NM
Location ID:	EV013	Field duplicate collected? (Yes)	= FD
Media type (circle one):	(PW) EB FB	Sample ID:	EV013-PW-2-092019
Container Size:	125 mL poly w/ Nitric	Chemical Analysis:	Diss Metals only
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Vibraframe.; Clear Water		

Sampling date:	9/20/2019	Sampling time:	1421
Weather:	Partly Cloudy	Sample collector:	NM
Location ID:	EV012	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EV012-PW-1-092019
Container Size:	125mL x 3	Chemical Analysis:	All except Sulfides
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibra frame.		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

Field Supervisor: _____ Date: 9/20/19

Sample Lead NM Date: 9/20/19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9/20/19			
Person completing form:	N. Moody		

Sampling date:	9/20/2019	Sampling time:	1236
Weather:	Clear Sunny 70s	Sample collector:	NM
Location ID:	EV01?	Field duplicate collected? (yes)	= FD
Media type (circle one):	(PW) EB FB	Sample ID:	EV013-PW-2-092019
Container Size:	125 mL poly w/ Nitric	Chemical Analysis:	Diss metals only
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Vibraframe.; Clear water		

Sampling date:	9/20/2019	Sampling time:	1421
Weather:	Partly cloudy	Sample collector:	NM
Location ID:	EV012	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EV012-PW-1-092019
Container Size:	125mL x 3	Chemical Analysis:	All except sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibraframe.		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

Field Supervisor NM Date: 9/20/19

Sample Lead NM Date: 9/20/19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9/20/19			
Person completing form: N. Moody			

Sampling date:	9/20/2019	Sampling time:	1236
Weather:	Clear Sunny 70s	Sample collector:	NM
Location ID:	EV01?	Field duplicate collected? (Y/N)	= FD
Media type (circle one):	(PW) EB FB	Sample ID:	EV013-PW-2-092019
Container Size:	125 mL poly w/ Nitric	Chemical Analysis:	Diss Metals only
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Vibraframe.; Clear water		

Sampling date:	9/20/2019	Sampling time:	1421
Weather:	partly cloudy	Sample collector:	NM
Location ID:	EV012	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EV012-PW-1-092019
Container Size:	125mL x 3	Chemical Analysis:	All except sulfides
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibraframe.		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

Field Supervisor NM Date: 9/20/19

Sample Lead NM Date: 9/20/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV014
Vessel Crew: Shawn Hinz (SH), Ed Sloan (ES)
Sampling Crew: Michelle Stegner (MS), (BF) Michaela McCoog (MM) Brian Fletcher
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 8:40 (MS) 8:30
Departure Time: 9:35
River Stage: 64 ft. deep
Water Surface Elev. (ft): 1298.41 ft
Water Surface Elevation Source: USGS 9/20 waterdata.usgs.gov
Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: Partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø
Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Small water pump house and pipe extending to water on West shore

Sampling Information

Sampler Used: Humon
# of Sampling Attempts (Accepted vs. Rejected): 3 attempts; 3 rejected

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials mm Date: 9-20-19
Field Supervisor Initials [illegible] Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV014

Attempt # 1 Cast Time: 0857 Water Depth (ft): 67 ft

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV014-SE-1 Estimated Hydrowire angle (degrees): —

Easting: 422853.89 Sampler Penetration (inches): <1

Northing: 5391810.99 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Poor recovery

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary: No

Presence of debris: No

Color: Biological Structures: No

Stratification: Shells: No

Density: Sheen/Odor: No

Presence/Absence silica glass: None Other Notes: Very low recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials MF Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV014

Attempt # 2 Cast Time: 0906 Water Depth (m): 71 ft

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV014-2 Estimated Hydrowire angle (degrees): —

Easting: 422872.12 Sampler Penetration (inches): 1

Northing: 5391802.24 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0 Poor recovery

Sediment Characteristics

Sediment Type / Texture: Fine to med. SAND Redox Boundary: No

Presence of debris: No

Color: Light brown Biological Structures: No

Stratification: No Shells: No

Density: Loose Sheen/Odor: No

Presence/Absence silica glass: None noted Other Notes: 1 Tbs recovered Only

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DW Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV014

Attempt # 3 Cast Time: 0935 Water Depth (m): 71

GPS Target Parameters Sheave Counter Depth (m): –

Name: EV014-3 Estimated Hydrowire angle (degrees): –

Easting: 422841.54 Sampler Penetration (inches): < 1

Northing: 5391809.13 Sample Interval (0 to X inches bss): –

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Poor recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials DMM Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: RV Tieton **Location ID:** EV014

Vessel Crew: J. Schaefer, R. McElhaney **Sampling Crew:** S. Holmes (video/photo)

C.R. Observer: N/A **EPA Observer:** G. Sedberry, L. Ratevink

Arrival Time: 1555 **Departure Time:** 1605

River Stage:
Water Surface Elev. (ft): ____
Water Surface Elevation Source: ____

Weather Conditions Upon Arrival:
Temp (°F): 58 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: EV014-SV-1
Easting: 422888.59
Northing: 5391799.13
D: 24.1 m @ 1557
Observations: Cobbles and silt/sand

GPS Target Name: EV014-SV-2
Easting: 422869.71
Northing: 5391786.45
D: 23.2 m @ 1559
Observations: Cobbles and silt/sand

GPS Target Name: EV014-SV-3
Easting: 422832.28
Northing: 5391795.19
D: 23.0m @ 1601
Observations: Cobbles and silt/sand w/ small boulders

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials AH Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/28/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV015
Vessel Crew: Pete Jenkins (PJ), Jeff Schut (JS)
Sampling Crew: Michelle Stegner (MS), Cliff Pearson (CP), Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 0823
Departure Time: 1020

River Stage:
Water Surface Elev. (ft): -1298.34 waterdata
Water Surface Elevation Source: usgs.gov

Weather Conditions Upon Arrival:
Temp (°F): 40 Wind (mph): 8
Clouds/Precipitation: rain, clouds

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708.
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Yes - fishing derby, small boats pass occasionally
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional cliff on east shoreline, with cobble shore.

Sampling Information

Sampler Used: Freeze grab w/o hammer (3 attempts-rejected, 2 video recon)
# of Sampling Attempts (Accepted vs. Rejected): #1: Correct facies, little to no penetration/recovery. SH 9-28 ~~#Video recon.~~ #2: same as #1 #3: same as #1

Video Reconnaissance Information

GPS Target Name: EV015-SV-1
Easting: 423085.49
Northing: 5391610.93 Depth = 25.2 m
Observations: Mixed coarse w/ fines @ 25 and 40 %. Large gravels making up coarse fraction, suitable for sampling

GPS Target Name: EV015-SV-2
Easting: 423098.97
Northing: 5391615.00 Depth = 25.6
Observations: Same as first sediment video. Appears to be mCS.

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-28-19
Field Supervisor Initials MS Date: 9-28-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-28-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV015

Attempt # 1 Cast Time: 0956 Water Depth (m): 25.2

GPS Target Parameters: Sheave Counter Depth (m): —

GPS Target Name: EV015-1 Estimated Hydrowire angle (degrees): —

Easting: 473086.64 Sampler Penetration (inches): 3

Northing: 5391609.46 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical~~ ~~BMI~~ **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
4. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: Freeze Grab w/ Hammer ~~w/o Hammer~~ Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: SA fine-coarse gravels (5 total)

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples - Sieve and Composite Information

Attempt #s in ~~Sample if~~ Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

PA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials CY Date: 9/28/19 Field Supervisor Initials MS Date: 9-28-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-28-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV015

Attempt # 2 Cast Time: 0924 Water Depth (m): 25.4

GPS Target Parameters: Sheave Counter Depth (m): —

GPS Target Name: EV015-2 Estimated Hydrowire angle (degrees): —

Easting: 423086.93 Sampler Penetration (inches): 3

Northing: 5391610.48 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical~~ ~~BMI~~ **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
4. Sample is:	Accepted	(Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

PA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials CR Date: 9/28/19 Field Supervisor Initials MS Date: 9-28-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-28-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV015

Attempt # 3 Cast Time: 1005 Water Depth (m): 24.8

GPS Target Parameters: Sheave Counter Depth (m): —

GPS Target Name: EV015-3 Estimated Hydrowire angle (degrees): —

Easting: 423099.56 Sampler Penetration (inches): 2

Northing: 5391615.70 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical~~ BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES (NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES (NO)
4. Sample is: Accepted (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: No Recovery

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials CL Date: 9/28/19 Field Supervisor Initials MS Date: 9-28-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___

Date 10-9-19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Yeti **Location ID:** EV015

Vessel Crew: R. Trudeau, E. Rigbey **Sampling Crew:** J. Pretare, J. Moore, C. Pickerell

EPA Observer: N. Badon

Arrival Time: 0845 **Departure Time:** 1122

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 39 Wind (mph): 1-2
Clouds/Precipitation: high clouds, no precip

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ___

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Unvegetated bluff w/ erosion patterns

GPS Target Parameters and Water Depth

GPS Name: EV015-1-PW

Water Depth (m): 25.5

Easting: 423072.39

Northing: 5391621.23

Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: ___

Observations: Video taken by CMA

Easting: ___

Northing: ___

GPS Name: ___

Observations:

Easting: ___

Northing: ___

Sample Identification Information

Primary Sample ID: EV015-PW-1-100919 Time: 1024

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: — Time: ___

Analyte and Bottle Type: ___

EPA Split Sample ID: EV015-PW-3-100919 Time: 1024

1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JP Date: 10-9-19

Field Supervisor Initials DM Date: 10-9-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/28/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV016
Vessel Crew: Pete Jenkins (PJ) Jay Shut (JS)
Sampling Crew: Michelle Stegner (MS) Cliff Pearson (CP) Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1315
Departure Time: 1345

River Stage:
Water Surface Elev. (ft): 1298.
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 39 Wind (mph): 9
Clouds/Precipitation: clouds, rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Mostly MBS, discrete patches mCS circled by J. Pretare 12-2-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ∅
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
∅

Sampling Information

Sampler Used: freeze Grab w/o hammer # of Sampling Attempts (Accepted vs. Rejected):
(4 video recon)

Video Reconnaissance Information

GPS Target Name: EV016-SV-1 @1323
Easting: 423190.45
Northing: 5391653.73 Depth: 25.0 m
Observations: Gravel w/ sand and cobbles/boulders could not sample
1322 time stamp on photo

GPS Target Name: EV016-SV-2 @1325
Easting: 423179.19
Northing: 5391653.64 Depth = 25.0 m
Observations: Boulders, wood debris w/in bed of cobble/gravel, little sand
1324 time stamp on photo

GPS Target Name: EV016-SV-3 @1336
Easting: 423210.54
Northing: 5391627.20 Depth = 24.0m
Observations: Large boulders w/ some cobble, gravel and sand.
1336 time stamp

GPS Target Name: EV016-SV-4 @1338
Easting: 423204.63
Northing: 5391619.13 Depth = 24.0m
Observations: A patch of sand/gravel w/ few cobbles. MOST SAMPLEABLE
1337 time stamp

Sample Lead Initials SH Date: 9-28-19
Field Supervisor Initials MS Date: 9-28-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV-016
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: Anisa Sheppard-Becker
EPA Observer: Brad Sample
Arrival Time: 1300
Departure Time: 1405

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 59 Wind (mph): 2
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: very low

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline, steep cliffs

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): 2 - Rejected both

Video Reconnaissance Information

GPS Target Name: EV016-SV-5
Easting: 423173.10
Northing: 539160.43
Observations: 23.50m, T=13.48, Image: 134807A, 134811A, boulder, cobbles (predominant)

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: ac Date: 10/2/19
Field Supervisor Initials: NM Date: 10/2/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-016

Attempt # 1 Cast Time: 1312 Water Depth (m): 23.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: EV016-1-CHEM Estimated Hydrowire angle (degrees): 0

Easting: 423206.79 Sampler Penetration (average) (inches): 4

Northing: 5391613.60

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? YES NO (N/A)

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES (NO)
4. Sample is: Accepted (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: No sample collected. Some material may have fallen off during retrieval.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID: NA		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AC Date: 10/2/19 Field Supervisor Initials NM Date: 10/2/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES 1342 **Location ID:** EV-016

Attempt # 2 Cast Time: ~~1347~~ re ~~1405~~ **Water Depth (m):** 23.5

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: EV016-2CHEM T=1347 **Estimated Hydrowire angle (degrees):** 0

Easting: 423157.13 **Sampler Penetration (average) (inches):** Unknown

Northing: 5391604.04 video image: 1347 ~~21~~ A

Sample Type: Physical/Chemical BMI **Cultural Resource Check Completed?** YES NO (NA)

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	YES	**NO**
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
4. Sample is:	**Accepted**	Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) **Added Weights on Sampler (lbs):** 100

Sediment Characteristics

Sediment Type / Texture: Dropped sampler onto hard cobble/boulder substrate at 1347. Substrate too hard to sample.

Color:

Stratification: Not correct strata.

Density: No sample collected

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AC Date: 10/2/19 Field Supervisor Initials NM Date: 10/2/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/2/18

Project Number: 60612698 **Area of Interest:** EVANS
Vessel: YETI **Location ID:** EV018
Vessel Crew: R. TRUDEAU, R. McCLEESE **Sampling Crew:** J. RAY, J. MOORE, J. GUERRERO
EPA Observer: STEVE COX
Arrival Time: 1140 **Departure Time:** 1540

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 46 Wind (mph): 3mph S
Clouds/Precipitation: P. CLOUDY

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 70.8 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE, INGALLS NEARBY

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ENDDRO/SLIDE TO THE SE, N SHORE SAND/COBBLE

GPS Target Parameters and Water Depth

GPS Name: EV018-3-PW Water Depth (m): 24
Easting: 427334 8.47
Northing: 5391683.16 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: VIDEO FROM CMA x3 Observations: ① FLYOVER/LANDING
Easting: ② INITIAL DRIVE
Northing: ③ FINAL DRIVE, SAMPLE POSITION

GPS Name: 10/2/19 Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV018-PW-1-100219 Time: 1403

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type:
EPA Split Sample ID: — Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 10/2/19 Field Supervisor Initials NM Date: 10/2/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/02/2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV020

Vessel Crew: Pete Jenkins, Jeff Schut **Sampling Crew:** Nicky Moody, Andy Clodfelter

C.R. Observer: Anisa Sheppherd-Becker **EPA Observer:** Brad Sample

Arrival Time: 0902 **Departure Time:** 1255

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 33 Wind (mph): 2
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708-5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline, steep cliffs

Sampling Information

Sampler Used: Freeze Grab

# of Sampling Attempts (Accepted vs. Rejected): 5 attempts (MEB 11/26/19) all accepted. NO BMI

Video Reconnaissance Information

GPS Target Name: EV020-SV-1
Easting: 423493.07
Northing: 5391760.52
T= 906
Observations: 24.8 m. mixed coarse

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MC Date: 10/2/19 Field Supervisor Initials NM Date: 10/2/19

Revised 9/18/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-020

Attempt # 1 Cast Time: 0917 **Water Depth (m):** 24.5

GPS Target Parameters **Sheave Counter Depth (m):** Na

Name: EV020-1-CHEM **Estimated Hydrowire angle (degrees):** 0

Easting: 423493.06 **Sampler Penetration (average) (inches):** 4

Northing: 539761.95

Sample Type: (Physical/Chemical) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO AE
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: AE (Accepted) Rejected AE Holding

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) **Added Weights on Sampler (lbs):** 100

Sediment Characteristics

Sediment Type / Texture: sample held for AE despite ~~rejected due to~~ low percentage of fines, (20% sand) AE, gravelly cobbles w/ some sand

Color: brown

Stratification: homogeneous

Density: loose

(Presence)/Absence silica glass: comprised most of fines in sample

Redox Boundary: NA

Presence of debris: no

Biological Structures: no

Shells: no

Sheen/Odor: slight sulfur odor

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1,2,3,4,5 SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 0.4 Total Mass of Sediment (kg): 5.9

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 3.4

Mass of Sediment > 3 inches (cobble) (kg): 2.1

Sample Identification Information

SE Primary Sample ID: EV021-SE-1-100219 Time: 0935

	Cross off containers NOT filled
SEM-AVS	8 ~~oz WMGJ (no headspace)~~
Total Metals & TOC	8 oz WMGJ
Grain Size	~~8 oz WMGJ~~
BEM	~~16 oz Amber WMGJ~~
Organics	~~2 x 8 oz WMGJ (3/4 full except in Reference Area)~~

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: EV020-SE-3-100219 Time: 0935 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? (Yes) No AE See *Rinsate Sample Collection Form*

Sample Lead Initials AE Date: 10/2/19 Field Supervisor Initials NM Date: 10/2/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 5
Date 10/2/19

Project Number: 60612698 — **Area of Interest:** Evans

Anchored? NO YES — **Location ID:** EV-020

Attempt # 2 — Cast Time: 0950 — Water Depth (m): 24.5

GPS Target Parameters — Sheave Counter Depth (m): NA

E ~~Name:~~ 423488.44 — Estimated Hydrowire angle (degrees): 0

N ~~Easting:~~ 5391763.72 — Sampler Penetration (average) (inches): 4

NAME ~~Northing:~~ EV020-2-CHEM

Sample Type: Physical/Chemical BMI — Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: Accepted Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer w/o Hammer — Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: similar material to EV020-1-~~CHEM~~ as see form EV020-1 for additional information on sample composition.

Color:

Stratification:

Density:

Presence/Absence silica glass: ~~X~~ more gravels than cobbles; cobbly gravel w/some sand.

Redox Boundary:

Presence of debris:

Biological Structures: ~~Sand~~ Small snail observed

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: — SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No — Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
Sample included + composited with EV020-SE-1-100219		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials AC — Date: 10/2/19 — Field Supervisor Initials NM — Date: 10/2/19

Revised 9/21/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698 **Area of Interest:** Elans

Anchored? (NO) YES **Location ID:** EV-020

Attempt # 3 Cast Time: 1025 Water Depth (m): 24.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: EV-020-3-CHEM Estimated Hydrowire angle (degrees): 0

Easting: 4234490.49 Sampler Penetration (average) (inches): 4

Northing: 539 1763.14

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: cobbly gravel w/some sand Redox Boundary: NA

cobbles sub rounded to subangular

Color: gravel/sand fine to coarse Presence of debris:

- black to dk. brown sand, variety of colors - cobble. Biological Structures: few benthic macroinvertebrates observed

Stratification: Shells:

Density: Sheen/Odor: slight sulfur odor

(Presence)/Absence silica glass: Other Notes: All other parameters similar to EV-020-2

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
Sample included + composited with EV020-SE-1-100219		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:	8 oz WMGJ	*Sediment Volume*	
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*	
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*	

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/2/19 Field Supervisor Initials AM Date: 10/2/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-020

Attempt # 4 Cast Time: 1053 Water Depth (m): 24.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: EV-020-4-chem Estimated Hydrowire angle (degrees): 0

Easting: 423459.78 Sampler Penetration (average) (inches): 4

Northing: 5391768.78

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HOLD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 2 cobbles cobbly gravel w/some sand

Color: cobbles - subrounded, gravels - fine to coarse Variable - sand brown/black + sand

Stratification: no apparent

Density: loose

Presence/Absence silica glass:

Redox Boundary: NA

Presence of debris: no

Biological Structures: some macroinvertebrates observed

Shells: no

Sheen/Odor: ~~no~~ slight sulfur smell

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:
sample included + composited with EV020-SE-1-100219

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID. Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials ec Date: 10/2/19 Field Supervisor Initials NSA Date 10/2/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 5 of 5
Date 10/2/19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 5 Cast Time: 1131

GPS Target Parameters
Name: EV-020-5-CHEM
Easting: 423490.81
Northing: 5391767.91

Area of Interest: Evans
Location ID: EV-020
Water Depth (m): 25.1
Sheave Counter Depth (m): NA
Estimated Hydrowire angle (degrees): 0
Sampler Penetration (average) (inches): 4

Sample Type: (Physical/Chemical) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer)
Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 1 cobble gravelly cobble w/some sand
Color: cobbles - subrounded sand + gravels - fine to coarse
Stratification: homogenous
Density: loose
(Presence)/Absence silica glass:
Brown/black sand - variable colors (subrounded cobbles/gravel)

Redox Boundary: NA
Presence of debris: no
Biological Structures: no
Shells: no
Sheen/Odor: no
Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ____ SEM-AVS Container Collected from Attempt #: ____

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No
Removed by Hand > 5mm? (Yes) No
Mass of Sediment < 5 mm (kg): 0.4
Total Mass of Sediment (kg): 5.9
Mass of Sediment 5 mm to 3 inches (gravel) (kg): ____
Mass of Sediment > 3 inches (cobble) (kg): ____

Sample Identification Information

SE Primary Sample ID: ____ Time: ____
Sample included + composited with EV020-SE-1-100219

SE Duplicate Sample ID: ____ Time: ____

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: ____ Time: ____ 8 oz WMGJ *Sediment Volume*
BMI Primary Sample ID: ____ Time: ____ Yellow 5-gallon bucket ____ *gallons*
BMI Duplicate Sample ID: ____ Time: ____ Yellow 5-gallon bucket ____ *gallons*

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials dm Date: 10/2/19 Field Supervisor Initials NM Date: 10/2/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10-9-19

Project Number: 60612698
Area of Interest: Evans
Vessel: Yeti
Location ID: EV020
Vessel Crew: R. Trudeau, E. Rigby
Sampling Crew: J. Freitare, J. Moore, C. Pickerell
EPA Observer: N. Bad on
Arrival Time: 1146
Departure Time: 1455

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 46 Wind (mph): 1-2
Clouds/Precipitation: high scattered clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ___
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic ___
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Eroding bluff

GPS Target Parameters and Water Depth

GPS Name: ___
Water Depth (m): ___
Easting: ___
Northing: ___
Water Sample Color: ___

Additional Video Reconnaissance Information

GPS Name: ___
Observations:
Easting: ___
Northing: ___

GPS Name: ___
Observations: more than 3 attempts. No sample.. No penetration w/ probe
Easting: ___
Northing: ___

Sample Identification Information

Primary Sample ID: none Time: ___

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: ___ Time: ___
Analyte and Bottle Type: ___
EPA Split Sample ID: ___ Time: ___
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JP Date: 10/9/19
Field Supervisor Initials tmj Date: 10-9-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/4/19

Project Number: 60612698
Area of Interest: EVANS
Vessel: YETI
Location ID: EV021
Vessel Crew: R. TRUDEAU, R. McGREGOR
Sampling Crew: J. RAY, J. MOORE, J. GUERRERO
EPA Observer: NONE
Arrival Time: 0800
Departure Time: 0945

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 38
Wind (mph): CALM ~2mph
Clouds/Precipitation: CLOUDY SHOWERS FORECASTED

Trident Sampler Type: Push Pole Vibraframe ~~Driveframe~~

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic NONE
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
SHORELINE TO EAST PREDOMINANTLY COBBLE WITH SOME SAND. BLUFFED SLOPE BELOW FORESTED. MARCUS CAMPGROUND IN DISTANCE TO SE

GPS Target Parameters and Water Depth

GPS Name:
Easting:
Northing:
Water Depth (m): ~22 m
Water Sample Color:

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing: 10/4/19
Observations: MULTIPLE ATTEMPTS PARTIALLY PENETRATING WITH LITTLE OR NO ADVANCEMENT WITH DRIVING. EV021-2 EXAMPLE POINT W/ REFUSAL

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: Time:
Duplicate Sample ID: NO SAMPLE Time:
EPA Split Sample ID: Time:
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	~~125 mL Amber with H2SO4~~
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: Date: 10/4/19
Field Supervisor Initials: MS Date: 10/4

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/28/2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV022

Vessel Crew: Pete Jenkins (PJ), Jeff Schut (JS) **Sampling Crew:** Michelle Stegner (MS), Cliff Pearson (CP), Stuart Holmes (SH)

C.R. Observer: Michelle Stegner (MS) **EPA Observer:** Marilyn Gauthiee (MG)

Arrival Time: 1038 **Departure Time:** 1213

River Stage:
Water Surface Elev. (ft): 1298.34
Water Surface Elevation Source: waterdata.usgs.gov

Weather Conditions Upon Arrival:
Temp (°F): 40 Wind (mph): 9
Clouds/Precipitation: Cloudy, rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: occasional small fishing boats

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
0

Sampling Information

Sampler Used: Freeze Grab w/o hammer (2 attempts, 1 accepted, 3 video)

# of Sampling Attempts (Accepted vs. Rejected): #1 rejected; #2 accepted (~27g metals)

Video Reconnaissance Information

GPS Target Name: EV022-SV-1 @1050
Easting: 423673.83
Northing: 5391794.52 D=22.8 m
Observations: large boulder in video, ~~not~~ suitable for grab attempt!

GPS Target Name: EV022-SV-2 @1054
Easting: 423649.91
Northing: 5391763.35 D=22.8 m
Observations: Appears as gravel w/ sand, few cobbles, will attempt sample.

GPS Target Name: EV022-SV-3 @1134
Easting: 423642.27
Northing: 5391745.05 D=22.8 m
Observations: Appears as patch of gravel w/ sand, will attempt sample.

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-28-19 Field Supervisor Initials MS Date: 9-28-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-28-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV022

Attempt # 1 Cast Time: 1108 Water Depth (m): 22.8

GPS Target Parameters: Sheave Counter Depth (m): —

GPS Target Name: EV022-1 Estimated Hydrowire angle (degrees): —

Easting: 423649.24 Sampler Penetration (inches): 2

Northing: 539763.01 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical~~ BMI **Cultural Resource Check Completed?** ~~YES~~ ~~NO~~

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
4. Sample is:	Accepted	(Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: No Recovery

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples - Sieve and Composite Information

Attempt ~~#s in Sample~~ if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: ~~# and type of Containers:~~

PA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials CP Date: 9/28/19 Field Supervisor Initials JAP Date: 1-17-20

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-28-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV022

Attempt # 2 Cast Time: 1200 Water Depth (m): 20.5

GPS Target Parameters: Sheave Counter Depth (m): —

GPS Target Name: EV022-2-Chem Estimated Hydrowire angle (degrees): —

Easting: 423609.88 Sampler Penetration (inches): 5

Northing: 5391701.14 Sample Interval (0 to X inches bss): 0 to 5

Sample Type: (Physical/Chemical) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	YES	(NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
4. Sample is:	(Accepted)	Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Fine SAND w/ trace m-c sand. 1 coarse gravel.

Redox Boundary: None

Presence of debris: None

Color: 10 YR 4/3

Biological Structures: None

Stratification: None

Shells: None

Density: Loose

Sheen/Odor: None

Presence/Absence silica glass: Scattered

Other Notes:

Physical/Chemical Samples - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 only SEM-AVS Container Collected from Attempt #: Not collected

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (g): 27.0 Total Mass of Sediment (g): 127.7

Mass of Sediment 5 mm to 3 inches (gravel) (g): 100.7

Mass of Sediment > 3 inches (cobble) (g): 0.0

Sample Identification Information

Primary Sample ID: EV022-SE-1-092819 Time: 1200 # and type of Containers: Only filled 27g in 8oz metals jar

Duplicate Sample ID: Time: # and type of Containers:

PA Split Sample ID: DID NOT COLLECT BMI Time: # and type of Containers:

Sample Lead Initials CP Date: 9/28/19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09/30/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EVO 22
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: Anisa Shepherd-Becker
EPA Observer: Brad Sample
Arrival Time: 1146
Departure Time: 1615
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: Partly cloudy

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): 5 attempts - 5 accepted (11/26/19 MEO)

Video Reconnaissance Information

GPS Target Name: EV022-SV4 T=1155 Observations: Depth = 20.2m
Easting: 423596.86
Northing: 5391717.30
cobble w/ gravel and sand

GPS Target Name: ~~EV022-SV5~~ T=1252 Observations: Depth = 20.2m.
Easting: 423597.54 name = EV022-3-BMI Sample attempt #3
Northing: 5391715.17

GPS Target Name: EV022-4-BMI T=1325 Observations: Depth = 20.2m
Easting: 423598.79 Sample attempt #4
Northing: 5391719.85

GPS Target Name: EV022-5-BMI T=1350 Observations: Depth = 22.4m
Easting: 423601.64 Sample attempt #5
Northing: 5391719.11

Sample Lead Initials NM Date: 9/30/19 Field Supervisor Initials NM Date: 9/30/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV022

Attempt # 3 Cast Time: 1247 (number 1 attempt of day) **Water Depth (m):** 20.2

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: EV022-3-BM1 **Estimated Hydrowire angle (degrees):** 0

Easting: 423547.54 **Sampler Penetration (average) (inches):** 4

Northing: 5391715.17

Sample Type: Physical/Chemical (BMI) **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) **Added Weights on Sampler (lbs):** 100

Sediment Characteristics

Sediment Type / Texture: gravel-angular to subrounded fine to coarse sand w/ gravel

Color: gravel is fine, trace coarse gravel greyish brown w/ brown/white speckles

Stratification: NA

Density: loose

Presence/Absence silica glass: not observed

Redox Boundary: NA

Presence of debris: no

Biological Structures: no

Shells: no

Sheen/Odor: none

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3, 4, 5, 6, 7 **SEM-AVS Container Collected from Attempt #:** NA

Sieving Information: NA

Sieved with 5 mm Sieve? Yes (No) **Removed by Hand > 5mm?** Yes No

Mass of Sediment < 5 mm (kg): _____ **Total Mass of Sediment (kg):** _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ		*Sediment Volume*
BMI Primary Sample ID:	EV022-BM1-1-093019	Time: 1307	Yellow 5-gallon bucket		1.1 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket		_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 9/30/19 Field Supervisor Initials NM Date: 9/30/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 5

Date 9/30/19

Project Number: 60612698 **Area of Interest:** EVANS

Anchored? (NO) YES **Location ID:** EVA-22

Attempt # 4 Cast Time: 1322 Water Depth (m): 20.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: EVA22-4-BMI Estimated Hydrowire angle (degrees): 0

Easting: 423593.79 Sampler Penetration (average) (inches): 4

Northing: 539,719.85

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Similar as EVA22-4-BMI but 2 large cobble included. Redox Boundary:

Color: Subangular to rounded cobble. Presence of debris:

Stratification: See attempt 3 for additional Biological Structures:

Density: information as this sample Shells:

Presence/Absence silica glass: is very similar in composition. Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See attempt 3 SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: → Included + composited	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: See attempt 3	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 9/30/19 Field Supervisor Initials 9/30/19 Date: NM

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV022

Attempt # 5 Cast Time: 1356 Water Depth (m): 22.4

GPS Target Parameters Sheave Counter Depth (m): N/A

Name: EV022-5-BMI Estimated Hydrowire angle (degrees): 0

Easting: 423601.64 Sampler Penetration (average) (inches): 4

Northing: 5391719.11

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: similar as EV022-3 and EV022-4 BMI, except only one cobble included with sample.

Color: see attempt 3 as this sample is very similar in composition.

Stratification:

Density: loose

Presence/Absence silica glass: no

Redox Boundary: Dark brown silty sand

Presence of debris: no

Biological Structures: no

Shells: no

Sheen/Odor: no

Other Notes: Sand is fine to medium, gravels are fine to coarse subrounded to subangular

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See attempt 3 SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Included + composited	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	See attempt 3	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 9/30/19 Field Supervisor Initials NM Date: 9/30/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES **Location ID:** EV0-22

Attempt # 6 Cast Time: 1430 Water Depth (m): 27.4

GPS Target Parameters Sheave Counter Depth (m): NA

Name: EV022-6-BMI Estimated Hydrowire angle (degrees): 0

Easting: 423602.52 Sampler Penetration (average) (inches): 4

Northing: 5391718.80

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: See EV022-3-BMI as this sample was very similar in composition to that sample.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: see attempt 3 SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: not included+composited	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: see attempt 3	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials 9/30 Date: NM Field Supervisor Initials NM Date: 9/30/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/19

Project Number: 60612698

Area of Interest: Evans

Anchored? (NO) YES

Location ID: EV0-22

Attempt # 7 Cast Time: 1518

Water Depth (m): 22.4

GPS Target Parameters (#5 attempt of day)

Sheave Counter Depth (m): NA

Name: EV022-7BMI

Estimated Hydrowire angle (degrees): 0

Easting: 423601.54

Sampler Penetration (average) (inches): 4

Northing: 5391719.70

Sample Type: Physical/Chemical (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer)

Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: See EV022-3-BMI as this sample was very similar in composition to that sample.

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See attempt #3

SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Included + composited	Time:	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	See attempt 3	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 9/30/19 Field Supervisor Initials NM Date: 9/30/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/3/19

Project Number: 60612698
Area of Interest: EVANS
Vessel: YETI
Location ID: EV022
Vessel Crew: R. TRUDEAU, R. McCLEESE
Sampling Crew: J. RAY, J. MOORE, S. GUENKEL
EPA Observer: NONE
Arrival Time: ~~1055~~ 1105
Departure Time: 1310

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 47 Wind (mph): CALM ~ 2mph
Clouds/Precipitation: CLOUDY, SHOWERS

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) ~~(Anchored)~~
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
EASTERN SHORELINE SANDY, BELOW ERODED SLOPE

GPS Target Parameters and Water Depth

GPS Name: EV022-1-PW
Water Depth (m): 19.4
Easting: 423611.56
Northing: 5391700.89
Water Sample Color: INITIAL PURGE SLIGHTLY TURBID SAMPLE CLEAR

Additional Video Reconnaissance Information

GPS Name:
Observations:
Easting:
Northing:

GPS Name: 10/3/19
Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV022-PW-1-100319 Time: 1203

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

10/3/19

Duplicate Sample ID: Time:
EPA Split Sample ID: Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type:
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials JL Date: 10/3/19
Field Supervisor Initials MS Date: 10/3/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/4/19

Project Number: 60612698 **Area of Interest:** EVANS
Vessel: YETI **Location ID:** EV023
Vessel Crew: R. TRUDEAU, R. MCLEOD **Sampling Crew:** J. RAY, J. MOORE, J. GUERRERO
EPA Observer: NONE
Arrival Time: ~~1000~~ 1018 **Departure Time:** 1212

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 38 Wind (mph): CALM <2mph
Clouds/Precipitation: CLOUDY

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *(Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: FISHERMAN UP ~~CLOSED~~ TOWARDS CAMPGROUND

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
LOCATION SLOPED. BASE OF SLIDE, ~~BER~~SHORE PREDOMINATLY COBBLE w/ SAND/SCREE

GPS Target Parameters and Water Depth

GPS Name: EV023-1-PW Water Depth (m): 14.5
Easting: 423863.42
Northing: 5391827.94 Water Sample Color: INITIAL PURGE TURBID (PHOTO) SAMPLE CLEARED, HOWEVER FILTER DIRTY. (SEE PHOTO) ONLY USED 1 WHATMAN FILTER.

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV023-PW-1-100419 Time: 1117

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

10/4/19

Duplicate Sample ID: Time: Analyte and Bottle Type:
EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: Date: 10/4/19 Field Supervisor Initials: Date: 10/4/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** EVANS

Vessel: VET 1 **Location ID:** EV024

Vessel Crew: R. TRUDEAU, R. McCLEESE **Sampling Crew:** J. PLAM, J. MOORE, J. GUERRERO

EPA Observer: NONE

Arrival Time: 1224 **Departure Time:** 1430

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 47 Wind (mph): CALM ≈ 4 mph
Clouds/Precipitation: Showers, cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
COBBLE SHORELINE TO FORESTED SLOPE, APPROX 2/3 TO MARCUS CAMPGROUND FROM EVANS

GPS Target Parameters and Water Depth

GPS Name: EV024-1-PW Water Depth (m): 15.6

Easting: 423912.68

Northing: 5391859.42 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

10/4/19

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: EV024-PW-1-100419 Time: 1340

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

10/4/19

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials MA Date: 10/4/19 Field Supervisor Initials MS Date: 10/4/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10-8-19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV025
Vessel Crew: R. Trudeau, E. Rigbey **Sampling Crew:** J. Pretare, J. Moore, C. Pickerell
EPA Observer: Nicole Badon
Arrival Time: 1453 **Departure Time:** 1530

River Stage:
Water Surface Elevation (ft): ____
Elevation Source: ____

Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): 3-4
Clouds/Precipitation: Cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ____
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None

GPS Target Parameters and Water Depth

GPS Name: ____ Water Depth (m): ____
Easting: ____
Northing: ____ Water Sample Color: ____

Additional Video Reconnaissance Information

GPS Name: ____ Observations:
Easting: ____
Northing: ____

GPS Name: ____ Observations: incorrect strata (sand)
Easting: ____ No sample collected
Northing: ____

Sample Identification Information

Primary Sample ID: None Time: ____

Duplicate Sample ID: None Time: ____

EPA Split Sample ID: None Time: ____

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: ____

1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials JP Date: 10.8.19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV026

Vessel Crew: SH, ES **Sampling Crew:** MM, MS, BF

C.R. Observer: MS **EPA Observer:** MG

Arrival Time: 1422 **Departure Time:** 1735

River Stage:
Water Surface Elev. (ft): 1298.41
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 72 Wind (mph): 2
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare 12-2-19

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708.5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: ∅

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
erosional slopes and cobbles on west shoreline

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
1 = no recovery; 2 = lid not closed
3 = no recovery/low penetration, more, See grab sheets

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # 1 Cast Time: 1431 Water Depth (m): 75.7

GPS Target Parameters Sheave Counter Depth (m): -

Name: EV026-1-CHEM Estimated Hydrowire angle (degrees): -

Easting: 423832.01 Sampler Penetration (inches): 4

Northing: 5392159.78 Sample Interval (0 to X inches bss): 4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: Fine to Med SAND, Trace Silt, Trace rounded Gravel fine to coarse

Color: 10YR 4/1

Stratification: Homogenous

Density: Loose

Presence/Absence silica glass: Y

Redox Boundary: No

Presence of debris: Twigs

Biological Structures: No

Shells: No

Sheen/Odor: No

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 5, 6, 9 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 16.0 kg Total Mass of Sediment (kg): 20.8 kg

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 4.8 kg

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: EV026-SE-1-092019 Time: 1431 # and type of Containers: 6 jars + 2 buckets (2.5 & 5 gal)

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DW Date: 9-20-19

5 gal bucket filled w/ 1.6 gal
2.5 gal bucket filled w/ 1.22 gal

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # 2 Cast Time: 1500 Water Depth (m): 74.3

GPS Target Parameters Sheave Counter Depth (m): –

Name: EV026-2 Estimated Hydrowire angle (degrees): –

Easting: 423837.60 Sampler Penetration (inches): 4

Northing: 5392156.42 Sample Interval (0 to X inches bss): 4

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO** X
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Rejected because the Hamon Lid in "open" position

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** Ev026

Attempt # 3 Cast Time: 1506 Water Depth (m): 76

GPS Target Parameters Sheave Counter Depth (m): —

Name: Ev026-3 Estimated Hydrowire angle (degrees): —

Easting: 423839.59 Sampler Penetration (inches): 1

Northing: 5392157.57 Sample Interval (0 to X inches bss): 1

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ~~0~~

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Poor recovery ~~dm~~ (SF)

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DRY Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # 4 Cast Time: 1519 Water Depth (m): 78

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV026-4 Estimated Hydrowire angle (degrees): —

Easting: 423831.42 Sampler Penetration (inches): < 1

Northing: 5392155.58 Sample Interval (0 to X inches bss): < 1

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) ~~NO~~ BF

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ~~0~~

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Very low (1 tsp) recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials [illegible] Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698
Area of Interest: Evans
Anchored? (NO) YES
Location ID: EV026
Attempt # 5 Cast Time: 1525
Water Depth (m): 71.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: EV026-5
Estimated Hydrowire angle (degrees): —
Easting: 423843.58
Sampler Penetration (inches): 4
Northing: 5392170.30
Sample Interval (0 to X inches bss): 4
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: Same as attempt 1
Redox Boundary: No.
Presence of debris: Y. Plant debris
Color:
Biological Structures: Y. 1 mussel
Stratification:
Shells: Y (mussel)
Density:
Sheen/Odor: N.
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 5, 6, 9
SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): See page 1
Total Mass of Sediment (kg): See page 1
Mass of Sediment 5 mm to 3 inches (gravel) (kg): See page 1
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: See page 1 Time: # and type of Containers:
Duplicate Sample ID: Time: # and type of Containers:
EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials mm Date: 9-2019
Field Supervisor Initials TPJ Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # 6 Cast Time: 1547 Water Depth (m): ~~77.7~~ ft

GPS Target Parameters Sheave Counter Depth (m): -

Name: EV026-6-CHEM Estimated Hydrowire angle (degrees): -

Easting: 423841.08 Sampler Penetration (inches): 4

Northing: 5392163.19 Sample Interval (0 to X inches bss): 4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: Gravelly Med. SAND trace silt. Gravel fine to coarse, rounded sub-angular to sub-rounded

Color: 10YR 4/1

Stratification: Homogeneous

Density: Medium

Presence/Absence silica glass: Y.

Redox Boundary: No

Presence of debris: Twigs

Biological Structures: No

Shells: No

Sheen/Odor: No

Other Notes: Large wood/stick + fabric piece

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 5, 6, 9 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): See Page 1 Total Mass of Sediment (kg): See Page 1

Mass of Sediment 5 mm to 3 inches (gravel) (kg): See Page 1

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: See Page 1 Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

EPA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

(BF) 7

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 8 of 11
Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # BF 07 Cast Time: 1609 (BF) Water Depth (m): 76.1 ft

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV026-07 Estimated Hydrowire angle (degrees): —

Easting: 423847.45 Sampler Penetration (inches): 14

Northing: 5392164.96 Sample Interval (0 to X inches bss): N/A

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Med. SAND

Color: N/A

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: Poor/low recovery (1Tbsp)

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # 8 Cast Time: 1618 Water Depth (m): 71.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV026-8 Estimated Hydrowire angle (degrees): —

Easting: 423846.51 Sampler Penetration (inches): <1

Northing: 5392167.15 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Poor recovery / penetration

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DY Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** ~~EV003~~ (BF) EV

Attempt # 9 Cast Time: 1629 Water Depth (m): 76.0

GPS Target Parameters Sheave Counter Depth (m): -

Name: EV026-9-CHEM Estimated Hydrowire angle (degrees): -

Easting: 423837.82 Sampler Penetration (inches): 4

Northing: 5392154.03 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ~~0~~

Sediment Characteristics

Sediment Type / Texture: Fine to med Sand. Trace fine rounded gravel

Color: 10YR 4/1

Stratification: Homogeneous

Density: Loose to med.

Presence/Absence silica glass: Y.

Redox Boundary: NO.

Presence of debris: Y. sticks

Biological Structures: Y. worms, sticks

Shells: NO

Sheen/Odor: NO

Other Notes: minimum amount of recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 5, 6, 9 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 18.8 - 2.8 = 16.0 kg Total Mass of Sediment (kg): 20.8 kg

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 5.0 - 0.2 = 4.8 kg

Mass of Sediment > 3 inches (cobble) (kg): N/A

Sample Identification Information

Primary Sample ID: See page 1 Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

EPA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials DY Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # 10 Cast Time: 1707 Water Depth (m): 70

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV026-10 Estimated Hydrowire angle (degrees): —

Easting: 423838.86 Sampler Penetration (inches): <1

Northing: 5392157.00 Sample Interval (0 to X inches bss): N/A

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-20-19 Field Supervisor Initials TDY Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV026

Attempt # 11 Cast Time: 1714 Water Depth (m): 75

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV026-11 Estimated Hydrowire angle (degrees): —

Easting: 423841.47 Sampler Penetration (inches):

Northing: 5392154.09 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 6

Sediment Characteristics

Sediment Type / Texture: Fine to Med. Sand Trace gravel Redox Boundary: No

Presence of debris:

Color: 10YR 4/1 Biological Structures:

Stratification: Homogeneous Shells:

Density: loose Sheen/Odor:

Presence/Absence silica glass: Y. Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: EV026-BM1-1-092019 Time: 1431 # and type of Containers: 1 yellow 5-gal bucket

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials JP Date: 12-2-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 24 Sept. 2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Yeti
Location ID: EV026
Vessel Crew: Rene Trudeau + Bret
Sampling Crew: Al Thatcher, Bart Chadwick + Joel Guerero
EPA Observer: Jeff Johnson
Arrival Time: 0810 JP 12-17-19
Departure Time: 1223
River Stage:
Water Surface Elevation (ft):
Elevation Source: Lake Roosevelt
Weather Conditions Upon Arrival:
Temp (°F): 45° F
Wind (mph): <5 MPH
Clouds/Precipitation: Scattered clouds, no precip
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO Nearby had cobbles
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 110
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None except other UCR project vessels
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Campsite ~ 1 mile to Northeast

GPS Target Parameters and Water Depth

GPS Name: Trimble
Water Depth (m): 22.0
Easting: ~~423830.93~~ 423831.85
Northing: ~~5392157.54~~ 5392163.50
Water Sample Color: slightly yellow

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: EV026-PW-1-092419 Time: 1123
Duplicate Sample ID: NA Time:
EPA Split Sample ID: NA Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 24 Sept. 19
Field Supervisor Initials DRY Date: 9-24-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV027
Vessel Crew: Shawn Hinz (SH), Ed Sloan (ES)
Sampling Crew: Michaela McGoog (MM), Michelle Stegner (MS), Brian Fletcher (BF)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 0919
Departure Time: 1141

River Stage:
Water Surface Elev. (ft): 1297.14
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 47° Wind (mph): 2
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
In center of old river channel; steep slopes on both shorelines

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): #1 rejected, 6 attempts; 4 accepted: SE-1 and SE-3 from attempts #2-4, #5 rejected, #6 BM1

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 9-21-19
Field Supervisor Initials NM Date: 9/21/19.

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV027

Attempt # 1 Cast Time: 0901 Water Depth (m): 24 m

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV027-1 Estimated Hydrowire angle (degrees): —

Easting: 423856.29 Sampler Penetration (inches): ~~12mm~~ 12mm

Northing: 5392078.97 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES) X	NO
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: Med. SAND some Fine to coarse gravel (rounded)

Color: 10YR 2/1

Stratification: Homogeneous

Density: Loose

Presence/Absence silica glass: Y

Redox Boundary: N

Presence of debris: sticks

Biological Structures: N

Shells: Y

Sheen/Odor: N

Other Notes: Too much material over top

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3, 4 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): See page 4 (49.5kg) Total Mass of Sediment (kg): See page 4 (72.9kg)

Mass of Sediment 5 mm to 3 inches (gravel) (kg): See page 4 (23.4kg)

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: EV027-SE-1-092119 Time: 0925 # and type of Containers: 1 5-gal (4.7gal) + 1 2-gal (2.4 gal) buckets + 6 jars

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: EV027-SE-3-092119 Time: 0925 # and type of Containers: 1 2gal bucket (1.84gal)

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

~~EV027-Bmt-1-092119~~ 9/21 NM ~~Two 5-gal buckets~~ NM 9/21

This attempt not in sample!

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV027

Attempt # 2 Cast Time: 0919 Water Depth (m): 25m

GPS Target Parameters Sheave Counter Depth (m): 0

Name: EV027- Estimated Hydrowire angle (degrees): 0

Easting: 423868.48 Sampler Penetration (inches): 6

Northing: 5392025.19 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Med to Coarse SAND with Fine to Coarse rounded gravel Trace silt. (Sub rounded to sub angular)

Redox Boundary: <1mm thick

Color: 10YR 2/1

Presence of debris: N

Biological Structures: N

Stratification: 1mm of silt (dark reddish brown)

Shells: Y

Density: Loose

Sheen/Odor: N

Presence/Absence silica glass: Yes.

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3, 4 SEM-AVS Container Collected from Attempt #: 2

Sieving Information: SEE ATTEMPT 4

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): ~~ALL FINES~~ MM Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0 MM

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: EV027-SE-1-092119 Time: 0925 # and type of Containers: 6 jars + 1 5-gal + 1 2 gal ~~+ 1 spl~~

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: EV027-SE-3-092119 Time: 0925 # and type of Containers: 1 2 gal bucket

Sample Lead Initials MM Date: 9-21/19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV037

Attempt # 3 Cast Time: 0953 Water Depth (m): 28.1m

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV037-3-CHEM Estimated Hydrowire angle (degrees): —

Easting: 4738679.96 Sampler Penetration (inches): 6

Northing: 539202B.44 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: Same as attempt 2

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3, 4 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): See Page 4 Total Mass of Sediment (kg): See Page 4

Mass of Sediment 5 mm to 3 inches (gravel) (kg): See Page 4

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: see ATTEMPT 2 Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV027

Attempt # 4 Cast Time: 1020 Water Depth (m): 24.9 m

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV027-4-CHEM Estimated Hydrowire angle (degrees): —

Easting: 423869.54 Sampler Penetration (inches): 6

Northing: 5392028.63 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: Same as #2 attempt

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3, 4 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 52.3 - 2.8 = 49.5 kg Total Mass of Sediment (kg): 72.9 kg

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 26.2 - 2.8 = (23.4 kg)

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: EV027-SE-1-092119 Time: 0925 # and type of Containers: (BF) ~~1~~ 1 5-gal buckets, 1 2-gallon & 6 jars

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: EV027-SE-3-092119 Time: 0925 # and type of Containers: 1 2-gal bucket

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials Date:

~~EV027-BMI-1-092119~~ NM 9/24 ~~2 5-gal buckets~~ NM 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV027

Attempt # 5 Cast Time: 1110 Water Depth (m): 25.7m

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV027-5 ~~BM~~ (BF) Estimated Hydrowire angle (degrees): —

Easting: 423869.42 Sampler Penetration (inches): —

Northing: 539209.68 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	MM (Accepted)	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as ~~after~~ BF Attempt #2

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: Rejected due to siphoned water did not go through sieve.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes No N/A Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers: ~~1 2-gal bucket~~ MM

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials MM Date: 9/21/19

Had to reject sample because 250 ~~MM~~ was not used during river water siphon

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV027

Attempt # 6 Cast Time: ~~1110~~ (BF) 1121 Water Depth (m): ~~25~~ (BF) 24.5 m

GPS Target Parameters Sheave Counter Depth (m): -

Name: EV027-6-BMI Estimated Hydrowire angle (degrees): -

Easting: ~~423869.42~~ (BF) 423870.37 Sampler Penetration (inches): 6

Northing: ~~5392029.68~~ (BF) 5392027.99 Sample Interval (0 to X inches bss): 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as attempt #2 Redox Boundary:

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: EV027-BMI-1-092119 Time: 0925 # and type of Containers: 2 - 5 gal buckets

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Volume was large enough to have to use 2 5-gal buckets to ensure one to one sediment ethanol ratio

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 28 Sept 2019

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV027
Vessel Crew: Rene Trudeau + Bart Walburn **Sampling Crew:** Bart Chadwick, Joel Guerrero + Al Thatcher
EPA Observer: DJ Moore
Arrival Time: 1105 **Departure Time:** ~~1315~~ ads. 9/28/19 1350

River Stage:
Water Surface Elevation (ft):
Elevation Source: River Cast

Weather Conditions Upon Arrival:
Temp (°F): 39°F Wind (mph): 5-10 MPH
Clouds/Precipitation: Steady rain

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708.7 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic Periodic - fishing derby ongoing
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 25.1
Easting: 423866.18
Northing: 5392023.50 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:
ads. 9/28/19

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV027-PW1-092819 Time: 1220
ads. 9/28

Duplicate Sample ID: NA Time:
EPA Split Sample ID: NA Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 28 Sept. 2019 Field Supervisor Initials MS Date: 9/28/18

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EVO-28
Vessel Crew: Pete Jenkins, Jeff Schutt
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: Anisa Sheppherd-Becker
EPA Observer: Brad Sample
Arrival Time: 1113
Departure Time: 1130

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: partly cloudy

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): NA

Video Reconnaissance Information

GPS Target Name: EVO28-SV-1 T=1117
Easting: 423964.99 Image
Northing: 5391996.97 T=1118 video
Observations: Depth=26.5 m, cobble, boulders, not suitable facies

GPS Target Name: EVO28-SV-2 T=1120
Easting: 423951.59 no image taken
Northing: 5391982.01
Observations: Depth=27.5, mostly boulders, not suitable facies

GPS Target Name: EVO28-SV-3 T=1122
Easting: 423935.18 Image + video
Northing: 5392007.49
Observations: Depth=26.3, cobble, some gravel, *potentially samplable

GPS Target Name: EVO28-SV-4 T=1123
Easting: 423976.02 Image
Northing: 5392006.10
Observations: Depth=26.3, Pockets of gravel w/ boulders, *Potentially samplable

Sample Lead Initials NM Date: 9/30/19
Field Supervisor Initials NM Date: 9/30/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/01/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV-028
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: Anisa Sheppherd-Becker
EPA Observer: Brad Sample
Arrival Time: 1458
Departure Time: 1559

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): 3
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: minimal

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline

Sampling Information

Sampler Used: freeze grab
# of Sampling Attempts (Accepted vs. Rejected): #1 - Rejected - no sample recovered

Video Reconnaissance Information

GPS Target Name: EV028-SV5 T=1539
Easting: 423998.74
Northing: 5392006.10
Observations: 27m. boulder, cobble
camera image: 153904A
video: 153910A

GPS Target Name: EV028-SV6 T=1542
Easting: 423993.07
Northing: 5392003.69
Observations: 27m. boulder, cobble
camera images: 154133A, 154144A, 154226A
video: 154153A

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CC Date: 10/1/19
Field Supervisor initials 10/1/19 Date: NM

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/4/19

Project Number: 60612698 **Area of Interest:** EVANS
Vessel: VET1 **Location ID:** EV029
Vessel Crew: R. TINDEAU, R. McCLEESE **Sampling Crew:** S. RAY, J. MOORE, J. GUTENKUNST
EPA Observer: NONE
Arrival Time: 1440 **Departure Time:**

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 47 Wind (mph): CALM ~5mph
Clouds/Precipitation: P. CLOUDY

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: EV029-1-POINT 10/4/19 Water Depth (m): 27.5
Easting: 424066.85 ← POINT TO DOCUMENT INCORRECT STRATA; SEARCHED
Northing: 5392076.81 Water Sample Color:

Additional Video Reconnaissance Information

~~GPS Name:~~ ADDITIONAL VIDEO Observations: FOR CORRECT STRATA BETWEEN TARGET STATION + THIS LOCATION
~~Easting:~~ FROM CMA TO
~~Northing:~~ DOCUMENT OBSERVED STRATA

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: Time: JPA 10/4/19
Duplicate Sample ID: Time:
EPA Split Sample ID: Time:
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:
1B Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials JPA Date: 10/4/19 Field Supervisor Initials MS Date: 10/4/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09/30/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EVO 3i.
Vessel Crew: Pete Jenkins, Jeff Schutt
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: Anisa Sheppherd-Becker
EPA Observer: Brad Sample
Arrival Time: 1032
Departure Time: 1109

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph): 2
Clouds/Precipitation: Partly cloudy

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): NA

Video Reconnaissance Information

GPS Target Name: EV031-SV-1 T=1038
Easting: 424124.77
Northing: 539 2057.42
Observations: Depth = 25.5 m. predominantly cobbles and boulders (~~very~~ coarse)

GPS Target Name: EV031-SV-2 T=1049
Easting: 424143.24
Northing: 539 2021.04
Observations: Depth = 23.4 cobble, some boulders

GPS Target Name: EV031-SV-3 T=1103
Easting: 424093.65
Northing: 5392043.37
Observations: Depth = 26.8 coarse cobbles w/ some boulders + gravels

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials NM Date: 9/30/19
Field Supervisor Initials NM Date: 9/30/19

Revised 9/18/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.22.19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Tieton **Location ID:** AP ~~EV030~~ EV032

Vessel Crew: John & Ryan **Sampling Crew:** Palmieri

EPA Observer: Gab Sedberry Joss & Alan

Arrival Time: 1019 **Departure Time:** 1221

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): calm
Clouds/Precipitation: overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? (YES) NO circled 11/26/19 MB

Boat Position: (Powered) (Anchored) circled 11/26/19 MB River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic fishing RV nearby

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

immediately Adjacent to shore, steep slope

GPS Target Parameters and Water Depth

GPS Name: EV032-1-PW Water Depth (m): 9.9

Easting: 424200.90

Northing: 539990.06 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____ AP

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: EV032-PW-1-102219 Time 1110

AP

Duplicate Sample ID: _____ Time: _____

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~ AP
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: _____

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AP Date 10.22.19 Field Supervisor Initials AP Date 10.22.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/27/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV034
Vessel Crew: Pete Jenkins (PJ), Jeff Schut (JS)
Sampling Crew: Michelle Stegner (MS), Cliff Pearson (CP), Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1433
Departure Time: 1526

River Stage:
Water Surface Elev. (ft): 1198.14
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): 5
Clouds/Precipitation: Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Circled by J. Pretare 12-2-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep east shoreline w/ Cobbles & boulders

Sampling Information

Sampler Used: Freeze grab w/o hammer (2 attempts (rejected) & 1 video recon)
# of Sampling Attempts (Accepted vs. Rejected):
#1 rejected (3 cobbles)
#2 No recovery

Video Reconnaissance Information

GPS Target Name: EV034-SV-1
Easting: 424289.65
Northing: 5392064.46
Observations: large cobbles and boulders observed on video. Very little sand (<10%) observed in area/polygon.

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CP Date: 9/27/19
Field Supervisor Initials MS Date: 9/27/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-27-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV034

Attempt # 1 Cast Time: 1453 Water Depth (m): 16.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV034-1 Estimated Hydrowire angle (degrees): —

Easting: 424296.44 Sampler Penetration (average) (inches): 4

Northing: 5392054.21

Sample Type: ~~Physical/Chemical~~ ~~BMI~~ Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)?	(YES)	**NO**
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	~~NO~~
4. Sample is:	**Accepted**	~~Rejected~~

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 3 cobbles / large gravel adhered to sampler. No fines.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/27/19 Field Supervisor Initials AS Date: 9/27/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-27-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV034

Attempt # 2 Cast Time: 1517 Water Depth (m): 18.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV034-2 Estimated Hydrowire angle (degrees): —

Easting: 4242 92.27 Sampler Penetration (average) (inches): 3

Northing: 5392067.22

Sample Type: ~~Physical/Chemical~~ ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ ~~NO~~

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: Accepted Rejected

Sample Collection Method: Freeze Grab w/ Hammer w/o Hammer Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: No recovery

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris: Did not see >20% sand on video

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: Many cobbles on video.

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket ____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/27/19 Field Supervisor Initials MS Date: 9/27/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV036

Date: 9/14/2019 **Vessel:** Cayuse

Sampling Crew: MS, AP **Vessel Crew:** JW, RT

EPA Observer: DL **C.R. Observer:** MS

Arrival Time: 11:38 **Departure Time:** 1446

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 58°

Wind (mph): 0-2 mph

Clouds/Precipitation: light rain

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)

River Mile: _____

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes No

River Current: (Swift) (Eddie) (Calm) (Ripple)

Boat Traffic: 0

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): Rocky shoreline, steep

General Notes:

C.R. - cultural resources

Field Supervisor Initials SP Date: 9.14.19

Sample Lead Initials AP Date: 9.15.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9-14-2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES 1158 NM 9-15-19 **Location ID:** EV036

Attempt # (1) 2 3 Cast Time ~~1208~~ Water Depth (~~feet~~) m: 11.6

Sample Location: Sheave Counter Depth (feet):

E ~~Latitude~~: 424415.78 Estimated Hydrowire angle (degrees): Ø

N ~~Longitude~~: 5392090.79 Sampler Penetration (inches): 5 inches ~~recovery~~ ~~6 inches penetration~~ NM

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sample surface smooth or reflects the material collected and does not indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (6 inches) acheived? -5 only recovery	(YES)	~~NO~~ NM
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
4. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Freeze Grab) Sampler Drive Method: (Sampler Weight) Mechanical

Additional Sampling Notes:

Sediment Characteristics

F-C

Sediment Type: slightly sandy cobbely

Texture: GRAVEL. trace silt
Subrounded

Color: Dark brown sand/silt but highly variable

Stratification: gravel Colors

Density: loose - after defrost

Presence/Absence silica glass: ~~Present~~ ~~Absent~~ NM Trace NM

Redox Boundary: thin film 0-1 mm

Presence of debris: None

Biological Structures: ↓

Shells: trace shell fragments

Sheen/Odor: trace sulfur odor

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): 11.7 kg

>5mm
> ~~2mm~~ removed by hand: (YES) NO

Seived (YES) NO NM? 2mm (5mm)

5mm
Mass of material > ~~2mm~~ (kg): 0.57+7.6= 8.17g

0.57g = gravel
7.6g = cobbles

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: EV036-SE-1-091419 Time: 1330 # and type of Containers: ~~6 jars~~ - NM 5 jars - Water
No 2nd archive

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9-14-19 Field Supervisor Initials JP Date: 9.14.19

Composite of attempts 1, 2, & 4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9-14-2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV036

Attempt # 1 (2) 3 Cast Time 1228 Water Depth (feet): 11.6

Sample Location: Sheave Counter Depth (feet):

E ~~Latitude~~: 424415.78 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5392090.79 Sampler Penetration (inches): ~~4~~ 5 inches

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sample surface smooth or reflects the material collected and does not indicate that material was lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (6 inches) acheived? 5 - acceptable (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab) Sampler Drive Method: (Sampler Weight) Mechanical

Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Gravelly fine-C Sand
Texture: with cobbles and Silt.
Color: Dark brown w/ varible gravel colors
Stratification: nonogenous other than diff sized of sediment
Density: loose - after defrost
Presence/Absence silica glass: present - but trace

Redox Boundary: ~~None~~ visible thin 0.1mm layer
Presence of debris: None
Biological Structures: ↓
Shells: ~~None~~ trace shell fragments
Sheen/Odor: slight sulfur odor
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples — See attempt 1
Seived (YES/NO)? 2mm 5mm
Total Sample Mass (kg): _____
Mass of material > 2mm (kg): _____
> 2mm removed by hand: YES NO

BMI Samples N/A
Seived (250 µm)? YES

Primary Sample ID: ~~EV036-SC-1-091419~~ Time: 1330 # and type of Containers: ~~6x jars~~ NM 9/14. NM 9/14.
Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____
Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.14.19 Field Supervisor Initials JP Date: 9.14.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/14/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV 036

Attempt # 1 2 (3) Cast Time 1316 Water Depth (feet): ~10.3 m

Sample Location: Sheave Counter Depth (feet): 10.3 m

E Latitude: 424416.33 Estimated Hydrowire angle (degrees): 0

N Longitude: 5392090.42 Sampler Penetration (inches): 5"

Sample Type: Physical/Chemical Bioassay (BMI) Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sample surface smooth or reflects the material collected and does not indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (6 inches) acheived? – 5 accepted	(YES)	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
4. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Freeze Grab) Sampler Drive Method: (Sampler Weight) Mechanical

Additional Sampling Notes:

Sediment Characteristics

Sediment Type: F-C 2 Gravelly fine-C Sand with Cobbles and Silt

Texture:

Color: Dark brown sand/silt but variable gravel colors

Stratification: homogenous.

Density: loose – after defrost

Presence/Absence silica glass: present – trace

Redox Boundary: 0 - 0.1mm

Presence of debris: None

Biological Structures:

Shells:

Sheen/Odor: No sheen Trace sulfur odor

Other Notes: Remove 3 cobbles.

Field Sieving/Weighing

Physical/Chemical Samples N/A

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? (YES)

Sieved river water & overlying used for melting

Primary Sample ID: EV036-BMI-1-091419 Time: 1345 # and type of Containers: 1-5gal bucket.

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9-14-19 Field Supervisor Initials JP Date: 9.14.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9-14-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EU036-

Attempt # 4 ~~1 2 3~~ Cast Time 1427 Water Depth ~~(feet)~~: m 10.4

Sample Location: Sheave Counter Depth (feet):

E ~~Latitude~~: 424411.21 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5392090.09 Sampler Penetration (inches): 4 inches Recovery

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sample surface smooth or reflects the material collected and does not indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (6 inches) acheived? 4 inches recovery	(YES)	NO 6-inch pen
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
4. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Freeze Grab) Sampler Drive Method: (Sampler Weight) Mechanical

Additional Sampling Notes:

Sediment Characteristics

Sediment Type: See ~~Grab~~ # 2 attempt nm

Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary: See #2 attempt

Presence of debris: None

Biological Structures:

Shells:

Sheen/Odor: Trace no sheen
└ sulfur odor

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples — See attempt 1

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

Composited in sample

BMI Samples

Seived (250 µm)? YES N/A

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.14.19 Field Supervisor Initials JP Date: 9.14.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09/30/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EVO 36
Vessel Crew: Pete Jenkins, Jeff Schutt
Sampling Crew: Nicky Moody, Andy Clodfelter ~~Anisa Shepherd-Becker~~
C.R. Observer: Anisa Shepherd-Becker
EPA Observer: Brad Sample
Arrival Time: 09:42
Departure Time: ~~09:25~~ 10:28 ac

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 37 Wind (mph): 2 mph
Clouds/Precipitation: Partly Cloudy

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): NA

Video Reconnaissance Information

GPS Target Name: EV036-SV-1
Easting: 424414.20
Northing: 539209013
Observations: 10.2 m depth mix of sand and cobbles

GPS Target Name: ~~EV031-SV-1~~ ac
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials NM Date: 9/30/19
Field Supervisor Initials NM Date: 9/30/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/01/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EVO 36 (Duplicate sample) ae 10/2
Vessel Crew: Pete Jenkins, Jeff schut
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: Anisa Sheppherd-Becker
EPA Observer: Brad Sample
Arrival Time: 1303
Departure Time: 1450

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 1
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline.

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): #5, #6 Accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials ae Date: 10/1/19
Field Supervisor Initials NM Date: 10/1/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 2
Date 10/1/19

Project Number: 60612698 — **Area of Interest:** EVANS

Anchored? (NO) YES — **Location ID:** EVU-36

Attempt # 5 — Cast Time: 1314 First attempt of day — Water Depth (m): 13.0

GPS Target Parameters — Sheave Counter Depth (m): NA

Name: EVU36-5-BM1 — Estimated Hydrowire angle (degrees): 0

Easting: 424413.77 — Sampler Penetration (average) (inches): 4

Northing: 539209.04

Sample Type: Physical/Chemical (BMI) — Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) — Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: sandy gravel; 1 cobble discarded; sand fine to coarse; gravel fine to coarse — Redox Boundary: NA

Color: greyish brown — Presence of debris: none

Stratification: homogenous — Biological Structures: 1 chironomid larvae

Density: loose — Shells: none

Presence/Absence silica glass: none — Sheen/Odor: slight sulfer odor, no sheen

Other Notes: subrounded to subangular

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 5, 6 — SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No — Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ — Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	EV036-BMI-2-100119	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	EV036-BMI-1-100119	Time: 1326		Yellow 5-gallon bucket	1.2 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

nc 10/2

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CU — Date: 10/1/19 — Field Supervisor Initials NM — Date: 10/1/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/1/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-036

Attempt # 6 Cast Time: 1401 Water Depth (m): 12.6

GPS Target Parameters Sheave Counter Depth (m): N/A

Name: EV036-6-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 4244/2.73 Sampler Penetration (average) (inches): 4

Northing: 539 2090.30

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: silty sand (sand + gravels. fine to coarse - gravels - subangular to subrounded)

Color: brownish-grey

Stratification: —

Density: loose

Presence/Absence silica glass: none

Redox Boundary: —

Presence of debris: none

Biological Structures: 1 chironomid larvae

Shells: —

Sheen/Odor: slight sulfur odor

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: Included + composited	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: with EV036-BM1-X-100119	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: ac 10/2	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ac Date: 10/1/19 Field Supervisor Initials NM Date: 10/1/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/3/19

Project Number: 60612698 **Area of Interest:** EVANS
Vessel: YETI **Location ID:** EV036
Vessel Crew: R. TRUDEAU, R. MCLEESE **Sampling Crew:** J. RAY, J. MOORE, J. GUERRERO
EPA Observer: NONE
Arrival Time: 0800 **Departure Time:** 1039

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 41 Wind (mph): CALM ~ 2mph
Clouds/Precipitation: CLOUDY

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
E SHORE MIXED COBBLE/BOULDER TO FORESTED SLOPE
W SHORE SANDY W/ DOCK

GPS Target Parameters and Water Depth

GPS Name: EV036-1-PW Water Depth (m): 13.5
Easting: 424412.55
Northing: 5392096.40 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

10/3/19

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV036-PW-1-100319 Time: 0940

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:
EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JM Date: 10/3/19 Field Supervisor Initials JMS Date: 10/3/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/23/19

Project Number: 60612698
Area of Interest: Evans (LS)
Vessel: Ingalls
Location ID: EV037
Vessel Crew: (JS) Jesse Shultz
(PJ) Pete Jenkins
Sampling Crew: SH, CP, MS
Stuart Holmes, Cliff Pearson, Michelle Stegner
C.R. Observer: (MS) Michelle Stegner
EPA Observer: MG Marilyn Gothlee
Arrival Time: 1224
Departure Time: 1425

River Stage:
Water Surface Elev. (ft): 1296.83
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 62 Wind (mph): 4
Clouds/Precipitation: Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ∅

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional embankments along shorelines

Sampling Information

Sampler Used: Van Veen (3 attempts, 3 accepted)
# of Sampling Attempts (Accepted vs. Rejected): #1 accepted (SE/bioassay)
#2 accepted (BMI)
#3 accepted (BMI dup)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-23-19
Field Supervisor Initials MS Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV037

Attempt # 1 Cast Time: 1228 **Water Depth (m):** 24.5

GPS Target Parameters **Sheave Counter Depth (m):** —

Name: EV037-1 **Estimated Hydrowire angle (degrees):** —

Easting: 424271.77 **Sampler Penetration (inches):** 8.5

Northing: 5392318.95 **Sample Interval (0 to X inches bss):** 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Added Weights on Sampler (lbs):** 750

Sediment Characteristics

Sediment Type / Texture: f-med. SAND w/ 1cm silt overlying

Color: 5Y 2.5/2

Stratification: 1cm silt 0-6" SAND w/ faint silt laminations @ 3" depth

Density:

Presence/Absence silica glass: Abundant

Redox Boundary: Not observed

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: EV037-SE-1-092319	Time: 1228	SEM-AVS	8 oz WMGJ (no headspace)	*Cross off containers NOT filled*	
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
		Bioassays	1 x 5 gallon white bucket	4.4	gallons
			1 x 2.5 gallon white bucket	1.8	gallons
SE Duplicate Sample ID: EV037-SE-2-092319	Time: 1300	SEM-AVS	8 oz WMGJ (no headspace)		*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
EPA SE Split Sample ID: EV037-SE-3-092319	Time: 1228		8 oz WMGJ		
EPA TX Split Sample ID: —	Time: —		2.5 gallon white bucket	—	gallons
BMI Primary Sample ID: EV037-BMI-1-092319	Time: 1228		Yellow 5-gallon bucket	2.9	gallons
BMI Duplicate Sample ID: EV037-BMI-2-092319	Time: 1359		Yellow 5-gallon bucket	2.75	gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/23/19 Field Supervisor Initials MS Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 | **Area of Interest:** Evans

Anchored? (NO) YES | **Location ID:** EV037

Attempt # 2 | Cast Time: 1322 | **Water Depth (m):** 24.70

GPS Target Parameters | **Sheave Counter Depth (m):** —

Name: EV037 | **Estimated Hydrowire angle (degrees):** —

Easting: 4242647.10 | **Sampler Penetration (inches):** 8

Northing: 5392319.16 | **Sample Interval (0 to X inches bss):** 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) | **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool | Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine-med. SAND. 1 cm overlying silt.

Color:

Stratification: 0-1 cm silt, ~~bioturbated~~ SAND + silica glass to 6" depth

Density: loose

Presence/Absence silica glass: Abundant

Redox Boundary: Not observed

Presence of debris: None

Biological Structures: None

Shells: None

Sheen/Odor: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ | SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No | Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ | Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample !D: _____	Time: _____		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: EV037-BMI-1-092319	Time: 1328		Yellow 5-gallon bucket	2.9 gallons
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials AP Date: 9/23/19 | Field Supervisor Initials MS Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** EVANS

Anchored? (NO) YES **Location ID:** EV037

Attempt # 3 Cast Time: 1359 Water Depth (m): 25.8

GPS Target Parameters Sheave Counter Depth (m): ——

Name: EV037-3-BMIDUP Estimated Hydrowire angle (degrees): ——

Easting: 424264.86 Sampler Penetration (inches): 8

Northing: 5392321.62 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: SEE ATTEMPT #2 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: EV037-BMI-2-092319 Time: 1359 Yellow 5-gallon bucket 2.75 gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/23/19 Field Supervisor Initials MS Date: 9.23.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 24 Sept. 19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV037
Vessel Crew: Rene Trudeau, Brett **Sampling Crew:** Bart Chadwick + Joel Guerrero + Al Thatcher
EPA Observer: Jeff Johnson
Arrival Time: 1242 **Departure Time:** 1615
River Stage:
Water Surface Elevation (ft): ____
Elevation Source: Lake Roosevelt
Trident Sampler Type: Push Pole Vibraframe (Driveframe)
Weather Conditions Upon Arrival:
Temp (°F): ~~60°F~~ 67°F Wind (mph): ~5 MPH
Clouds/Precipitation: Mix Sun + clouds, no precip

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare 12-2-19
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ____ Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None. Shore is typical cobbles/boulders and sand

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 23.8
Easting: 424313.16
Northing: 5392240.44 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: ____ Observations:
Easting: ~~424313.16~~ acs, 9/24/19
Northing: ~~5392240.44~~ acs, 9/24/19

GPS Name: ____ Observations:
Easting: ~~acs~~ 9/24/19
Northing: ____

Sample Identification Information

Primary Sample ID: EV037-PW-1-092419 Time: 1454
Duplicate Sample ID: NA Time: ____
EPA Split Sample ID: EV037-PW-3-092419 Time: 1454
Equipment Blank Collected? (Yes) No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~ acs, 9/24	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: ____
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 24 Sept. 19 Field Supervisor Initials DM Date: 9-24-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.22.19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Tictur **Location ID:** EV038

Vessel Crew: John + Ryan **Sampling Crew:** Palmieri

EPA Observer: Gab Sedberry CMA - Joss + Alan

Arrival Time: 1237 **Departure Time:** 1411

River Stage:

Water Surface Elevation (ft): _____

Elevation Source: _____

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:

Temp (°F): 55 Wind (mph): Calm

Clouds/Precipitation: Sunny

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Fish survey boats nearby

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

West of shoreline, which is steep

GPS Target Parameters and Water Depth

GPS Name: EV038-1-PW Water Depth (m): 16.0

Easting: 424510.02

Northing: 5392193.37 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

AP

GPS Name. _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: EV038-PW-1-102219 Time: 1320

AP

Duplicate Sample ID: _____ Time: _____

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~ AP
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: _____

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AP Date: 10.22.19 Field Supervisor Initials AP Date: 10.22.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/02/2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV039

Vessel Crew: Pete Jenkins, Jeff Schut **Sampling Crew:** Nicky Moody, Andy Clodfelter

C.R. Observer: Anisa Shepherd-Becker **EPA Observer:** Brad Sample

Arrival Time: 0814 **Departure Time:** 0853

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 32 Wind (mph): 2
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Bedrock, boulder, cobbles not suitable stratum - no sampleable sand observed

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline

Sampling Information

Sampler Used: Freeze Grab

# of Sampling Attempts (Accepted vs. Rejected): None

Video Reconnaissance Information

GPS Target Name: EV-039-SV-1
Easting: 424510.69
Northing: 5392339.23
T= 0824
Image # 082052A
Observations: 27 m.
cobble, some boulder
video = # 082700A

GPS Target Name: EV-039-SV-2
Easting: 424517.170
Northing: 5392350.970
T=0829
Image # 082844A
Observations: 27 m.
Bedrock

GPS Target Name: EV039-SV-3
Easting: 424541.28
Northing: 5392338.42
T=0842
Observations: 26.5 m.
Boulder, cobble

GPS Target Name: EV039-SV-4
Easting: 424545.96
Northing: 5392358.00
T= 0845
Observations: 26.5
Bedrock, cobble, boulders

Sample Lead Initials: ac Date: 10/2/19 Field Supervisor Initials: NM Date: 10/2/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10.8.19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV04X
Vessel Crew: R. Trudeau, E. Rigbey **Sampling Crew:** J. Pretare, J. Moore, C. Pickerell
EPA Observer: Nicole Bader
Arrival Time: 1147 **Departure Time:** 1415

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 60° Wind (mph): 1-2
Clouds/Precipitation: light clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ___ Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None: forest & undeveloped

GPS Target Parameters and Water Depth

GPS Name: No sample this location Water Depth (m): ___
Easting: ___
Northing: ___ Water Sample Color: ___

Additional Video Reconnaissance Information

GPS Name: ___ Observations: multiple video recon files
Easting: ___
Northing: ___

GPS Name: ___ Observations: Driveframe unable to penetrate coarse strata after 3x + attempts. No sample.
Easting: ___
Northing: ___

Sample Identification Information

Primary Sample ID: None Time: ___
Duplicate Sample ID: None Time: ___
EPA Split Sample ID: None Time: ___
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: ___
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials JP Date: 10-8-19 Field Supervisor Initials JAP Date: 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10.8.19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EVA41
Vessel Crew: Rene Trudeau, Emma Rigbey **Sampling Crew:** J. Pretare, J. Moore, C. Pickerell
EPA Observer: N. Badon
Arrival Time: 0800 **Departure Time:** 1049
River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___
Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 1-2
Clouds/Precipitation: partly cloudy
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (Coarse) *(mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ___ Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
trees, undeveloped

GPS Target Parameters and Water Depth JP 10-8-19

GPS Name: NONE Water Depth (m): 23
Easting: ___
Northing: ___ Water Sample Color: ___

Additional Video Reconnaissance Information

GPS Name: ___ Observations: multiple videos recorded by CMA
Easting: ___
Northing: ___

GPS Name: ___ Observations: Driveframe unable to penetrate Coarse strata after 3x attempts. No sample collected.
Easting: ___
Northing: ___

Sample Identification Information

Primary Sample ID: NONE Time: ___
Duplicate Sample ID: N/A Time: ___
EPA Split Sample ID: N/A Time: ___
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: ___
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials JP Date: 10.8.19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/27/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV042
Vessel Crew: Pete Jenkins (PJ) Jeff Schut (JS)
Sampling Crew: Michelle Stegner (MS) Cliff Pearson (CP) Stuart Holmes (SH)
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1352
Departure Time: 1425

River Stage:
Water Surface Elev. (ft): 1298.14
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 60 Wind (mph): 4
Clouds/Precipitation: Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Bedrock & gravel, boulders

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Cobble Covered Shoreline to east

Sampling Information

Sampler Used: Freeze grab w/o hammer (2 attempts rejected & 1 video recon)
# of Sampling Attempts (Accepted vs. Rejected):
Attempt #1 Rejected 9/14
Attempt #2 Rejected, no recovery. Large boulders

Video Reconnaissance Information

GPS Target Name: EV042-SV-1
Easting: 424761.43
Northing: 5392690.52
26m depth
Observations: Large boulders, bedrock w/ ledge-like surfaces. very thin dust of sand. Cannot land sampler

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CP Date: 9/27/19
Field Supervisor Initials [illegible] Date: 9/27/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/14/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV042

Attempt # (1) 2 3 Cast Time 1110 Water Depth (feet): M 24.3

Sample Location: Sheave Counter Depth (feet):

E Latitude: 424763.22 Estimated Hydrowire angle (degrees): 0

N Longitude: 5392618.18 Sampler Penetration (inches):

Sample Type: (Physical/Chemical) ~~Bioassay~~ BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria: Empty Sampler NA No recovery

1. Sample surface smooth or reflects the material collected and does not indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	YES	NO
2. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
4. Sample is:	Accepted	Rejected

Sample Collection Method: (Freeze Grab) Sampler Drive Method: ~~Sampler~~ 140 lbs Weight Mechanical

Additional Sampling Notes: large boulder in background of video.

Sediment Characteristics

Sediment Type: NA
Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:

Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples NA
Total Sample Mass (kg): _____
> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg): _____

BMI Samples
Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____
Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____
Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.14.19 Field Supervisor Initials JP Date: 9.14.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

(See 9/14 for 1st FG, page 1)

Date 9-27-19

Project Number: 60612698 **Area of Interest:** Evens

Anchored? (NO) YES **Location ID:** EV042

Attempt # 2 Cast Time: 1406 Water Depth (m): 25.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV042-2 Estimated Hydrowire angle (degrees): —

Easting: 424750.61 Sampler Penetration (average) (inches): None

Northing: 5392627.31

Sample Type: ~~Physical/~~Chemical BMI Cultural Resource Check Completed? YES ~~NO~~

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
4. Sample is:	Accepted	(Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 160

Sediment Characteristics

Sediment Type / Texture: No penetration. Landed on cobble.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris: Very little

Biological Structures: sand in area visible on video

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ		*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket		_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket		_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/27/19 Field Supervisor Initials MP Date: 9/27/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-23-19

Attempt #1

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Yeti **Location ID:** EV043

Vessel Crew: Renee & Emma **Sampling Crew:** Brent & Joel CMA
~~Emily~~ Patricia AECOM

EPA Observer: Lisa

Arrival Time: 1000 **Departure Time:** 1108

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 34 Wind (mph): Calm
Clouds/Precipitation: Sunny

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO circled 11/26/19 MEB

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic fishing research vessels nearby

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

west of shore, steep shore, small house to east

GPS Target Parameters and Water Depth

GPS Name: EV043-1

Water Depth (m): 25.9

Easting: 424734.50

Northing: 5392717.53

Water Sample Color: —

Additional Video Reconnaissance Information

GPS Name: _____

Easting: _____

Northing: _____

Observations:

GPS Name: _____

Easting: _____

Northing: _____

Observations: AP

Sample Identification Information

Primary Sample ID: _____ Time: _____

No Sample

Duplicate Sample ID: _____ Time: _____

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: _____

1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AP Date: 10-23-19

Field Supervisor Initials AP Date: 10-23-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.23.19

Attempt #2

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV043
Vessel Crew: Renee + Emma **Sampling Crew:** Brn to Jvel - Cms
EPA Observer: Lisa Palmieri - AECOM
Arrival Time: 1130 **Departure Time:** 1335

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): Calm
Clouds/Precipitation: Sunny

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled 11/26/19 MEB

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic fishing research vessel nearby

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

See Previous

GPS Target Parameters and Water Depth

GPS Name: EV043-2 Water Depth (m): 26.0
Easting: 424733.52
Northing: 5392703.96 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:
Easting: _____
Northing: _____

AP

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: EV043-PW-1-1023AP Time: 1232

AP

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. ~~Sulfide~~ — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

AP

Duplicate Sample ID: _____ Time: _____ ~~Analyte and Bottle Type~~: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals — With Same ~~Capsule~~ Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AP Date: 10.23.19 Field Supervisor Initials AP Date: 10.23.19

1 of 1

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Page 1 of 2

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9/20/2019			
Person completing form: Nicky Moody			

Sampling date:	9/20/2019	Sampling time:	1013
Weather:	Sunny 54°F	Sample collector:	Nicky Moody
Location ID:	EV044	Field duplicate collected?	None
Media type (circle one):	(PW) EB FB	Sample ID:	EV044-PW-1-092019
Container Size:	All 125mL x 4	Chemical Analysis:	all except sulfide.
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Slight yellow color water Trident vibraframe.		

Sampling date:	9/20/2019	Sampling time:	0900
Weather:	Sunny 54°F	Sample collector:	NM
Location ID:	EV044	Field duplicate collected?	N/A
Media type (circle one):	NM ~~PW~~ ~~EB~~ NM FB (EB)	Sample ID:	EV044-PW-4-092019
Container Size:	125mL x 3	Chemical Analysis:	Total metals NM ~~Alkalinity~~, Chloride, TOC Sulfate, Alkalinity
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibraframe clear water		

Equipment blank ↓ PUT ON HOLD AS NEW Method provided @ 12:50pm today

Sampling date:	9/20/2019	Sampling time:	1236
Weather:	Sunny ~70s	Sample collector:	NM
Location ID:	EV013	Field duplicate collected?	Yes – See next page
Media type (circle one):	(PW) EB FB	Sample ID:	EV013-PW-1-092019
Container Size	All 125mL x 4	Chemical Analysis	all except sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibraframe clear water		

Field supervisor Initials ZH Date: 09/20/19
Sample Lead Initials NM Date: 9/20/19

1 of 1

Page 1 of 2

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9/20/2019			
Person completing form: Nicky Moody			

Sampling date:	9/20/2019	Sampling time:	1013
Weather:	Sunny 54°F	Sample collector:	Nicky Moody
Location ID:	EV044	Field duplicate collected?	None
Media type (circle one):	(PW) EB FB	Sample ID:	EV044-PW-1-092019
Container Size:	All 125mL x 4	Chemical Analysis:	all except sulfide.
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Slight yellow color water Trident vibraframe.		

Sampling date:	9/20/2019	Sampling time:	0900
Weather:	Sunny 54°F	Sample collector:	NM
Location ID:	EV044	Field duplicate collected?	N/A
Media type (circle one):	NM ~~PW~~ ~~FB~~ NM FB (EB)	Sample ID:	EV044-PW-4-092019
Container Size:	125mL x 3	Chemical Analysis:	Total metals, ~~Hardness~~, Chloride, TOC, Sulfate, Alkalinity
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibraframe Clear water		

Equipment blank ↓ PUT ON HOLD AS NEW Method provided @ 12:50pm today

Sampling date:	9/20/2019	Sampling time:	1236
Weather:	Sunny ~70s	Sample collector:	NM
Location ID:	EV013	Field duplicate collected?	Yes – See next page
Media type (circle one):	(PW) EB FB	Sample ID:	EV013-PW-1-092019
Container Size	All 125mL x 4	Chemical Analysis	all except sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Vibraframe clear water		

Field supervisor Initials ZH Date: 09/20/19

Sample Lead Initials NM Date: 9/20/19

~~1 of 1~~

Page 1 of 2

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9/20/2019			
Person completing form: Nicky Moody			

✓

Sampling date:	9/20/2019	Sampling time:	1013
Weather:	Sunny 54°F	Sample collector:	Nicky Moody
Location ID:	EV044	Field duplicate collected?	None
Media type (circle one):	(PW) EB FB	Sample ID	EV044-PW-1-092019
Container Size:	All 125mL x 4	Chemical Analysis:	all except sulfide.
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Slight yellow color water Trident vibraframe.		

✓✓

Sampling date:	9/20/2019	Sampling time	0900
Weather:	Sunny 54°F	Sample collector:	NM
Location ID:	EV044	Field duplicate collected?	N/A
Media type (circle one):	NM ~~PW~~ ~~EB~~ NM FB (EB)	Sample ID	EV044-PW-4-092019.
Container Size:	125mL x 3	Chemical Analysis	Total metals, ~~Hardness~~, Chloride, NM TOC Sulfate, Alkalinity
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident vibraframe clear water		

Equipment blank ↓ PUT ON HOLD AS NEW Method provided @ 12:50pm today

✓

Sampling date:	9/20/2019	Sampling time:	1236
Weather:	Sunny 70s	Sample collector:	NM
Location ID:	EV013	Field duplicate collected?	Yes – See next page
Media type (circle one):	(PW) EB FB	Sample ID	EV013-PW-1-092019
Container Size	All 125mL x 4	Chemical Analysis	all except sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Vibraframe clear water		

Field supervisor Initials ZH Date: 09/20/19
Sample Lead Initials NM Date: 9/20/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/24/19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV044

Vessel Crew: Pete Jenkins (PJ); Jeff Shut (JS); Michelle Stegner (MS) **Sampling Crew:** Michelle Stegner (MS); Cliff Pearson (CP); Stuart Holmes (SH)

C.R. Observer: **EPA Observer:** Marilyn Gaulteer (MG)

Arrival Time: 0957 **Departure Time:** 1128

River Stage:
Water Surface Elev. (ft): 1298.05
Water Surface Elevation Source: waterdata.usgs.gov

Weather Conditions Upon Arrival:
Temp (°F): 53 Wind (mph): 2
Clouds/Precipitation: Mostly sunny; dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO cinewd 11/26/19 MSB

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Ø

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

None

Sampling Information

Sampler Used: Van Veen

# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted (6 SE jars, 3 TV buckets (1 split)
#2 accepted (BMI bucket)

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials 9-24-19 Date: SH Field Supervisor Initials by Date: 9-24-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV044

Attempt # 1 Cast Time: 1001 Water Depth (m): 7.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV044-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 424998.55 Sampler Penetration (inches): 9

Northing: 5392737.37 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: SILT w/ little very fine sand Redox Boundary: Not observed

Presence of debris: Trace small sticks

Color: 2.5Y 3/2 Biological Structures: None

Stratification: None/homogeneous Shells: None

Density: ~~Very soft to~~ SH a/a/a/g soft Sheen/Odor: None

Presence/Absence silica glass: Not observed Other Notes: Blender used to homogenize for sample

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: EV044-SE-1-092419 Time: 1001

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.3 gallons
	1 x 2.5 gallon white bucket	1.6 gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: EV044-SE-3-092419 Time: 1601 2.5 gallon white bucket 1.6 gallons

BMI Primary Sample ID: EV044-BMI-1-092419 Time: 1001 Yellow 5-gallon bucket 2x 1.7 gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CF Date: 9/24/19 Field Supervisor Initials [illegible] Date: 9-24-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evens

Anchored? (NO) YES **Location ID:** EV044

Attempt # 2 Cast Time: 1047 Water Depth (m): 79

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV044-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 425001.30 Sampler Penetration (inches): 9

Northing: 5392737.87 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

SEE ATTEMPT #1

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

~~Attempt #s in Sample~~ if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket*
			Total Metals & TOC	8 oz WMGJ	*volumes*
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EV044-BMI-1-092419	Time:	1001	Yellow 5-gallon bucket	2 x 1.7 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/24/19 Field Supervisor Initials DG Date: 9-24-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698
Area of Interest: ~~EV046~~ SH → Evans
Vessel: RV Tleton
Location ID: EV046
Vessel Crew: J. Schaefer, R. McEliece
Sampling Crew: S. Holmes (photo/video)
C.R. Observer: N/A
EPA Observer: G. Seaberg, L. Raterink
Arrival Time: 1541
Departure Time: 1549

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 58 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: EV046-SV-1
Easting: 4252497
Northing: 5392926.56
D: 6.7 m @ 1543
Observations: Gravel w/ one cobble and silt

GPS Target Name: EV046-SV-2
Easting: 4252132
Northing: 5392876.72
D: 4.3 m @ 1545
Observations: silt/mud w/ gravel and cobbles (large silt plume upon landing).

GPS Target Name: EV046-SV-3
Easting: 4251996.29
Northing: 5392836.26
D: 5.3 m @ 1547
Observations: Same as SV-2

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19
Field Supervisor Initials [illegible] Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Yeti **Location ID:** EV044

Vessel Crew: Renee Trudeau, Emma Rigby, Bret Walburn **Sampling Crew:** Nicky Moody, Alan Sims, Chris Smith

C.R. Observer: N/A **EPA Observer:** Jeff Johnson

Arrival Time: 0821 **Departure Time:** 1113

River Stage: Water Depth = 7.30m.

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:

Temp (°F): 54 Wind (mph): 3

Clouds/Precipitation: Sunny.

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709.25

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: None

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes No N/A

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Gravelly beach

Sampling Information

Sampler Used: Porewater → Trident vibraframe

# of Sampling Attempts (Accepted vs. Rejected): 1 Attempt = successful.

Video Reconnaissance Information

GPS Target Name: N/A
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials NM Date: 9/20/19

Field Supervisor Initials [illegible] Date: 09/20/19

Revised 9/18/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 23Sept2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Yeti
Location ID: EV046pw5-9/23, 46
Vessel Crew: Rene
Sampling Crew: Bart Chadwick
EPA Observer: Jeff Johnson
Arrival Time: 1428
Departure Time:

River Stage:
Water Surface Elevation (ft): 1280' msl
Elevation Source: Lake Roosevelt

Weather Conditions Upon Arrival:
Temp (°F): 55°F Wind (mph): 0
Clouds/Precipitation: Raining

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Balders, cobbles onshore. Very near shoreline (~20') to west

GPS Target Parameters and Water Depth

GPS Name: Trimble
Water Depth (m): 5.3
Easting: 425173.30
Northing: 5392793.05
Water Sample Color: None noted

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: EV046-PW-1-092319 Time: 1548

Cross off bottles NOT filled
1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: NA Time:
Analyte and Bottle Type:
EPA Split Sample ID: NA Time:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AT Date: 23Sept.19
Field Supervisor Initials BM Date: 9-23-19

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV048

Date: 9/16/2019 **Vessel:** Ingalls

Sampling Crew: MB Michaela McGoog, Brian Fletcher MS Michelle Steyner **Vessel Crew:** Shawn Hintz, Emma Rigby SH E

EPA Observer: Jeff Johnson **C.R. Observer:** Michelle Steyner

Arrival Time: 16:33 **Departure Time:** 17:10

River Stage:

Water Surface Elev. (ft): ~1299

Water Surface Elevation Source:

Weather Conditions Upon Arrival

Temp (°F): 60°

Wind (mph): 0-3 mph

Clouds/Precipitation: Cloudy, Ø precip.

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709 Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

No Sample due to Mechanical issues

C.R. - cultural resources

Field Supervisor Initials DY Date: 9-17-19

Sample Lead Initials MM Date: 9-16-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/24/19 (US)

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV048-
Vessel Crew: Pete Jenkins (PJ), Jeff Shutt (JS)
Sampling Crew: Michelle Stegner (MS), Cliff Pearson (CP), Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1134
Departure Time: 1253

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: waterdata.usgs.gov

Weather Conditions Upon Arrival:
Temp (°F): 62 Wind (mph): 2
Clouds/Precipitation: Clear, sunny, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 1 small fishing boat 100m west

Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
no

Sampling Information

Sampler Used: Van Veen
2 attempted / 2 accepted
# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted - SE Jars (6) 2 Tx buckets
#2 accepted - BMI (2 buckets, 20 gal ea)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-24-19
Field Supervisor Initials DM Date: 9-24-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV048

Attempt # 1 Cast Time: 1137 Water Depth (m): 29.7

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV048-1 Estimated Hydrowire angle (degrees): —

Easting: 424637.54 Sampler Penetration (inches): ~~20~~ 8

Northing: 5392931.19 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine-med SAND w/ trace SR coarse sand < 1% SR fine gravel

Color:

Stratification: < 1cm overlying silt. Massively-bedded sand to 6"

Density: loose

Presence/Absence silica glass: Abundant

Redox Boundary: Not observed

Presence of debris: None

Biological Structures: None

Shells: None

Sheen/Odor: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: EV048-SE-1-092419	Time: 1137	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket 5.2 *gallons*	
			1 x 2.5 gallon white bucket 1.6 *gallons*	
SE Duplicate Sample ID: —	Time: —	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: —	Time: —		8 oz WMGJ	
EPA TX Split Sample ID: —	Time: —		2.5 gallon white bucket — *gallons*	
BMI Primary Sample ID: EV048-BMI-1-092419	Time: 1137		Yellow 5-gallon bucket 2 x 2.0 *gallons*	
BMI Duplicate Sample ID: —	Time: —		Yellow 5-gallon bucket — *gallons*	

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/24/19 Field Supervisor Initials MS Date: 9/24/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV048

Attempt # 2 Cast Time: 1217 Water Depth (m): 29.7

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV048-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 424637.96 Sampler Penetration (inches): 10

Northing: 5392928.22 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: See Attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket ____ *gallons*
	1 x 2.5 gallon white bucket ____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ *gallons*

BMI Primary Sample ID: EV048-BMI-1-092419 Time: 1217 Yellow 5-gallon bucket 2 x 2.0 *gallons*

BMI Duplicate Sample ID: Time Yellow 5-gallon bucket ____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/24/19 Field Supervisor Initials AS Date: 9/24/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/30/19

Project Number: 60612698
Area of Interest: EVANS
Vessel: YGT
Location ID: EV048
Vessel Crew: RENE TANDEAU, RYAN McCLURE
Sampling Crew: JENNIFER RAM, JOSS MOORE, JOEL GUERRERO
EPA Observer: N/A
Arrival Time: 0930
Departure Time: 12th 1300
River Stage:
Water Surface Elevation (ft): 30.8 mLLW
Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 43°
Wind (mph): CALM ~3mph
Clouds/Precipitation: PARTLY CLOUDY
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic INGALLS CREW
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): CENTER RIVER WEST SHORELINE (SAND BEACH W/ FLOATING DOCK), EAST SHORELINE (ROCKY W/ FORESTED SLOPE, HOUSE + ROCK OUTCROP)

GPS Target Parameters and Water Depth

GPS Name: TRIMBLE
Water Depth (m): 30.8
Easting: 424636.08
Northing: 5392927.63
Water Sample Color: CLEAR, PURGE CONTAINER INITIALLY SLIGHT YELLOW

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

9/30/19

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: EV048-PW-1-093019 Time: 1132
EV048-PW-2-093019
Duplicate Sample ID: YES DISS METALS Time: 1132
EPA Split Sample ID: NO Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: DISS METALS 125mL HNO3
1B. Dissolved Metals: With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: [illegible] Date: 9/30/19
Field Supervisor Initials: NM Date: 9/30/19

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV049

Date: 091219 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: FD, DL **C.R. Observer:** MS

Arrival Time: 1300 **Departure Time:** 1405

River Stage:
Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 70° F

Wind (mph): 0-3 mph

Clouds/Precipitation: partly cloudy Ø precip

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) / Mixed Coarse (mCs) / Mud (M) / Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO — Sand but boulders + cobbles visible in video

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

Circled by J. Pretare 12-2-19

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.13.19

Sample Lead Initials AP Date: 9/13/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/12/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV049

Attempt # (1) 2 3 Cast Time 1306 **Water Depth (feet):** 21.6 M

Sample Location: GPS = EV049-1 **Sheave Counter Depth (feet):**

E ~~Latitude~~: 424693.88 **Estimated Hydrowire angle (degrees):** Ø

N ~~Longitude~~: 5392953.29 **Sampler Penetration (inches):** 6 inches

Sample Type: (Physical/Chemical) ~~Bioassay~~ BMI NM **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO N/A
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:** Holding – is not representative of facies. Video has boulders, cobbles. rejected come back w/ freeze grab

Sediment Characteristics

Sediment Type: F-C Sand NO Coarse **Redox Boundary:** None

Texture: **Presence of debris:** None

Color: Black w/ Brown speckles **Biological Structures:** None

Stratification: Homogenous **Shells:** None

Density: loose **Sheen/Odor:** None

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): None **Seived (YES/NO)?** 2mm 5mm

> 2mm removed by hand: YES NO **Mass of material > 2mm (kg):**

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

supposed to be mCs mixed coarse,

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698 Area of Interest: Evans

Anchored? (NO) YES Location ID: EV049

Attempt # 1 (2) 3 Cast Time 1326 Water Depth (feet): 21.6 m

Sample Location: Sheave Counter Depth (feet):

E ~~Latitude~~: 424692.80 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5392953.28 Sampler Penetration (inches): < 6 inches

Sample Type: (Physical/Chemical) or Bioassay → BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: thin film of m-f Sand
Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:

Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples: None
Seived (YES/NO)? 2mm 5mm
Total Sample Mass (kg):
Mass of material > 2mm (kg):
> 2mm removed by hand: YES NO

BMI Samples: None
Seived (250 µm)? YES

Primary Sample ID: Time: # and type of Containers:
Duplicate Sample ID: Time: # and type of Containers:
Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials AP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV049

Attempt # 1 2 (3) Cast Time 1349 **Water Depth (feet):** 21.7 m

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude~~: 424686.74 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 5392934.90 **Sampler Penetration (inches):** ~ 6 inches

Sample Type: Physical/Chemical Bioassay (BMI)? **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Thin veneer of sand. **Redox Boundary:**

Texture: trace grav cobble **Presence of debris:**

Color: Very dark gray **Biological Structures:**

Stratification: homogenous **Shells:**

Density: loose **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time. _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV049

Date: 9/14/2019 **Vessel:** Cayuse

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: DL **C.R. Observer:** MS

Arrival Time: 1000 **Departure Time:** 1050

River Stage:
Water Surface Elev. (ft): 1299

Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival
Temp (°F): 57° F

Wind (mph): 0-2 mph

Clouds/Precipitation: cloudy/rainy

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Retare 12-2-19

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 708

Boat Traffic: ∅

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

∅

General Notes:

no recovery in both grabs

C.R. - cultural resources

Field Supervisor Initials AP Date: 9.14.19

Sample Lead Initials AP Date: 9.14.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: ~~EV 9/14/19~~ NM 9/14/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV049

4 Attempt # ~~1~~ ~~2~~ ~~3~~ (4) NM **Cast Time** 1012 **Water Depth (feet):** M 21.6 m

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude~~: 424692.00 **Estimated Hydrowire angle (degrees):** Ø

N ~~Longitude~~: 539295~~8~~952.93 JP **Sampler Penetration (inches):**

Sample Type: (Physical/Chemical) Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria: Empty sampler.

1. Sample surface smooth or reflects the material collected and does not indicate that material was lost during retrieval (i.e, no voids or discontinuities)?	N/A YES	NO
2. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
4. Sample is:	Accepted	Rejected

Sample Collection Method: (Freeze Grab) Sampler Drive Method: (Sampler Weight 140 lbs) Mechanical

Additional Sampling Notes:

Sediment Characteristics

Sediment Type: N/A.
Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:

Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples N/A

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9/14/19 Field Supervisor Initials JP Date: 9.14.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/14/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV049

Attempt # 5 ~~1 2 3~~ Cast Time 1037 Water Depth ~~(feet)~~ (m): 21.8m

Sample Location: Sheave Counter Depth (feet): —

E ~~Latitude:~~ 424693.18 Estimated Hydrowire angle (degrees): —

N ~~Longitude:~~ 5392953.69 Sampler Penetration (inches): —

Sample Type: (Physical/Chemical) ~~Bioassay~~ BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sample surface smooth or reflects the material collected and does not indicate that material was lost during retrieval (i.e, no voids or discontinuities)? N/A No recovery	YES	NO
2. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
4. Sample is:	Accepted	Rejected

Sample Collection Method: (Freeze Grab) Sampler Drive Method: (Sampler Weight) Mechanical

140165

Additional Sampling Notes:

Sediment Characteristics

Sediment Type: N/A.

Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: ✓ # and type of Containers: _____

Sample Lead Initials AP Date: 9.14.19 Field Supervisor Initials AP Date: 9.14.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/27/2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV049

Vessel Crew: Pete Jenkins (PJ) Jeff Schut (JS) **Sampling Crew:** Michelle Stegner (MS) Cliff Pearson (CP) Stuart Holmes (SH)

C.R. Observer: Michelle Stegner (MS) **EPA Observer:** Marilyn Gauthier (MG)

Arrival Time: ~~1000~~ 855 **Departure Time:** 1310

River Stage:
Water Surface Elev. (ft): 1218.50
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 2
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled 11/27/19 MEG

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709.5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic ∅

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
∅ NOTES 3 | 3 previous attempts w/ hamon on 9/12, 4 freeze grab attempts 9/14

Sampling Information

Sampler Used: Freeze Grab w/o hammer #3 (5 attempts, 2 accepted)

# of Sampling Attempts (Accepted vs. Rejected): ~~#1~~ #1 no recovery, rejected #2 - ~~no recovery~~ wrong facies :SE #5 = BLI #4 no recovery #3 = accepted SE

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials CP Date: 9/27/19 Field Supervisor Initials MG Date: 9/22/19

Revised 9/18/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

(See 9/14 FG forms for Pg 1-4)

Date 9-27-19

Project Number: 60612698

Area of Interest: Evans

Anchored? (NO) YES JP 12-17-19

Location ID: EV049

Attempt # ~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ 6 Cast Time: 0906

Water Depth (m): 22.5

GPS Target Parameters

Sheave Counter Depth (m): —

Name: EV049-5

Estimated Hydrowire angle (degrees): —

Easting: 424691.34

Sampler Penetration (average) (inches): < 4

Northing: 5392947.00

Sample Type: Physical/Chemical ~~BMI~~

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
4. Sample is:	Accepted	(Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer)

Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Only trace amount of sand adhered to sampler prong

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz ~~WMGJ~~ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CL Date: 9/27/19 Field Supervisor Initials MC Date: 9/27/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 9
Date 9-27-19

Project Number: 60612698
Area of Interest: Evans
Anchored? (NO) YES JP 10-17-19
Location ID: EV049
Attempt # ~~2~~/~~4~~ 7 Cast Time: 0944
Water Depth (m): 23.20
GPS Target Parameters
Sheave Counter Depth (m): —
Name: EV049-6
Estimated Hydrowire angle (degrees): —
Easting: 424681.96
Sampler Penetration (average) (inches):
Northing: 5392944.78
Sample Type: Physical/Chemical BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: **Accepted** ~~Rejected~~

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer)
Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Fine-med SAND
Redox Boundary: None
Presence of debris: stick
Color:
Biological Structures: Crayfish leg
Stratification: None
Shells: Trace
Density: Loose
Sheen/Odor: None
Presence/Absence silica glass: Abundant
Other Notes: Does not match target facies of mCS

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/27/19
Field Supervisor Initials MLS Date: 9/27/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 9

Date 9-27-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES JP 12-17-19 **Location ID:** EV049

Attempt # ~~3~~ 1 / ~~7~~ 8 Cast Time: 1051 Water Depth (m): 22.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV049-~~7~~ Estimated Hydrowire angle (degrees): —

Easting: 424688.71 Sampler Penetration (average) (inches): 6

Northing: 5392942.51

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? ~~YES~~ NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? ~~YES~~ NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: F-coarse SAND. Trace gravel <1% Redox Boundary: None

Presence of debris: None

Color: 10 YR 7/1 Biological Structures: None

Stratification: None Shells: None

Density: loose Sheen/Odor: None

Presence/Absence silica glass: Abundant Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: — SEM-AVS Container Collected from Attempt #: ~~3~~ 1 SH

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: EV049-SE-1-092719 Time: 1051

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: EV049-BMI-1-092719 Time: 1051 Yellow 5-gallon bucket 0.6 *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CL Date: 9/27/19 Field Supervisor Initials MW Date: 9/27/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-27-19

Project Number: 60612698

Area of Interest: Evans

Anchored? (NO) YES dP 12-17-19

Location ID: EV049

Attempt # ~~1~~ 2 / ~~2~~ 3 / ~~3~~ 4

Cast Time: 1144

Water Depth (m): 23.2

GPS Target Parameters

Sheave Counter Depth (m): —

Name: EV049-8

Estimated Hydrowire angle (degrees): —

Easting: 424688.61

Sampler Penetration (average) (inches): < 4

Northing: 5392943.34

Sample Type: ~~Physical/Chemical~~ ~~BMI~~

Cultural Resource Check Completed? ~~YES~~ ~~NO~~

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)?	(YES)	NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	~~NO~~
4. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer)

Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures: No recovery

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? ~~Yes~~ No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ ~~8 oz~~ WMGJ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials AP Date: 9/27/19

Field Supervisor Initials MS Date: 9/27/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-27-19

Project Number: 60612698

Area of Interest: Evans

Anchored? ~~NO~~ YES JP 12-17-19

Location ID: EV049

Attempt # ~~3~~ 4/9 10 Cast Time: 1221

Water Depth (m): 23.2

GPS Target Parameters

Sheave Counter Depth (m): —

Name: EV049-9

Estimated Hydrowire angle (degrees): —

Easting: 424684.69

Sampler Penetration (average) (inches): 6

Northing: 5392943.08

Sample Type: Physical/Chemical (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES ~~NO~~
2. Minimum sampler penetration depth (4 to 6 inches) acheived? ~~YES~~ NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? ~~YES~~ NO
4. Sample is: ~~Accepted~~ Rejected

Sample Collection Method: Freeze Grab w/ Hammer ~~w/o Hammer~~ Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as attempt #7

Redox Boundary:

Presence of debris:

Color: 10 YR 7/1

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	EV049-BMI-1-092719	Time: 1051		Yellow 5-gallon bucket	0.6 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/27/19 Field Supervisor Initials MS Date: 9/27/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/1/19

Project Number: 60612698
Vessel: YETI
Vessel Crew: L. TWDEAN, R. MCCLEES
EPA Observer: STEVE COX
Arrival Time: 1340

Area of Interest: EVANS
Location ID: ~~EVOOGE~~ EV049
Sampling Crew: S. RAY S. MOORE S. GUERRERO
Departure Time: 1622

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 53 Wind (mph): CALM <2mph
Clouds/Precipitation: P. CLOUDY

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic INGALLS CREW
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
EASTERN SHORE ROCKY, HOUSE UP FORESTED SLOPE

GPS Target Parameters and Water Depth

GPS Name: EV049-2-PW
Easting: 424687.69
Northing: 5392941.89
Water Depth (m): 22.4
Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name: NM 10/1/19
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: EV049-PW-1-100119 Time: 1506

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time:
EPA Split Sample ID: — Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials NM Date: 10/1/19
Field Supervisor Initials NM Date: 10/1/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/24/2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Ingalls **Location ID:** EV051

Vessel Crew: Jeff Schutt (JS), Pete Jenkins (PJ) **Sampling Crew:** Michelle Stegner (MS), Cliff Pearson (CP), Stuart Holmes (SH)

C.R. Observer: Michelle Stegner (MS) **EPA Observer:** Marilyn Gaethier (MG)

Arrival Time: 1258 **Departure Time:** 1437

River Stage:
Water Surface Elev. (ft): 1299.51
Water Surface Elevation Source: waterdata.usgs.gov

Weather Conditions Upon Arrival:
Temp (°F): 65 Wind (mph): 2
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled 11/26/19 MEB

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709. Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: 0

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Van Veen
2 attempts, 2 accepted

# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted - Collected (6) SE jars and (2) Tx buckets. #2 BMI (2 buckets)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-24-19 Field Supervisor Initials MS Date: 9/24/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? ~~NO~~ YES **Location ID:** EVOS1

Attempt # 1 Cast Time: 1300 Water Depth (m): 23.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: EVOS1-1-chem Estimated Hydrowire angle (degrees): —

Easting: 424659.04 Sampler Penetration (inches): 8

Northing: 5393066.63 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: ~~Van Veen~~ Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: F-med SAND w/ few C. sand. SR-R

Color: 10YR 3/1

Stratification: <1cm silt, massively bedded sand to 6"

Density: Losse

Presence/Absence silica glass: Abundant

Redox Boundary: None

Presence of debris: A stick

Biological Structures: A half mussel shell

Shells:

Sheen/Odor: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes ~~No~~

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: ~~EVOS1-1-chem~~ SH 9-24-19 Time: 1300
EVOS1-SE-1-092419

		Cross off containers NOT filled	
	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	5.2 *gallons*
		1 x 2.5 gallon white bucket	2.1 *gallons*

SE Duplicate Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: — Time: — 8 oz WMGJ

EPA TX Split Sample ID: — Time: — 2.5 gallon white bucket — *gallons*

BMI Primary Sample ID: EVOS1-BMI-1-092419 Time: 1300 Yellow 5-gallon bucket 2x 2.2 *gallons*

BMI Duplicate Sample ID: — Time: — Yellow 5-gallon bucket — *gallons*

Equipment Blank Collected? Yes ~~No~~ See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/24/19 Field Supervisor Initials MS Date: 9/24/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV051

Attempt # 2 Cast Time: 1410 Water Depth (m): 23.5

GPS Target Parameters Sheave Counter Depth (m): ~~———~~

Name: EV051-2-BMI Estimated Hydrowire angle (degrees): ~~———~~

Easting: 424659.11 Sampler Penetration (inches): 8

Northing: 5393065.26 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Same as Attempt #1

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	6 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: EV051-BMI-1-092419 Time: 1500 Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials DR Date: 9/24/19 Field Supervisor Initials JLr Date: 9/24/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 25 Sept. 19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV051
Vessel Crew: Rene Trudeau, Bret Walburn **Sampling Crew:** Bart Chadwick, Joel Guerero
EPA Observer: DJ Moore
Arrival Time: 0800 **Departure Time:** 1020

River Stage:
Water Surface Elevation (ft): 1280 msl
Elevation Source: Lake Roosevelt

Weather Conditions Upon Arrival:
Temp (°F): 45°F Wind (mph): <5 MPH
Clouds/Precipitation: Clear blue sky, light high haze

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO Some cobbles in view within camera frame on approach of driveframe

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709.5 Water Surface: (Calm) (Small Waves) (Choppy) (Very)

Boat Traffic None

Surface Vegetation Present: sm. amt. drifting by Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None. Campground 2 0.8 mi N.

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 24.1
Easting: 424659.54
Northing: 5393066.69 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV051-PW-1-092519 Time: 0859

Cross off bottles NOT filled
1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: EV051-PW-2-092519 Time: 0859 Analyte and Bottle Type: Dissolved Metals 125 ml HDPE
EPA Split Sample ID: NO Time: NA 1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AT Date: 25 Sept. 19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/26/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV052 (alt for 62)
Vessel Crew: Pete Jenkins (PJ) Jeff Schut (JS)
Sampling Crew: Michelle Stegner (ms) Libb Pearson (cp) Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (ms)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1220
Departure Time: 1429

River Stage:
Water Surface Elev. (ft): 1297.14
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 60 Wind (mph): 1
Clouds/Precipitation: Mostly cloudy, occasional light rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.8
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Van Veen
3 attempts, 2 accepted
# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted: EV052-SE-1-092619
#2 rejected (wood debris in jaws)
#3 accepted (RM1)

Video Reconnaissance Information

GPS Target Name: ~~Van Veen~~
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-26-19 Field Supervisor Initials SAP Date: 10-7-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV052

Attempt # 1 Cast Time: 1226 Water Depth (m): 23.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV052-Chem Estimated Hydrowire angle (degrees): ~

Easting: 424620.49 Sampler Penetration (inches): 8

Northing: 5393163.01 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 750

Sediment Characteristics

Sediment Type / Texture: Fine-coarse SAND w/ trace Gravel (~3-5 %) Redox Boundary: None

Presence of debris: Trace small wood chips

Color: 10YR 2/1 Biological Structures: None

Stratification: <1cm silt overlying massively bedded sand Shells: None

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Abundant Other Notes: Alternate for EV062 Video 0926_122507A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 43.9 Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 1.3

Mass of Sediment > 3 inches (cobble) (kg): None

Sample Identification Information

SE Primary Sample ID: EV052-SE-1-092619 Time: 1226

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.2 gallons
	1 x 2.5 gallon white bucket	2.15 gallons

SE Duplicate Sample ID: _____ Time: _____

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: EV052-BMI-1-092619 Time: 1226 Yellow 5-gallon bucket 2.9 gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/26/19 Field Supervisor Initials AP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV052

Attempt # 2 Cast Time: 1358 Water Depth (m):

GPS Target Parameters Sheave Counter Depth (m):

Name: EV052-2 Estimated Hydrowire angle (degrees):

Easting: 424617.68 Sampler Penetration (inches):

Northing: 5393168.30 Sample Interval (0 to X inches bss):

Sample Type: ~~Physical/Chemical/Bioassay~~ ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ ~~NO~~

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	~~Rejected~~

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures: stick in Jaws, sample washed out

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/26/19 Field Supervisor Initials: JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES **Location ID:** EV052

Attempt # 3 Cast Time: 1405 Water Depth (m): 23.0

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV052-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 424618.14 Sampler Penetration (inches): 7

Northing: 5393162.89 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Same as Attempt #1 but no gravel Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: EV052-BMI-1-092619	Time: 1226		Yellow 5-gallon bucket	2.9 *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CA Date: 9/26/19 Field Supervisor Initials JAP Date: 11-7-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 27Sept, 19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV052
Vessel Crew: Rene Trudeau + Bret Walburn **Sampling Crew:** Al Thatcher, Bart Chadwick + Joel Guerrero
EPA Observer: DJ Moore
Arrival Time: 0755 **Departure Time:**

River Stage:
Water Surface Elevation (ft): 1981' msl
Elevation Source: Lake Roosevelt Rivercast map
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:
Temp (°F): 37°F Wind (mph): <5 MPH
Clouds/Precipitation: Mostly cloudy, no precip.

Site Information

Target Sediment Facies: (Sampleable Sand (S and mF)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.7 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic 2 boats passed during sampling
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
To west is undeveloped shoreline
0.75 mi to NE is campground, 0.4 to E. undeveloped shoreline - has houses set back

GPS Target Parameters and Water Depth

GPS Name: Trimble
Easting: ~~424608~~ 424617.18 aes 9/27/19
Northing: 5393165.36
Water Depth (m): 23.23 aes 9/27/19
Water Sample Color: Slight tinge of yellow

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

aes 9/27/19

Sample Identification Information

Primary Sample ID: EV052-PW-1-092719 Time: 0933
aes, 9/27/19
Duplicate Sample ID: NA Time:
EPA Split Sample ID: EV052-PW-3-092719 Time: 0933
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

Analyte and Bottle Type:	
1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 27 Sept. 19 Field Supervisor Initials DM Date: 9-27-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: Evans

Location ID: NM ~~EV059~~ EV053

Date: 9/11/2019

Vessel: Tietan

Sampling Crew: MS + AP + NM

Vessel Crew: RT + JW

EPA Observer: Frank Dillon

C.R. Observer: MS

Arrival Time: 1120

Departure Time: 11:35

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 70s

Wind (mph): 2 mph

Clouds/Precipitation: partly cloudy

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: NM ~~710~~ 709.5

Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes No N/A

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

Main river channel - southwest of Evans campground.

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.11.19

Sample Lead Initials AP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/2019

Project Number: 60612698 **Area of Interest:** EVANS

Anchored? (NO) YES **Location ID:** ~~NMEV054~~ EV053

Attempt # (1) 2 3 Cast Time 1120 **Water Depth (feet):** 21.8

Sample Location: **Sheave Counter Depth (feet):**

E Latitude: 424706.58 **Estimated Hydrowire angle (degrees):**

N Longitude: 539327.14 **Sampler Penetration (inches):** N/A

Sample Type: (Physical/Chemical) (Bioassay) BMI **Cultural Resources Observed?** YES NO

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Cobbles only. ~8 cobbles **Redox Boundary:** N/A

Texture: **Presence of debris:** None

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A. Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES N/A

Primary Sample ID: None Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials AP Date: 9.11.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV053

Date: 091219 **Vessel:** Tieton

Sampling Crew: Jeff Wilson, Renee Trudeau **Vessel Crew:** Nicky Moody, Anthony Palmer

EPA Observer: Frank Dillon, Dan Levois **C.R. Observer:** Michelle Stegner

Arrival Time: 9:35 **Departure Time:** 10:

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): Upper 50's °F

Wind (mph): 0-3 mph

Clouds/Precipitation: few Clouds, Ø precip.

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709.5

Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

Ø

General Notes:

C.R. - cultural resources

Field Supervisor Initials: [illegible] Date: 9.13.19

Sample Lead Initials: AP Date: 9.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9-12-19

Project Number: 60612698 **Area of Interest:** Evans GPS

Anchored? (NO) YES **Location ID:** EV053 EV053-2

* Attempt # ~~1~~ (2) 3 Cast Time 0947 Water Depth (feet): 23.2m

Sample Location: Sheave Counter Depth (feet):

E ~~Latitude~~: 424703.31 Estimated Hydrowire angle (degrees): Ø

N ~~Longitude~~: 5393227.11 Sampler Penetration (inches): 9 inches

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes: H_2O only.

Sediment Characteristics

Sediment Type: N/A. Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES N/A

Primary Sample ID: None Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

* 1st attempt w/ hamon bcf 2nd attempt over all with mechanical sampler

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV053 GPS EV053-3

* Attempt # 1 ~~2~~ (3) Cast Time 1031 **Water Depth (feet):** 20.1 m

Sample Location: NM

E ~~Latitude~~: 424725.52 **Sheave Counter Depth (feet):**

N ~~Longitude~~: 5393230.37 **Estimated Hydrowire angle (degrees):** Ø

Sampler Penetration (inches): Ø

Sample Type: (Physical/Chemical) Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A.	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:** Empty w/ thin veneer of silt.

Sediment Characteristics

Sediment Type:
Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples
Total Sample Mass (kg): _____
> 2mm removed by hand: YES NO
Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg): _____

BMI Samples
Seived (250 µm)? YES

Primary Sample ID: None Time: _____ # and type of Containers: _____
Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____
Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

* 2nd attempt with hamon but 3rd attempt over all with mechanical sampler

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698
Area of Interest: Evans
Vessel: RV Tieton
Location ID: EV053
Vessel Crew: J. Schaefer, R. McElliece
Sampling Crew: S. Holmes (photo/video)
C.R. Observer: N/A
EPA Observer: G. Sedberry, L. Ratterink
Arrival Time: 1529
Departure Time: 1537

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: EV053-SV-1
Easting: 424692.39
Northing: 5343239.25
D: 25.6 m
@1531
Observations: Cobble w/ silt or sand

GPS Target Name: EV053-SV-2
Easting: 424718.91
Northing: 5343245.65
D: 23.7m
@1533
Observations: Same as above

GPS Target Name: EV053-SV-3
Easting: 424721.64
Northing: 5343208.78
D: 22.7m
@1535
Observations: Same as above

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SM Date: 10/23/19
Field Supervisor Initials LOH Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans.

Location ID: EV054.

Date: 9/11/~~2018~~ 2019 JP. 11-22-19 **Vessel:** Tieton

Sampling Crew: NM + AP **Vessel Crew:** RT + JW

EPA Observer: FB **C.R. Observer:** MS

Arrival Time: 1245 **Departure Time:** 1335

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 78° F

Wind (mph): 1 mph

Clouds/Precipitation: partly cloudy.

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Boat Traffic: None.

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

- Work done on Tieton
- Field notes in Cayuse logbook.

J.A.P. 12-2-19

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.11.19

Sample Lead Initials AP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV054

Attempt # (1) 2 3 Cast Time 1245 **Water Depth (feet):** 6.1 m

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude:~~ 4250592.35 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude:~~ 5393184.71 **Sampler Penetration (inches):** 33.5 - 8 cm = 25.5 = 10 inches (cm)

Sample Type: (Physical/Chemical) Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Silt with trace fine sand = Mud ✓

Texture: with trace Clay

Color: Very dark grayish brown 0-1mm, black >1 mm

Stratification: Massive

Density: Soft.

Presence/Absence silica glass: None

Redox Boundary: 0-1mm Redox.

Presence of debris: None

Biological Structures: Scattered rootlets, trace macrointerts in overlying H2O

Shells:

Sheen/Odor: Slight sulfur odor

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/(NO))? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES (NO)

BMI Samples

Seived (250 µm)? YES N/A.

Primary Sample ID: EV054-SE-1-091119 Time: 1300 # and type of Containers: 6 jars + 2 buckets.

Duplicate Sample ID: — Time: _____ # and type of Containers: —

Split Sample ID: — Time: _____ # and type of Containers: —

Sample Lead Initials AP Date: 9.19.19 Field Supervisor Initials JP Date: 9.11.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/23/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV054
Vessel Crew: Jeff Shult (SH), Pete Jenkins (PJ)
Sampling Crew: Stuart Holmes (SH), Cliff Pearson (CP), Michelle Stegner (MS)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1551
Departure Time: 1615

River Stage:
Water Surface Elev. (ft): 1296.
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 61 Wind (mph): 4
Clouds/Precipitation: Cloudy, light rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (~~Rowered~~) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.8
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Evans Campground on east shoreline

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): 1 attempt; 1 accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CP Date: 9/23/19
Field Supervisor Initials MS Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV054

Attempt # 2 Cast Time: 1551 Water Depth (m): 7.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV054-2-BMI Estimated Hydrowire angle (degrees): 0

Easting: 425057.70 Sampler Penetration (inches): 10.5

Northing: 5393186.48 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: SILT w/ scattered clay inclusions

Color: GLEY 1 3/10Y

Stratification: Homogeneous / massive

Density: Very soft

Presence/Absence silica glass: Not observed

Redox Boundary: Present, 1 cm

Presence of debris: trace rootlets, concentrated in top inch

Biological Structures: None

Shells: None

Sheen/Odor: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in ~~Sample if Composite~~ of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EV054-BMI-1-092319	Time: 1551		Yellow 5-gallon bucket	2.5 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CI Date: 9/23/19 Field Supervisor Initials US Date: 9.23.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV054

Date: 9-18-19 **Vessel:** Yeti

Sampling Crew: J. Pretare, A. Sims, C. Smith **Vessel Crew:** RT, ES

EPA Observer: D. Lavoie **C.R. Observer:** —

Arrival Time: 0930 **Departure Time:** 1250

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 58

Wind (mph): 0

Clouds/Precipitation: raining

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Boat Traffic: none

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): none

General Notes: 6.1 m depth

C.R. - cultural resources

Field Supervisor Initials NM Date: 9.18.19

Sample Lead Initials JP Date: 9.18.19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9-18-19			
Person completing form: J. Pretare			

Sampling date:	9-18-19	Sampling time:	1207
Weather:	raining	Sample collector:	J. Pretare
Location ID:	EVQ54	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EVQ54-PW-1-091819
Container Size:	125, 125, 125, 125 mL	Chemical Analysis:	all But Sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe No sulfide bottle collected full volume of other bottles		

Sampling date:	9-18-19	Sampling time:	1455
Weather:	rain, then sun	Sample collector:	J. Pretare
Location ID:	EVQ75	Field duplicate collected?	Yes
Media type (circle one):	(PW) EB FB	Sample ID:	EVQ75-PW-1-091819
Container Size:	125, 125, 125, 125 mL	Chemical Analysis:	all but sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe No sulfide bottle collected		

Sampling date:	9-18-19	Sampling time:	1455
Weather:	rain, then sun	Sample collector:	J. Pretare
Location ID:	EVQ75	Field duplicate collected?	this is Dup
Media type (circle one):	(PW) EB (FB)	Sample ID:	EVQ75-PW-2-091819
Container Size	125 mL	Chemical Analysis	Alkalinity, Chloride, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe 1 Field Duplicate - 1st of 5 bottles		

Yeti

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9-18-19			
Person completing form: J. Pretare			

Sampling date:	9-18-19	Sampling time:	1207
Weather:	raining	Sample collector:	J. Pretare
Location ID:	EVQ54	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EVQ54-PW-1-091819
Container Size:	125, 125, 125, 125 mL	Chemical Analysis:	all But Sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe No sulfide bottle full volume of other bottles collected		

Sampling date:	9-18-19	Sampling time:	1455
Weather:	rain, then sun	Sample collector:	J. Pretare
Location ID:	EVQ75	Field duplicate collected?	Yes
Media type (circle one):	(PW) EB FB	Sample ID:	EVQ75-PW-1-091819
Container Size:	125, 125, 125, 125 mL	Chemical Analysis:	all but sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe No sulfide bottle collected		

Sampling date:	9-18-19	Sampling time:	1455
Weather:	rain, then sun	Sample collector:	J. Pretare
Location ID:	EVQ75	Field duplicate collected?	this is Dup
Media type (circle one):	(PW) EB (FB)	Sample ID:	EVQ75-PW-2-091819
Container Size	125 mL	Chemical Analysis	Alkalinity, Chloride, sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe 1 Field Duplicate - 1st of 5 bottles		

Yeti

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV057

Date: 9/11/19 **Vessel:** Tieton

Sampling Crew: NM + MS + AP **Vessel Crew:** RT JW

EPA Observer: F. L **C.R. Observer:** MS

Arrival Time: 1140 **Departure Time:** 1220

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 70°s

Wind (mph): 0

Clouds/Precipitation: partly cloudy

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 710 Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes No N/A

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.11.19

Sample Lead Initials AP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES **Location ID:** EV057

Attempt # (1) 2 3 Cast Time 1141 **Water Depth (feet):** 6.7 m

Sample Location: **Sheave Counter Depth (feet):** --

E Latitude: 424823.90 **Estimated Hydrowire angle (degrees):** 0

N Longitude: 5393492.74 **Sampler Penetration (inches):** ~~10 cm~~ 13.5 cm = 9.25 inches

Sample Type: (Physical/Chemical) Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria: Target Facies = M

1. Sampler overfilled or sediment pressed against top of sampler?	N/M ~~YES~~	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Sandy Silt MUD **Redox Boundary:** none to very thin 1mm

Texture: VF Sand **Presence of debris:** None

Color: Very dark gray **Biological Structures:** scattered rootlets + grasses

Stratification: massive **Shells:** 1 bx. worm live

Density: Soft **Sheen/Odor:** slight sulfur odor No Sheen

Presence/Absence silica glass: Absence **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/(NO))? 2mm 5mm

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES (NO)

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: EV057-SE-1-091119 Time: 1200 # and type of Containers: 6 jars + 2 buckets

Duplicate Sample ID: ~~—~~ Time: _____ # and type of Containers: _____

Split Sample ID: ~~—~~ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials JP Date: 9.11.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/23/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV057
Vessel Crew: Jeff Shutt (JS), Pete Jenkins (PJ)
Sampling Crew: Stuart Holmes (SH) Cliff Parson (CP) Michelle Stegner (MS)
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1506
Departure Time: 1538

River Stage:
Water Surface Elev. (ft): 1296.
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 61 Wind (mph): 4
Clouds/Precipitation: Cloudy, light rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.8
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Evans Campground on east shoreline

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected):
1 attempt, 1 accepted (BMI only)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CP Date: 9/23/19
Field Supervisor Initials MG Date: 9.23.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-23-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EVOS7

Attempt # 2 Cast Time: 1510 Water Depth (m): 8.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: EVOS7-2 Estimated Hydrowire angle (degrees): —

Easting: 424823.60 Sampler Penetration (inches): 10

Northing: 5393493.26 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: SILT w/ little clay Redox Boundary: Present, 1cm

Presence of debris: Trace rootlets

Color: GLEY 1 3/10Y Biological Structures:

Stratification: Massive/homogeneous Shells: Trace shell

Density: Very soft. Sheen/Odor: None

Presence/Absence silica glass: Not observed Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EVOS7-BMT-1-092319	Time: 1510		Yellow 5-gallon bucket	2.5 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials CL Date: 9/23/19 Field Supervisor Initials JLS Date: 9.23.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV058

Date: 9/11/19 **Vessel:** Tieton

Sampling Crew: NM, AP, AU **Vessel Crew:** RT + JW

EPA Observer: FD **C.R. Observer:** MS

Arrival Time: 1355 **Departure Time:** 1442

River Stage:
Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): high 70s

Wind (mph): 3 mplt

Clouds/Precipitation: Slightly Cloudy

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO) = only cobbles in sampler w/ Van Veen.

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709.5 Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.11.19

Sample Lead Initials AP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV058

Attempt # (1) 2 3 Cast Time 1358 Water Depth (feet): 16.9 m

Sample Location: Sheave Counter Depth (feet):

E Latitude: 47 4679.97 Estimated Hydrowire angle (degrees): 0

N Longitude: 5393480.59 Sampler Penetration (inches): 0

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO N/A
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO N/A
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Additional Sampling Notes: ~~2~~ 1 VM

Sediment Characteristics

Sediment Type: Cobbles only. x2 with trace fines

Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): None

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg):

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: None Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials JP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES **Location ID:** EV058

Attempt # 1 2 3 Cast Time 1408 Water Depth (feet): 18.6

Sample Location: Sheave Counter Depth (feet):

Latitude: 424672.96 Estimated Hydrowire angle (degrees): 0

Longitude: 5393484.52 Sampler Penetration (inches): 0

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES NO

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Additional Sampling Notes: 2x cobbles with trace silt

Sediment Characteristics

Sediment Type: 2x Cobbles trace silt Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg):

BMI Samples N/A

Seived (250 µm)? YES

Primary Sample ID: None Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials JP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV058

Attempt # 1 2 (3) Cast Time 1436 Water Depth (feet): 22.1m

Sample Location: Sheave Counter Depth (feet): 39m

E ~~Latitude~~: 424658.56 Estimated Hydrowire angle (degrees):

N ~~Longitude~~: 5393484.58 Sampler Penetration (inches): 0

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO N/A.
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: cobble in jaws Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples None

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: None Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials JP Date: 9.11.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV058

Date: 09.12.19 **Vessel:** Tieton

Sampling Crew: Nicky Moody, Anthony Palmer **Vessel Crew:** Jeff Wilson, Renee Trudeau

EPA Observer: Frank Dillon, Dan Levois **C.R. Observer:** Michelle Stegner

Arrival Time: 10:55 **Departure Time:** 11:10

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 60° F
Wind (mph): 0-3 mph
Clouds/Precipitation: Ø

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 709.9 Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.) Ø

General Notes:

C.R. - cultural resources

Field Supervisor Initials SP Date: 9.13.19

Sample Lead Initials AP Date: 9.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/12/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV058

(4) Attempt # ~~1 2 3~~ Cast Time 1055 Water Depth (~~feet~~ m): 19.2

1st w/ hamon; 4th overall

Sample Location: Sheave Counter Depth (feet):

E ~~Latitude~~: 424680.52 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5393479.83 Sampler Penetration (inches): 0

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes: H_2O only.

Sediment Characteristics

Sediment Type: None. Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES N/A

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials JP Date: 9.13.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/12/19

Project Number: 60612698 **Area of Interest:** EVANS

Anchored? (NO) YES **Location ID:** EV058

(5) Attempt # ~~1~~ ~~2~~ NM 3 Cast Time 0804 **Water Depth (~~feet~~):** 21.4 m
2nd w/ hamon

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude~~: 424660.02 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 5393489.97 **Sampler Penetration (inches):** 4/3 = ~~B~~ NM 4"

Sample Type: (Physical/Chemical) (Bioassay) BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: H2O only. again. **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A **Seived (YES/NO)?** 2mm 5mm

> 2mm removed by hand: YES NO **Mass of material > 2mm (kg):**

BMI Samples

Seived (250 µm)? YES N/A

Primary Sample ID: NM Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials AP Date: 9.13.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: RV Tieton **Location ID:** EVOS8

Vessel Crew: J. Schaefer, R. McElliece **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G. Sedberry, L. Raterink

Arrival Time: 1519 **Departure Time:** 1527

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: EVOS8-SV-1
Easting: 424680.91
Northing: 5393502.71
D: 18.9 m
@ 1521
Observations: Cobbles and gravel w/ sand/silt, occasional boulder

GPS Target Name: EVOS8-SV-2
Easting: 424649.99
Northing: 5393503.46
D: 24.0 m
@ 1523
Observations: Gravel and cobble w/ sand/silt

GPS Target Name: EVOS8-SV-3
Easting: 424652.07
Northing: 5393470.38
D: 23.8 m
@ 1525
Observations: same as above

GPS Target Name: _____
Easting: _____
Northing: _____
Observations: _____

Sample Lead Initials SM Date: 10/23/19 Field Supervisor Initials DA Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV059 (use alt 60)
Vessel Crew: Shawn Hinz (SH) Ed Sloan (ES)
Sampling Crew: Michael McCook (MM) Brian Fletcher (BF) Michelle Stegner (MS)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gautier (MG)
Arrival Time: 1150
Departure Time:

River Stage:
Water Surface Elev. (ft): 1297.41
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 50's Wind (mph): 2
Clouds/Precipitation: few clouds, mostly clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J Pretare 12-2-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.9
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): 3 attempts, 3 rejected

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 9-21-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV059

Attempt # 1 Cast Time: 1158 Water Depth (m): 23.3 m

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV059-1 Estimated Hydrowire angle (degrees): —

Easting: 424554.04 Sampler Penetration (inches): ~~8~~ MM 3

Northing: 5393584.09 Sample Interval (0 to X inches bss): N/A

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	(YES) X	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ~~0~~

Sediment Characteristics

Sediment Type / Texture: Rounded cobble. some med. SAND and silt

Color:

Stratification: N/A

Density:

Presence/Absence silica glass: Y

Redox Boundary: N

Presence of debris: N

Biological Structures: N

Shells: N

N/Sheen/Odor: Silty overlying water. Low recovery of sand

Other Notes: Turbidity and cobbles

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV059

Attempt # 2 Cast Time: 1214 Water Depth (m): 23m

GPS Target Parameters Sheave Counter Depth (m): –

Name: EV059-2 Estimated Hydrowire angle (degrees): –

Easting: 424547.75 Sampler Penetration (inches): 21

Northing: 5393585.41 Sample Interval (0 to X inches bss): N/A

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Ø

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: NO recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials MM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV059

Attempt # 3 Cast Time: 1220 Water Depth (m): 23 m

GPS Target Parameters Sheave Counter Depth (m): –

Name: EV059-3 Estimated Hydrowire angle (degrees): –

Easting: 424557.27 Sampler Penetration (inches): ~~KC~~(BC) <1

Northing: 5393593.39 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	NA YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	NA YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	~~Accepted~~	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: M SAND Redox Boundary:

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes: low recovery ~

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 25 Sept. 19

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV059
Vessel Crew: Rene Trudeau, Bret Walburn **Sampling Crew:** Al Thatcher, Bart Chadwick, Joel Guerrero
EPA Observer: DJ Moore
Arrival Time: 1048 **Departure Time:** 1340

River Stage:
Water Surface Elevation (ft):
Elevation Source: Lake Roosevelt

Weather Conditions Upon Arrival:
Temp (°F): 67°F Wind (mph): <5MPH
Clouds/Precipitation: Mixed Clouds + blue sky

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 710 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None to West - vegetation covered bank. East has a house set back ~75 yards back from shore

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 23.2
Easting: 424528.66
Northing: 5393578.18 Water Sample Color: slight tinge of yellow

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV059-PW-1-092519 Time:

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: No Time:
EPA Split Sample ID: No Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type:
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 25 Sept. 2019 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV060 (alternate for EV059)
Vessel Crew: Shawn Hinz (SH), Ed Sloan (ES)
Sampling Crew: Michaela McCoog (MM), Brian Fletcher (BF), Michelle Stegner (MS)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1228
Departure Time: 1444

River Stage:
Water Surface Elev. (ft): 1297.41
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: few clouds, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710.1
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

none

Sampling Information

Sampler Used: Hamon
6 attempts (2 rejected; 4 accepts)
# of Sampling Attempts (Accepted vs. Rejected): #1 rejected (no recovery), #2 " , #3-6 accepted (BMI from #6)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 9-21-19
Field Supervisor Initials NM Date: 9/21/19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV060

Attempt # 1 Cast Time: 1234 Water Depth (m): 23.9

GPS Target Parameters Sheave Counter Depth (m): –

Name: EV060-1 Estimated Hydrowire angle (degrees): –

Easting: 424568.35 Sampler Penetration (inches): < 1

Northing: 5393697.86 Sample Interval (0 to X inches bss): N/A

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

NOT USED IN SAMPLE

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ~~0~~ No recovery

Sediment Characteristics

Sediment Type / Texture: N/A Redox Boundary: N/A

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3, 4, 5 SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): (100%) ~~Sandy~~ (BF) Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): Ø

Mass of Sediment > 3 inches (cobble) (kg): Ø

Sample Identification Information

Primary Sample ID: EV060-SE-1-092119 Time: 1255 # and type of Containers: 16 oz jar (1), 8oz jar (5) 2 gal (1) 5 gal buckets (2.4 gal)

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

NM ~~EV060-BMI-1-092119~~ ; EV060-SE-4-092119 = See other form EB.

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV060

Attempt # 2 Cast Time: 1242 Water Depth (m): 23.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV060-2 Estimated Hydrowire angle (degrees): —

Easting: 424567.39 Sampler Penetration (inches): < 1

Northing: 5393706.29 Sample Interval (0 to X inches bss): N/A

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) X
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0 Very low recovery

Sediment Characteristics

Sediment Type / Texture: Fine to med. Sand Redox Boundary: |

Presence of debris: |

Color: See attempt #3 Biological Structures: Biofilm on rocks

Stratification: Shells: |

Density: | Sheen/Odor: |

Presence/Absence silica glass: Y Other Notes: |

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV060

Attempt # 3 Cast Time: 1252 Water Depth (m): 23.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV060-3-CHEM Estimated Hydrowire angle (degrees): —

Easting: 424565.18 Sampler Penetration (inches): 6

Northing: 5393682.16 Sample Interval (0 to X inches bss): 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Med SAND, trace SILT Redox Boundary: Y 1/2 mm

Presence of debris: N

Color: 10YR 2/1 Biological Structures: N

Stratification: 1/2 mm silt on top; Homogeneous Shells: N

Density: Loose Sheen/Odor: N

Presence/Absence silica glass: Y Other Notes: No gravel or cobble

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3,4,5 SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes No NA

Mass of Sediment < 5 mm (kg): only fines Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: EV060-SE-1-092119 Time: 1255 # and type of Containers: 1 16oz jar, 5 8oz jar, 1 2gal, 5-g

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

1 equipment blank, scoop EV060-SE-4-092119

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV060

Attempt # 4 Cast Time: 1314 Water Depth (m): 24.0

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV060-4 Estimated Hydrowire angle (degrees): —

Easting: 424568.44 Sampler Penetration (inches): 4

Northing: 5393680.97 Sample Interval (0 to X inches bss): 4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Med Sand, Trace Silt — See attempt 3

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information: see p 3

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: see p 3 # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EVO60

Attempt # 5 Cast Time: 1325 Water Depth (m): ~24m

GPS Target Parameters Sheave Counter Depth (m): —

Name: EVO60-5-CHEM Estimated Hydrowire angle (degrees): —

Easting: 424561.55 Sampler Penetration (inches): 6

Northing: 539361.95 Sample Interval (0 to X inches bss): 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): ~~0~~

Sediment Characteristics

Sediment Type / Texture: See attempt #3 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Black Sand

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3,4,5 SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): All fines Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0 N/A

Mass of Sediment > 3 inches (cobble) (kg): 0 N/A

Sample Identification Information

Primary Sample ID: SCUP3 Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? NO YES **Location ID:** EV060

Attempt # 6 Cast Time: 1402 Water Depth (m): —

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV060-6-BM1 Estimated Hydrowire angle (degrees): —

Easting: 424563.66 Sampler Penetration (inches): 6

Northing: 5393685.66 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs) 0

Sediment Characteristics

Sediment Type / Texture: See attempt #3

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) N/A Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: EV060-BM1-1-092119 Time: 1255 # and type of Containers: 2 5-gal buckets

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-21-19 Field Supervisor Initials 9/21/19 Date: NM

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of __
Date 26 Sept 2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Yeti
Location ID: EV060
Vessel Crew: Rene Trudeau + Bret Walburn
Sampling Crew: Al Thatcher, Bart Chadwick + Joel Guerrero
EPA Observer: DJ Moore
Arrival Time: 1314
Departure Time: 1535 (we departed anchored Yeti for today)
River Stage:
Water Surface Elevation (ft): __
Elevation Source: Lake Roosevelt
Trident Sampler Type: Push Pole Vibraframe (Driveframe)
Weather Conditions Upon Arrival:
Temp (°F): 60° F Wind (mph): 5-10 MPH
Clouds/Precipitation: Mixed clouds + sunshine

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Campground to NE ~0.5 mi., house ~0.4 mi to east

GPS Target Parameters and Water Depth

GPS Name: Trimble
Water Depth (m): 23.8
Easting: 424563.29
Northing: 5393683.58
Water Sample Color: Slight tinge yellow

Additional Video Reconnaissance Information

GPS Name: __
Easting: __
Northing: __
Observations:

GPS Name: __
Easting: __
Northing: __
Observations:

Sample Identification Information

Primary Sample ID: EV060-PW-1-092619 Time: 1358
aes 9/26/19
Duplicate Sample ID: EV060-AW-2-092619 Time: 1358
EPA Split Sample ID: No Time: __
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
Analyte and Bottle Type:	Sulfate - 125 ml poly bottle
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date 26 Sept. 2019 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/24/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV 062
Vessel Crew: Pete Jenkins (PJ), Jeff Shutt (JS)
Sampling Crew: Michelle Stegner (MS), Cliff Pearson (CP), Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: (MS) 1440
Departure Time: 1525

River Stage:
Water Surface Elev. (ft): 1299.51
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 70 Wind (mph): 2
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Evans Campground ~100m North

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected):
2 attempts, 2 rejected. 2 video recon revealed cobbles & mud, #1 - rejected (2 cobbles) #2 - rejected (mud, wrong facies)

Video Reconnaissance Information

GPS Target Name: EV062-SV-1
Easting: 425022.20
Northing: 5393769.64
Observations: 5.2 m depth. Surface mostly covered w/ large gravel, maybe 10-20% sand.

GPS Target Name: EV062-SV-2
Easting: 425025.71
Northing: 5393745.37
Observations: 6.2 m depth. Surface mostly covered w/ large gravel small cobbles. Interstitial fines ~25%

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-24-19
Field Supervisor Initials JS Date: 9/24/19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV062

Attempt # 1 Cast Time: 1449 Water Depth (m): 5.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV062-1 Estimated Hydrowire angle (degrees): —

Easting: 425022.20 Sampler Penetration (inches): 3

Northing: 5393769.64 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical/Bioassay~~ ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ ~~NO~~

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	~~YES~~	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Rocks in jaws, sampler not clo

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/24/19 Field Supervisor Initials AL Date: 9/24/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV062

Attempt # 2 Cast Time: 1506 Water Depth (m): 3.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV062-2 Estimated Hydrowire angle (degrees): —

Easting: 4250335.7 Sampler Penetration (inches): 3.5

Northing: 5393754.87 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical/Bioassay~~ BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 750

Sediment Characteristics

Sediment Type / Texture: Mud w/ abundant vegetation Redox Boundary:

Presence of debris:

Color: Biological Structures: crayfish

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Does not match target fines (

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in ~~Sample~~ if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket ____ *gallons*
			1 x 2.5 gallon white bucket ____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket ____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket ____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket ____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CK Date: 9/24/19 Field Supervisor Initials JC Date: 9/24/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: RV Tieton **Location ID:** EV062

Vessel Crew: J. Schaefer, R. McEllrece **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G Seaberg, L. Raterink

Arrival Time: 1508 **Departure Time:** 1516

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: EV062-SV-3
Easting: 425026.37
Northing: 5393762.23
D: 5.4m @ 1510
Observations: Cobble/gravel and vegetation w/ little sand/silt

GPS Target Name: EV062-SV-4
Easting: 425035.60
Northing: 5393738.99
D: 5.7m @ 1512
Observations: Same as above, ~~no vegetation~~ SH

GPS Target Name: EV062-SV-5
Easting: 425025.69
Northing: 5393733.59
D: 8.2m @ 1514
Observations: Very silty upon landing, remained turbid (Mud)

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials DA Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV-063

Date: 9/10/2019 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: FD **C.R. Observer:** NM ~~N/A~~ MS

Arrival Time: 1440 **Departure Time:** 1612

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 75°F

Wind (mph): 2 mph - None

Clouds/Precipitation: Part/y

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 710-711 Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): campsites

General Notes:

West of Evans Campground

C.R. - cultural resources

Field Supervisor Initials NM Date: 9/10/19

Sample Lead Initials AP Date: 9.10.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/10/19

Project Number: 60612698 **Area of Interest:** Evans.

Anchored? (NO) YES **Location ID:** EU-063

Attempt # (1) 2 3 Cast Time 1445 Water Depth (feet): 23.1

Sample Location: Sheave Counter Depth (feet): 23.1

E Latitude: 424889.32 Estimated Hydrowire angle (degrees): 0

N Longitude: 5393899.22 Sampler Penetration (inches): 33.5-8 = 25.5 cm = 10 inches & sampled 0-6 inches.

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	(YES) NM	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Additional Sampling Notes: 250 lbs in sampler

Sediment Characteristics

Sediment Type: silt w/ trace fine sand + trace clay (MUD)

Texture:

Color: 0-1cm very dark gray.

Stratification: Massive structure

Density: @ 3 inches Δ soft

Presence/Absence silica glass:

Redox Boundary: 1 cm 0-1 cm very dark grayish brown

Presence of debris: None

Biological Structures: scattered fine roots, trace blood worm chronicles

Shells: 2 inch mussel ~~live~~ dead

Sheen/Odor: Slight organic sulfur No Sheen odor

Other Notes: /

Field Sieving/Weighing

Physical/Chemical Samples N/A

Total Sample Mass (kg): _____

> 2mm removed by hand: YES (NO)

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: EV063-SE-1-091019 Time: 1600 # and type of Containers: 5 jars + 2 buckets 6 9/18/19

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.10.19 Field Supervisor Initials NM Date: 9/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/10/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-063

BMI Attempt # ~~1~~ (2) 3 Cast Time 1535 **Water Depth (feet):** 23.1 cm

NM

Sample Location: **Sheave Counter Depth (feet):** 23.1 cm

E ~~Latitude~~: 424892.24 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 5393901.35 **Sampler Penetration (inches):** 33.5 - 10 = 23.5 cm = 9.25 inches

Sample Type: Physical/Chemical Bioassay (BMI) **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Same as Attempt 1 chem/physical.

Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures: Gatropods - snails, Amphipods, Isopod } in siphons water

Shells:

Sheen/Odor:

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A.

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES (NO)

BMI Samples NO. 60

Seived (250 µm)? (YES)

Primary Sample ID: ~~160~~ EV-063-BMI-1-091019 Time: 1600 # and type of Containers: 2x yellow buckets

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AL Date: 9.10.19 Field Supervisor Initials MM Date: 9/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EVDe3

Date: 9-19-19 **Vessel:** Yeti

Sampling Crew: J. Pretare A. Sim C. Smith **Vessel Crew:** R. Trudeau, E. Sloan

EPA Observer: J. Johnson **C.R. Observer:** —

Arrival Time: 0823 **Departure Time:** 1115

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 58
Wind (mph): none
Clouds/Precipitation: clear

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Boat Traffic: none

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): 1 house, otherwise undeveloped

General Notes:

C.R. - cultural resources

Field Supervisor Initials DY Date: 9/19/19

Sample Lead Initials NM Date: 9/19/19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9-19-19			
Person completing form: J. Pretare			

Sampling date:	9-19-19	Sampling time:	1030
Weather:	sunny, calm	Sample collector:	N. Moody
Location ID:	EV063	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	EV063-PW-1-091919
Container Size:	125, 125, 125, 125 mL	Chemical Analysis:	all except sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	EPA Split Collected (below) Vibraframe NO Sulfide Collected		

Sampling date:	9-19-19	Sampling time:	1030
Weather:	sunny, calm	Sample collector:	N. Moody
Location ID:	EV063	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EV063-PW-3-091919
Container Size:	125mL	Chemical Analysis:	metals
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	This is the EPA split Vibraframe Same geotech filter as primary sample.		

EPA (JeffJ took sample with him.

Sampling date:	9-19-19	Sampling time:	1247
Weather:	Sunny, light wind	Sample collector:	N. MOODY
Location ID:	EV057	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	EV057-PW-1-091919 1247
Container Size	125, 125, 125, 125 mL	Chemical Analysis	All except sulfide.
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe No sulfide		

AM 9/9/2019
TD 9/12/19

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9-19-19			
Person completing form: J. Pretare			

Sampling date:	9-19-19	Sampling time:	1030
Weather:	sunny, calm	Sample collector:	N Moody
Location ID:	EV063	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	EV063-PW-1-091919
Container Size:	125, 125, 125, 125 mL	Chemical Analysis:	all except sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	EPA Split collected (below) Vibraframe NO Sulfide collected		

Sampling date:	9-19-19	Sampling time:	1030
Weather:	sunny, calm	Sample collector:	N Moody
Location ID:	EV063	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	EV063-PW-3-091919
Container Size:	125 mL	Chemical Analysis:	metals
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	This is the EPA split Vibraframe Same geotech filter as primary sample		

EPA (Jeff) took sample with him

Sampling date:	9-19-19	Sampling time:	1247
Weather:	Sunny, light wind	Sample collector:	N. MOODY
Location ID:	EV057	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	EV057-PW-1-091919 1247
Container Size	125, 125, 125, 125 mL	Chemical Analysis	All except sulfide
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Vibraframe No sulfide		

NM 9/9/2019
TD 9/17/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** EVANS

Location ID: EV-064

Date: 9.10.2019 **Vessel:** Tieton

Sampling Crew: Moody, Stegner, Palmier **Vessel Crew:** Trudeau, Wilson

EPA Observer: Dillon / **C.R. Observer:** ~~None~~ Stegner

Arrival Time: 1050 **Departure Time:** 1430

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 60°F
Wind (mph): None
Clouds/Precipitation: cloudy

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 710-711 Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

West of Evans CG. Can see houses on shore.

C.R. - cultural resources

Field Supervisor Initials VM Date: 9/10/19

Sample Lead Initials AP Date: 9/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9.10.19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-064

Attempt # (1) 2 3 Cast Time 1115 Water Depth (feet): (9/10) NM ~~77 ft~~ 19.8 ft

Sample Location: Sheave Counter Depth (feet): 17 ft

E Latitude: 424645.70 Estimated Hydrowire angle (degrees): 0

N Longitude: 5393928.78 Sampler Penetration (inches): 19.5 cm = 7.7 inches

Sampling 0-6 inches only.

Sample Type: (Physical/Chemical) (Bioassay) BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Additional Sampling Notes: 250 lbs in weights = sampler.

Sediment Characteristics

Sediment Type: USCS Silty fine Sand ; ~~Mud~~ NM 9/10/19 Redox Boundary: None

Texture: Presence of debris: None

Color: dark olive gray 5yR 3/2 Biological Structures: scattered fine rootlets

Stratification: structure = massive Shells: None

Density: Soft Sheen/Odor: slight organic odor ; no sheen

Presence/Absence silica glass: No Other Notes: ~~4 to 3 inches~~ NM 9-10-19

Field Sieving/Weighing

Physical/Chemical Samples N/A

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples -N/A.

Seived (250 µm)? YES

Primary Sample ID: EV064-SE-1-091019 Time: 1130 # and type of Containers: 8

Duplicate Sample ID: — Time: _____ # and type of Containers: —

Split Sample ID: — Time: _____ # and type of Containers: —

Sample Lead Initials AP Date: 9/10/2019 Field Supervisor Initials NM Date: 9/10/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of ___
Date: 9.10.19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-064

2 Attempt # ~~1~~ ~~2~~ 3 Cast Time 1316 **Water Depth (feet):** ~~17.3~~ 18.8 ft

NM 9/10

Sample Location: **Sheave Counter Depth (feet):** 18.8 Ft

Latitude: 424645.27 **Estimated Hydrowire angle (degrees):** 0

Longitude: 539 3929.93 **Sampler Penetration (inches):** 9.25 inches 23.5cm
Sampled 0-6 inches only.

Sample Type: Physical/Chemical Bioassay (BMI) **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:** Then rejected as did not (~~Siphon~~ ~~NM~~) sieve siphon water.

Sediment Characteristics

Sediment Type: **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples N/A

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.10.19 **Field Supervisor Initials** NM Date: 9.10.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/10/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-064

Attempt # 1 ~~2~~ (3) Cast Time 1330 **Water Depth (feet):** 18.9

NM

Sample Location: **Sheave Counter Depth (feet):** 18.9

E Latitude: 424645.76 **Estimated Hydrowire angle (degrees):** 0

N Longitude: 5393930.73 **Sampler Penetration (inches):** 9.25 inches / 23.5 cm

Sample Type: Physical/Chemical Bioassay (BMI) **Cultural Resources Observed?** ~~YES~~ NS (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type:

Texture: Same as Attempt 1 for physical/chemistry

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples N/A

Total Sample Mass (kg): _____ Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? (YES)

JAP 3-18-20

EV064 ~~EV06~~ BMI-1-091019

Primary Sample ID: ~~EV064-BMI-2-091019~~ NM Time: 1345 # and type of Containers: 2

Duplicate Sample ID: — Time: — # and type of Containers: —

Split Sample ID: — Time: — # and type of Containers: —

Sample Lead Initials AP Date: 9/10/19 Field Supervisor Initials NM Date: 9/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EVQ64

Date: 17 Sept 2019 **Vessel:** Yeti

Sampling Crew: J.Pretare, C.Smith, A.Sims **Vessel Crew:** R.Trudeau, E.Sloan

EPA Observer: D.LaVoie **C.R. Observer:** N/A

Arrival Time: 1330 **Departure Time:** 1730

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 63
Wind (mph): 8
Clouds/Precipitation: cloudy

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO on 9-16-19

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Boat Traffic: none

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): None; middle of Lake Roosevelt Channel

General Notes: raining by end of sample collection.

C.R. - cultural resources

Field Supervisor Initials NM Date: 9.17.19

Sample Lead Initials JP Date: 9.17.19

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9-17-19			
Person completing form: J. Pretare			

Sampling date:	9-17-19	Sampling time:	1650 (completed)
Weather:	raining, light wind	Sample collector:	J. Pretare
Location ID:	EV&L64	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	EV&L4-PW-1-091719
Container Size:	multiple	Chemical Analysis:	multiple
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	vibraframe mud strata 1 disk filter used NO sulfide bottle filled.		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size:		Chemical Analysis:	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

9.17.19 NM field supervisor initials

9.17.19 JP sampler

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV065

Date: 091219 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: FD, DL **C.R. Observer:** MS

Arrival Time: 1235 **Departure Time:** 12:50

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 68° F

Wind (mph): 0-3 mph

Clouds/Precipitation: few clouds Ø precip.

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____

Boat Traffic: _____

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

Ø Smoke on Shoreline (light) from campfires

General Notes:

- Work done on Tieton
- Field notes in Cayuse logbook - JAP 12-2-19

C.R. - cultural resources

Field Supervisor Initials HP Date: 9-13-19

Sample Lead Initials AP Date: 9-12-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV-065

Attempt # (1) 2 3 Cast Time 1240 **Water Depth (feet):** 22.9 m

Sample Location: GPS= EV065-1 **Sheave Counter Depth (feet):**

E Latitude: 424461.04 **Estimated Hydrowire angle (degrees):** 0

N Longitude: 5393914.65 **Sampler Penetration (inches):** 6 inches

Sample Type: (Physical/Chemical) (Bioassay) BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:** Rejected as overfilled, return with VanVeen at this location

Sediment Characteristics

Sediment Type: Sand - F-M
Texture: with some gravel
Color: Black w/ brown specks.
Stratification: Massive
Density: loose.
Presence/Absence silica glass: presence

Redox Boundary: None.
Presence of debris:
Biological Structures: None
Shells: None
Sheen/Odor: None
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples
Total Sample Mass (kg): None
> 2mm removed by hand: YES NO
Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg):

BMI Samples
Seived (250 µm)? YES N/A

Primary Sample ID: Time: # and type of Containers:
Duplicate Sample ID: Time: # and type of Containers:
Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials AP Date: 9.13.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV065
Vessel Crew: Pete Jenkins (PJ) Joel Schut (JS)
Sampling Crew: Cliff Pearson (CP) Stuart Holmes (SH) Michelle Stegner (MS)
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 0807
Departure Time: 0921

River Stage:
Water Surface Elev. (ft): 1296.15 waterdata.
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 4
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Ø

Sampling Information

Sampler Used: Van Veen

# of Sampling Attempts (Accepted vs. Rejected):
2 ~~#1~~ accepted (12 SE jars (1 dupe) and 2 buckets TX
3 ~~#2~~ accepted (2 buckets BHI)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations: J.A.P. 12-2-19

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: CP Date: 9/25/19
Field Supervisor Initials: JP Date: 12-2-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV065

Attempt # 2 Cast Time: 0816 **Water Depth (m):** 23.5

GPS Target Parameters **Sheave Counter Depth (m):** —

Name: EV065-2-Chem **Estimated Hydrowire angle (degrees):** —

Easting: 424460.81 **Sampler Penetration (inches):** 8

Northing: 5393913.67 **Sample Interval (0 to X inches bss):** 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Added Weights on Sampler (lbs):** 250

Sediment Characteristics

Sediment Type / Texture: Fine-med SAND w/ few R coarse sand, trace fine gravel <1%

Color: 10 YR 2/1

Stratification: 1cm silt overlying massively bedded sand

Density: loose

Presence/Absence silica glass: Abundant

Redox Boundary: None

Presence of debris: None

Biological Structures: None

Shells: None

Sheen/Odor: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 X only JAP 12-2-19

SEM-AVS Container Collected from Attempt #: 2 X JAP 12-2-19

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: EV065-SE-1-092519 Time: 0816

SE Duplicate Sample ID: EV065-SE-2-092519 Time: 0855

EPA SE Split Sample ID: — Time: —

EPA TX Split Sample ID: — Time: —

BMI Primary Sample ID: EV065-BMI-1-092519 Time: 0816

BMI Duplicate Sample ID: — Time: —

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.2 gallons
	1 x 2.5 gallon white bucket	1.9 gallons
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	____ gallons
	Yellow 5-gallon bucket ~~2x~~	1@2.0 + 1@1.6 gallons
	Yellow 5-gallon bucket	____ gallons

2 BMI buckets: 2.0 + 1.6 gallons

Sample Lead Initials CP Date: 9/25/19 Field Supervisor Initials JAP Date: 11-7-20

JAP 12-2-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV065

Attempt # 3 Cast Time: 0857 Water Depth (m): 23.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV065-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 424464.54 Sampler Penetration (inches): 8.5

Northing: 5393913.62 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: SEE ATTEMPT #1 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

~~Attempt~~ #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EV065-BMI-1-092519	Time: 0816		Yellow 5-gallon bucket	~~1~~ 1620 1646 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/25/19 Field Supervisor Initials JAP Date: 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 23 Sept. 19

Project Number: 60612698
Area of Interest: ~~EV065~~ Evans
Vessel: Yeti
Location ID: EV065
Vessel Crew: Rene Trudeau, Brett Walburn
Sampling Crew: Bart Chadwick, ~~Leon~~ Joel Guerrero
EPA Observer: Jeff Johnson
Arrival Time: 0855
Departure Time: 1347

River Stage:
Water Surface Elevation (ft): 1280' msl
Elevation Source: Lake Roosevelt-Grand Coulee

Weather Conditions Upon Arrival:
Temp (°F): 55
Wind (mph): 5
Clouds/Precipitation: Cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Peterson 12-2-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) Lake Roosevelt

River Mile: 710.2
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Campsites to East w/ 1/4 to 1/2 mi. (measured 0.43 mi.)

GPS Target Parameters and Water Depth

GPS Name: Trimble
Water Depth (m): 23.3
Easting: 424462.56
Northing: 5393916.01
Water Sample Color: Slight yellow tinge

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: EV065-PW-1-092319 Time: 1253

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: NA Time:
EPA Split Sample ID: NA Time:

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AT Date: 23 Sept 19
Field Supervisor Initials DW Date: 9-23-19

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV066 (alt for 67)
Vessel Crew: PJ: Pete Jenkins
JS Jeff Schutt
Sampling Crew: CP, SH, MS (Cliff Pearson, Stuart Holmes, Michelle Stegner)
C.R. Observer: MS Michelle Stegner
EPA Observer: MG: Marilyn Gauthier
Arrival Time: 922
Departure Time: 1035

River Stage:
Water Surface Elev. (ft): 1296.15
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): 2
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
0

Sampling Information

Sampler Used: Van Veen - 2 attempts
2 accepted, 3
# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted (6 SE jars, 2 buckets)
#2 accepted (2 BMI-buckets)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: CP Date: 9/25/19
Field Supervisor Initials: JAP Date: 1-17-20

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV066

Attempt # 1 Cast Time: 0928 Water Depth (m): 23.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV066-1-chem Estimated Hydrowire angle (degrees): —

Easting: 424475.14 Sampler Penetration (inches): 8.5

Northing: 5393993.34 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine-med SAND

Color: 10 YR 2/1

Stratification: <1cm silt overlying massive sand

Density: loose

Presence/Absence silica glass: Abundant

Redox Boundary: None

Presence of debris: None

Biological Structures: None

Shells: None

Sheen/Odor: None

Other Notes: ALT for EV067

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: EV066-SE-1-092519 Time: 0928

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.1 gallons
	1 x 2.5 gallon white bucket	1.9 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: EV066-BMI-1-092519 Time: 0928 Yellow 5-gallon bucket 2 x 2 gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CL Date: 9/25/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV06b

Attempt # 2 Cast Time: 1006 Water Depth (m): 24.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV06b-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 424474.89 Sampler Penetration (inches): 8

Northing: 5393993.42 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: SEE Attempt #1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EV06b-BMI-1-092519	Time:	0928	Yellow 5-gallon bucket	2 x 2 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/25/19 Field Supervisor Initials JAP Date 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 26 Sept. 2019

Project Number: 60612698 **Area of Interest:** Evans

Vessel: Yeti **Location ID:** EV066

Vessel Crew: Rene Trudeau, Bret Walburn **Sampling Crew:** Al Thatcher, Bart Chadwick, Joel Guerrero

EPA Observer: DJ Moore

Arrival Time: 1038 **Departure Time:** 1232

River Stage:
Water Surface Elevation (ft):
Elevation Source: Lake Roosevelt

Weather Conditions Upon Arrival:
Temp (°F): Wind (mph): 0
Clouds/Precipitation: Partial Clouds + Sun

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare 12-2-19

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ~710.4 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic ~~None~~ acs. 1 boat passed by

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None to west - undeveloped shoreline. Campsite ~0.4 mi. to E

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 23.5

Easting: 424473.46

Northing: 5393993.73 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: EV066-PW-1-092619 Time: 1143

Duplicate Sample ID: EV066-PW-1-092619 (2 acts 11 Oct 19) Time: 1143

EPA Split Sample ID: No Time:

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
Analyte and Bottle Type:	TOC - 125ml amber
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 26 Sept 2019 Field Supervisor Initials [illegible] Date: 9/26/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV067

Date: 9/11/2019 **Vessel:** Tieton

Sampling Crew: NM + AP + MS **Vessel Crew:** JW + RT

EPA Observer: Frank Dillon **C.R. Observer:** Michelle Stegner

Arrival Time: 1020 **Departure Time:** ~~102~~ NM 1053

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 70°F
Wind (mph): Calm
Clouds/Precipitation: partly cloudy

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ~~07~~ 710.5
Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes No N/A

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

North of Evan campground

- Work done on Tieton
- Field notes in Cayuse logbook

J.A.P. 12-2-19

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.11.19

Sample Lead Initials AP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV067

Attempt # (1) 2 3 Cast Time 1022 Water Depth (feet): 21.2 m

Sample Location: Sheave Counter Depth (feet): 41.5 ~~FT~~ M

E Latitude: 424537.13 Estimated Hydrowire angle (degrees):

N Longitude: 5394016.72 Sampler Penetration (inches): Ø

Sample Type: (Physical/Chemical) Bioassay BMI SE Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO N/A
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	NO N/A
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO N/A
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO) Ø
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Additional Sampling Notes: ~~Boulder~~ Cobble in jaws

Sediment Characteristics

Sediment Type: N/A Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): Seived (YES/NO)? 2mm 5mm

> 2mm removed by hand: YES NO Mass of material > 2mm (kg):

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials AB Date: 9-11-19 Field Supervisor Initials JP Date: 9-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV067

Attempt # 1 (2) 3 Cast Time 1027 **Water Depth (feet):** 21.2 m

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude~~: 424542.50 **Estimated Hydrowire angle (degrees):**

N ~~Longitude~~: 5394023.50 **Sampler Penetration (inches):** 1 cm sand

Sample Type: (Physical/Chemical) Bioassay BMI SE **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria: Didn't fully close

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: Sand only **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials 9.11.19 Date: [illegible]

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV067

Attempt # 1 2 (3) Cast Time 1033 **Water Depth (feet):** 21.8 m

Sample Location: **Sheave Counter Depth (feet):**

E ~~Latitude~~: 424534.40 **Estimated Hydrowire angle (degrees):**

N ~~Longitude~~: 5394008.21 **Sampler Penetration (inches):** 9

Sample Type: Physical/Chemical Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:** H_2O only

Sediment Characteristics

Sediment Type: N/A **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): N/A

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: N/A Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials DP Date: 9.11.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV06 7

Date: 091219 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: FD, DL **C.R. Observer:** MS

Arrival Time: 1117 **Departure Time:** 1137

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 66°
Wind (mph): 0-3 mpg
Clouds/Precipitation: Ø

Site Information:

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? 10.2.19 AP YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.) Ø

General Notes:

* Added 10.2.19 by AP: Mismatched strata. Appears correct on video, but sampler penetration/recovery indicate strata is coarse.

Work done on Tieton
Field notes in Cayuse logbook
J.A.P. 12-2-19

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.13.19

Sample Lead Initials AP Date: 9.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/2019

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EU067

(4) Attempt # 1 2 3 Cast Time ~~1117~~ 1127 NM **Water Depth (feet):** 21.4 m

Sample Location: 3 x w/ VanVeen 1st w/ Hamon NM 9/12 **Sheave Counter Depth (feet):** 4245 15.79

E ~~Latitude:~~ ~~47 24 53.33~~ NM 9/12 **Estimated Hydrowire angle (degrees):** Ø

N ~~Longitude:~~ 53940 16.31 **Sampler Penetration (inches):** NM ~~4 inch~~ = Ø
53940 15.44

Sample Type: (Physical/Chemical) ~~Bioassay~~ BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: 1 boulder in sampler w/ thin veneer of sediment
Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:

Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples
Total Sample Mass (kg): N/A
> 2mm removed by hand: YES NO
Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg): _____

BMI Samples N/A
Seived (250 µm)? YES

Primary Sample ID: None Time: _____ # and type of Containers: 7
Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____
Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.12.19 Field Supervisor Initials TP Date: 9.13.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Evans

Vessel: RV Tieton **Location ID:** EV067

Vessel Crew: J. Schaefer, R. McElliece **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G. Sedberry, L. Reiterink

Arrival Time: 1454 **Departure Time:** 1502

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: EV067-SV-1
Easting: 424542.50
Northing: 5394011.05
@1456 D: 23.3 m
Observations: Cobbles and sand

GPS Target Name: EV067-SV-2
Easting: 424520.91
Northing: 5393997.32
D: 23.5 m @1459
Observations: Cobbles and sand

GPS Target Name: EV067-SV-3
Easting: 424513.99
Northing: 5394030.54
D: 23.2 m @1500
Observations: Cobbles and sand

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials DH Date: 10/23/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/1/19

Project Number: 60612698
Area of Interest: EVANS
Vessel: YETI
Location ID: EV067
Vessel Crew: RENE TRUDEAU, RYAN McGREGOR
Sampling Crew: JENNIFER RAY, JOSS MOORE, JOEL GUERRERO
EPA Observer: STEVE COX
Arrival Time: 1115
Departure Time: 1150

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 40 Wind (mph): CALM ~1 mph
Clouds/Precipitation: OVERCAST

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? YES (NO) COBBLES AND MIXED COARSE
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic KAYAK ALONG W. SHORELINE
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
EVANS CAMPGROUND + DOCK ON EASTERN SHORELINE

GPS Target Parameters and Water Depth

GPS Name: N/A EV067-1
Water Depth (m):
Easting:
Northing:
Water Sample Color:

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

10/1/19

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: NO SAMPLE Time:
Duplicate Sample ID: Time: 10/1/19
EPA Split Sample ID: Time:
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	~~125 mL Amber with H2SO4~~
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. ~~Sulfate~~/Alkalinity/Chloride	125 mL Poly Unpreserved
Analyte and Bottle Type:	
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: Date: 10/1/19
Field Supervisor Initials: Date: 10/1/19

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV069
Vessel Crew: Jeff Schut (JS), Pete Jenkins (PJ)
Sampling Crew: Michelle Stegner (MS), Cliff Pearson (CP) Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1045
Departure Time: 1214

River Stage:
Water Surface Elev. (ft): 1296.04
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): 2
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Evans Campground on east shoreline

Sampling Information

Sampler Used: Van Veer
3 attempts, 3 accepted

# of Sampling Attempts (Accepted vs. Rejected):
#1 EV069-SE-1-092519 (EPA Split) & SE-3
#2 EV069-BMI-1-092519
EV069-BMI-2-092519 (Duplicate)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-25-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV069

Attempt # 1 Cast Time: 1049 Water Depth (m): 23.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV069-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 424427.71 Sampler Penetration (inches): 9

Northing: 5394119.06 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine-med SAND w/ trace (<1%) fine gravel Redox Boundary: None

Presence of debris: 1 small stick

Color: 10YR 2/1 Biological Structures: None

Stratification: ~1cm silt overlying alternating 1/2" laminations of silica glass and sand Shells: Trace

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Abundant Other Notes: —

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: EV069-SE-1-092519 Time: 1049

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.7 gallons
	1 x 2.5 gallon white bucket	2.0 gallons

SE Duplicate Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	—	Time: —	8 oz WMGJ	
EPA TX Split Sample ID:	EV069-SE-3-092519	Time: 1049	2.5 gallon white bucket	2.0 gallons
BMI Primary Sample ID:	EV069-BMI-1-092519	Time: 1049	Yellow 5-gallon bucket	1 2.0, 1 2.5 gallons
BMI Duplicate Sample ID.	EV069-BMI-2-092519	Time: 1215	Yellow 5-gallon bucket	2x 1.75 gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials ML Date: 9/25/19 Field Supervisor Initials JAP Date 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV069

Attempt # 2 Cast Time: 1178 Water Depth (m): 23.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV069-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 424424.98 Sampler Penetration (inches): 8.5

Northing: 5394118.05 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Same as Attempt 1, w/out shells

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	EV069-BMI-2-092519	Time:	1049	Yellow 5-gallon bucket	1 20, 1 25 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AC Date: 9/25/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV069

Attempt # 3 Cast Time: 1158 Water Depth (m): 23.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV069-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 424428.71 Sampler Penetration (inches): 7

Northing: 5394116.13 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	~~Accepted~~	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Same as Attempt #1

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? ~~Yes~~ No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: EV069-BMI-2-092519 Time: 1215 Yellow 5-gallon bucket 2 x 1.75 *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: LL Date: 9/25/19 Field Supervisor Initials: JAP Date: 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: ~~25 Sept 19~~ 26 Sept 19
Dy 10/11

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** EV069
Vessel Crew: Rene Trudeau + Bart **Sampling Crew:** Al Thatcher, Bart Chadwick, Joel Guerrero
EPA Observer: DJ Moore
Arrival Time: 0800 **Departure Time:** 1018

River Stage:
Water Surface Elevation (ft):
Elevation Source: Lake Roosevelt
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:
Temp (°F): 49° F Wind (mph): <5 MPH
Clouds/Precipitation: Cloudy - started with rain but stopped by start of deployment

Site Information Dy 10/11/19

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ~710.4 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Campground to the east ~0.4 mi. Undeveloped shoreline to west ~0.3 mi.

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 24.2
Easting: 494433.92
Northing: 5394124.28 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:
0855 9/26/19

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: EV069-PW-1-092619 Time: 0916
0855 9/26
Duplicate Sample ID: EV069-PW-2-092619 Time: 0916
EPA Split Sample ID: No Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled
1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Analyte and Bottle Type: DOC 125 ml Amber bottle
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AT Date: 26 Sept. 2019 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/19

59

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV071 (alt for ~~EV059~~)
Vessel Crew: Jeff Schutt, Pete Jenkins
Sampling Crew: Michelle Stegner, Cliff Pearsm, Stuart Holmes
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier
Arrival Time: 1435
Departure Time: 1550

River Stage:
Water Surface Elev. (ft): 1296
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 76 Wind (mph): 2
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): 3 attempts, 1 reject #1 rejected (cobble), #2 accepted (SExTX), #3 accepted (BMI)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CP Date: 9/25/19
Field Supervisor Initials JAP Date: 1-17-20

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV071

Attempt # 1 Cast Time: 1442 Water Depth (m): 25.1

GPS Target Parameters Sheave Counter Depth (m): ——

Name: EV071-1 Estimated Hydrowire angle (degrees): ——

Easting: 424444.59 Sampler Penetration (inches): ——

Northing: 5394261.30 Sample Interval (0 to X inches bss): ——

Sample Type: ~~Physical/Chemical/Bioassay~~ ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ ~~NO~~

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Rock in jaws

Sample Collection Method: Van Veen ~~Hamon~~ Hand Tool Added Weights on Sampler (lbs): 250.

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Rock in jaws

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	____ *gallons*
	1 x 2.5 gallon white bucket	____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:		Time:	8 oz WMGJ	
EPA TX Split Sample ID:		Time:	2.5 gallon white bucket	____ *gallons*
BMI Primary Sample ID:		Time:	Yellow 5-gallon bucket	____ *gallons*
BMI Duplicate Sample ID:		Time:	Yellow 5-gallon bucket	____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/25/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 | **Area of Interest:** Evans

Anchored? (NO) YES | **Location ID:** EV071

Attempt # 2 | Cast Time: 1453 | Water Depth (m): 26.40

GPS Target Parameters | Sheave Counter Depth (m): —

Name: EV071-2 | Estimated Hydrowire angle (degrees): —

Easting: 424433.20 | Sampler Penetration (inches): 7.5

Northing: 5394263.22 | Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI | Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool | Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine-med SAND. | Redox Boundary: Present in top inch

Presence of debris: None

Color: 10YR 2/1 | Biological Structures: ~~Snail and~~ SM

Stratification: 1/2 inch silt underlain by massively bedded sand | Shells: Trace, snail and 1/2 mussel

Density: Loose | Sheen/Odor: None

Presence/Absence silica glass: Abundant | Other Notes: ALTERNATE for EV062

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only | SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) | Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — | Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: EV071-SE-1-092519 Time: 1453

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: EV071-BMI-1-092519 Time: 1453

BMI Duplicate Sample ID: _____ Time: _____

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.9 gallons
	1 x 2.5 gallon white bucket	2.15 gallons

sediment bucket volumes

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID	8 oz WMGJ	
EPA TX Split Sample ID	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID	Yellow 5-gallon bucket	_____ gallons

Sample Lead Initials CP Date: 9/25/19 | Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV071

Attempt # 3 Cast Time: 1529 Water Depth (m): 25.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV071-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 4244433.16 Sampler Penetration (inches): 8

Northing: 5394260.34 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Same as Attempt #2 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: EV071-BMI-1-092519 Time: 1453 Yellow 5-gallon bucket 2 x 1.8 *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/25/19 Field Supervisor Initials JHP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/26/2019

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV072 (alt. 4b)
Vessel Crew: Pete Jenkins (PJ) Jeff Schut (JS)
Sampling Crew: Michelle Stegner (MS) Cliff Pearson (CP) Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1444
Departure Time: 1545

River Stage:
Water Surface Elev. (ft): 1297.61
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 65 Wind (mph): 9
Clouds/Precipitation: Partly Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710.4
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ϕ

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Evans Campground on last Shoreline.

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted: EV072-SE-1-092619 (Dupe)
#2 accepted: EV072.BHT-1-092619
SAND

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-26-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV072

Attempt # 1 Cast Time: 1449 Water Depth (m): 23.8

GPS Target Parameters Sheave Counter Depth (m): ←

Name: EV072-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 4243778.26 Sampler Penetration (inches): 7.5

Northing: 5394305.22 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250 lbs

Sediment Characteristics

Sediment Type / Texture: Fine-course SAND. w/ trace (<< 1%) f gravel.

Redox Boundary: None

Presence of debris: 1 wood chip.

Color: 10 YR 7/1

Biological Structures: None

Stratification: < 1cm silt overlying massively bedded sand

Shells: None

Density: Loose

Sheen/Odor: None

Presence/Absence silica glass: Abundant

Other Notes: Video: 0926_144727A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): <0.1 kg

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: EV072-SE-1-092619 Time: 1449

SE Duplicate Sample ID: EV072-SE-2-092619 Time: 1520

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: EV072-BMI-1-092619 Time: 1449

BMI Duplicate Sample ID: _____ Time: _____

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)		
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
Bioassays	1 x 5 gallon white bucket	4.1	gallons
	1 x 2.5 gallon white bucket	2.15	gallons
SEM-AVS	8 oz WMGJ (no headspace)		*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
	8 oz WMGJ		
	2.5 gallon white bucket		gallons
	Yellow 5-gallon bucket	12.0	11.8 gallons
	Yellow 5-gallon bucket		gallons

Sample Lead Initials CP Date: 9/26/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV072

Attempt # 2 Cast Time: 1521 Water Depth (m): 24.0

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV072-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 424376.98 Sampler Penetration (inches): 9

Northing: 5394300.93 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Same as Attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)		
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
		Bioassays	1 x 5 gallon white bucket	_____	*gallons*
			1 x 2.5 gallon white bucket	_____	*gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*	
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ		
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID: EV072-BMI-1-092619	Time: 1449		Yellow 5-gallon bucket	12.0 | 1.8	*gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials AP Date: 9/26/19 Field Supervisor Initials JAP Date: 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/30/19

Project Number: 60612698
Vessel: YETI
Vessel Crew: RENE TRUDEAU, RYAN MELLEES
EPA Observer: N/A
Arrival Time: 1320

Area of Interest: EVANS
Location ID: EV072
Sampling Crew: JENNIFER RAY, JOSS MOORE, JOE GUERRERO
Departure Time: 1610

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): CALM
Clouds/Precipitation: PARTLY CLOUDY

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE BESIDES SAFETY BOAT

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
EAST SHORE ROCKY, TO EVANS CAMPGROUND

GPS Target Parameters and Water Depth

GPS Name: TRIMBLE
Water Depth (m): 24.4
Easting: 424379.40
Northing: 5394306.77
Water Sample Color: ~~SOME~~ SLIGHT DISCOLORATION CLEAR IN CAPSULE FILTER

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name: 9/30/19
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: ~~EV072-1-PW2~~ EV072-PW-1-093019 Time: 1434

Duplicate Sample ID: EV072-PW-2-093019 Time: 1434
EPA Split Sample ID: NONE Time: ~~NA~~

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: TOC 125ml / AMBER H2SO4
1B. Dissolved Metals: With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: Date: 9/30/19
Field Supervisor Initials: NM Date: 9/30/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: EV074
Vessel Crew: Jeff Schutt, Pete Jenkins
Sampling Crew: Michelle Stegner, Cliff Pearson (CP), Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 1308
Departure Time: 1532

River Stage:
Water Surface Elev. (ft): 1296
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 65 Wind (mph): 2
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 710
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Ø

Sampling Information

Sampler Used: VanVeen
(2 attempts, 2 refusals & 1 video recon)

# of Sampling Attempts (Accepted vs. Rejected):
attempt #1 Cobbles
attempt #2 Cobbles w/ dusting of sand

Video Reconnaissance Information

GPS Target Name: EV074-SV-1
Easting: 424486.36
Northing: 5344398.84 Depth=12.5m
Observations: River bottom appeared similar to two grab attempts, coating of sand on top of cobbles. The surface appears sandy. Unsure of actual grainsize dist. in first six inches.

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-25-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV074

Attempt # 1 Cast Time: 1310 Water Depth (m): 15.10

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV074-1 Estimated Hydrowire angle (degrees): —

Easting: 424477.37 Sampler Penetration (inches): —

Northing: 5394397.19 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical/Bioassay~~ ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO Incomplete closure
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary: —

Presence of debris: —

Color: Biological Structures: —

Stratification: Shells: —

Density: Sheen/Odor: —

Presence/Absence silica glass: Other Notes: Only cobbles in grab

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/25/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? ~~NO~~ YES **Location ID:** EV074

Attempt # 2 Cast Time: 1319 Water Depth (m): 17.0

GPS Target Parameters Sheave Counter Depth (m): —

Name: EV074-2 Estimated Hydrowire angle (degrees): —

Easting: 424471.23 Sampler Penetration (inches): —

Northing: 5394382.80 Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical/Bioassay~~ ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	YES	~~NO~~
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	~~NO~~
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	~~NO~~
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	~~YES~~	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	~~NO~~
8. Sample is:	Accepted	~~Rejected~~

Jaws open

Sample Collection Method: ~~Van Veen~~ Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor: Jaws slightly open. Washout

Presence/Absence silica glass: Other Notes: Cobbles w/ little (<20%) sand

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/25/19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV075

Date: 9/11/2019 **Vessel:** Tieton

Sampling Crew: NM + AP + MS **Vessel Crew:** Jeff Wilson + Renee

EPA Observer: Frank Dillon **C.R. Observer:** Michelle Stegner

Arrival Time: 0908 **Departure Time:** 1015

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 50°F
Wind (mph): 0
Clouds/Precipitation: cloudy

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 710.5 Boat Traffic: None

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes No N/A.

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): None

General Notes:

North of Evans campground.

C.R. - cultural resources

Field Supervisor Initials JP Date: 9.11.19

Sample Lead Initials AP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV075

Attempt # (1) 2 3 Cast Time 0916 **Water Depth (feet):** 23.2

Sample Location: **Sheave Counter Depth (feet):** 23.2

E ~~Latitude~~: 424384.41 **Estimated Hydrowire angle (degrees):** ∅

N ~~Longitude~~: 539445.71 **Sampler Penetration (inches):** ~ 3 inches

Depth sampled = N/A.

Sample Type: (Physical/Chemical) ~~Bioassay~~ BMI **Cultural Resources Observed?** YES NO

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)? Cobble in jaws	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: NM facies ~~appears~~ correct. ✓ Stratum not facies **Redox Boundary:** 0-1 cm

Texture: ✓ (S) (MFS) **Presence of debris:**

Color: fine-med SAND cobbles **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:** Layer Silty Sand on surface

Field Sieving/Weighing

Physical/Chemical Samples . None Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples N/A

Seived (250 µm)? YES

Primary Sample ID: None Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials JP Date: 9.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/11/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV075

Attempt # 1 (2) 3 Cast Time 927 Water Depth (~~feet~~): 23.4 meters

Sample Location: Sheave Counter Depth (feet):

E ~~Latitude~~: 424378.75 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5394451.86 Sampler Penetration (inches): 33-5-14 = 19.5 cm = 7.7 inches
Sampled 0-6 inches only

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES NO
SE

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Additional Sampling Notes:

Sediment Characteristics (Facies S) Samplable Sand / Not m Fs

Sediment Type: 0-0.2mm fine sand silt w/ F-m sand Redox Boundary: 0-0.2mm

Texture: Presence of debris: None

Color: 0-0.2mm very dark grayish brown / >0.2mm black. w/ brown speckles Biological Structures: None except one blood worm.

Stratification: No structure, massive Shells: None

Density: Loose. Sheen/Odor: None

Presence/Absence silica glass: ~~Absent~~ nm Present - abundant Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples tub = 2.8kg tare Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO Nothing removed as all <5mm

BMI Samples N/A.

Seived (250 µm)? YES

Primary Sample ID: EV075-SE-1-091119 Time: 0940 # and type of Containers: 6 jars / 2 buckets

Duplicate Sample ID: ✓ Time: # and type of Containers:

Split Sample ID: ✓ Time: # and type of Containers:

Sample Lead Initials AP Date: 9.11.19 Field Supervisor Initials AP Date: 9.11.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Evans

Location ID: EV075

Date: 091219 **Vessel:** Tieton

Sampling Crew: NM, AP, MS **Vessel Crew:** JW, RT

EPA Observer: FD, DL **C.R. Observer:** MS

Arrival Time: 11:45 **Departure Time:** 1235

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 68° F

Wind (mph): 0-3 mph

Clouds/Precipitation: Ø

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare on 12-2-19

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 710

Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.) Ø

General Notes:

- Work done on Tieton
- Field notes in Cayuse logbook

C.R. - cultural resources

Field Supervisor Initials AP Date: 9.13.19

Sample Lead Initials AP Date: 9.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/12/19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** EV075

Attempt # 1 2 (3) Cast Time NM ~~1145~~ **Water Depth (~~feet~~):** 23.6 m

Sample Location: GPS = EV075-3 **Sheave Counter Depth (feet):**

E ~~Latitude~~: 424380.41 **Estimated Hydrowire angle (degrees):** 0

N ~~Longitude~~: 5394452.78 **Sampler Penetration (inches):** 6 inches

Sample Type: Physical/Chemical Bioassay (BMI) **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:** 5 inches of Sediment

Sediment Characteristics

Sediment Type: See EV075 - SE. **Redox Boundary:**

Texture: **Presence of debris:**

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples N/A

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? (YES)

Primary Sample ID: EV075-BMI-1-091219 Time: 1215 # and type of Containers: 1 x 5 gal buckets

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials: AP Date: 9.12.19 Field Supervisor Initials: JP Date: 9.13.19

bucket = 5 inches of sediment = 2.25 gallons

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: Evans

Location ID: ~~EV054~~ EV075 JP

Date: 9-18-19

Vessel: Yeti

Sampling Crew: J.Pretare, C.Smith, A.Sims

Vessel Crew: R.Trudeau, E.Sloan

EPA Observer: D.LaVoie

C.R. Observer: —

Arrival Time: 1318

Departure Time:

River Stage:

Water Surface Elev. (ft):

Water Surface Elevation Source:

Weather Conditions Upon Arrival

Temp (°F): 62°

Wind (mph): 1-2

Clouds/Precipitation: cloudy, ~~no rain~~ raining d.P. 9-18-19

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile:

Boat Traffic: none

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

~~None~~ J.P. ; scattered houses

General Notes:

23.4 m. depth

C.R. - cultural resources

Field Supervisor Initials: N.M Date: 9-18-19

Sample Lead Initials: JP Date: 9.18.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/19

Project Number: 60612698
Area of Interest: Evans ~~-2019-~~
Vessel: Ingalls
Location ID: 4-B1-2019 ~~XV 4-B1-200-1~~ (Phase II repeat)
Vessel Crew: Jeff Schut (JS) Pete Jenkins (PJ)
Sampling Crew: Michelle Stegner (MS) Cliff Pearson (CP) Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 0810
Departure Time: 0920

River Stage:
Water Surface Elev. (ft): 1297.61
Water Surface Elevation Source: lesgs

Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 1
Clouds/Precipitation: Cloudy, light rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.9
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Evans campground on east shoreline

Sampling Information

Sampler Used: Van Veen
2 attempted, 2 accepted
# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted: 4-B1-2019-SE-1-092619
#2 accepted: 4-B1-2019-BGI-1-092619

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials CA Date: 9/26/19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** 4-B1-2019

Attempt # 1 Cast Time: 0813 Water Depth (m): 22.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: 4-B1-2019-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 424500.38 Sampler Penetration (inches): 8.5

Northing: 5393517.06 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine to med. SAND Redox Boundary: None

Presence of debris: None

Color: 10 YR 2/1 Biological Structures: Live mussel

Stratification: <1 cm silt overlying Massively bedded sand Shells: None

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Abundant Other Notes: — video file 0926_081228A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: 4-B1-2019-SE-1-092619 Time: 0813

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.4 *gallons*
	1 x 2.5 gallon white bucket	2.15 *gallons*

SE Duplicate Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: — Time: — 8 oz WMGJ

EPA TX Split Sample ID: — Time: — 2.5 gallon white bucket — *gallons*

BMI Primary Sample ID: 4-B1-2019-BMI-1-092619 Time: 0813 Yellow 5-gallon bucket 1 1.8 gal 1 1.6 *gallons*

BMI Duplicate Sample ID: — Time: — Yellow 5-gallon bucket — *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/26/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** 4-B1-2019

Attempt # 2 Cast Time: 0850 Water Depth (m): 22.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: 4-B1-2019-2-BMI Estimated Hydrowire angle (degrees): —

Easting: 424498.02 Sampler Penetration (inches): 8.5

Northing: 5393515.30 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Same as Attempt #1 w/ 1 stick no mussel

Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Video File 0926_084942A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

~~Attempt #s in Sample if Composite of Multiple Attempts:~~ SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No ~~Removed by Hand > 5mm?~~ Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	____ *gallons*
			1 x 2.5 gallon white bucket	____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	____ *gallons*
BMI Primary Sample ID: 4-B1-2019-BMI-1-092619	Time: 0813		Yellow 5-gallon bucket 1.8 gal 1 1/6	*gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CK Date: 9/26/19 Field Supervisor Initials JAP Date: 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 27 Sept 2019

Project Number: 60612698 **Area of Interest:** Evans
Vessel: Yeti **Location ID:** 4-B1-2019
Vessel Crew: Rene Trudeau + Bret Walburn **Sampling Crew:** Al Thatcher, Bart Chadwick, Joel Guerrero
EPA Observer: DJ Moore
Arrival Time: 1102 **Departure Time:** 1247

River Stage:
Water Surface Elevation (ft): 1281 msl
Elevation Source: River Cast Map

Weather Conditions Upon Arrival:
Temp (°F): 41°F Wind (mph): 5-10 MPH
Clouds/Precipitation: Cloudy, no precip.

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G) NA for Target Stratum
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 709.9 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic 1 sport fishing boat ~0.3 mile to west,
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None @ shoreline

GPS Target Parameters and Water Depth

GPS Name: Trimble Water Depth (m): 23.5
Easting: 424493.51
Northing: 5393513.28 Water Sample Color:

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing: ~~ADS~~ 9/27/19

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: 4-B1-2019-PW-1-092719 Time: 1151

Cross off bottles NOT filled
1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: No Time:
EPA Split Sample ID: No Time:
Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AT Date: 27 Sept. 19 Field Supervisor Initials DJ Date: 9-27-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/26/19

Project Number: 60612698
Area of Interest: Evans
Vessel: Ingalls
Location ID: 4-B6-2019 (Phase II repeat)
Vessel Crew: Pete Jenkins (PJ), Jeff Schut (JS)
Sampling Crew: Michelle Stegner (MS), Cliff Pearson (CP), Stuart Holmes (SH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Marilyn Gauthier (MG)
Arrival Time: 935
Departure Time: 1050

River Stage:
Water Surface Elev. (ft): 1297.61
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph): 2
Clouds/Precipitation: Cloudy, light rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional cliff on east shoreline

Sampling Information

Sampler Used: Van Veen
3 attempts, 2 accepted (#1 and #3)
# of Sampling Attempts (Accepted vs. Rejected):
#1 accepted: 4-B6-2019.SE-1-092619
#2 rejected (sheet in jaws)
#3 accepted (BMI)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-26-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 | **Area of Interest:** Evans

Anchored? (NO) YES | **Location ID:** 4-B6-2019

Attempt # 1 | Cast Time: 0942 | **Water Depth (m):** 29.5

GPS Target Parameters | **Sheave Counter Depth (m):** —

Name: 4-B6-2019-1-Chem | **Estimated Hydrowire angle (degrees):** —

Easting: 423101.71 | **Sampler Penetration (inches):** 8

Northing: 5391739.96 | **Sample Interval (0 to X inches bss):** 0 to 6

Sample Type: ~~Physical/Chemical/Bioassay~~ BMI | **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool | Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine-Med SAND | Redox Boundary: None

Presence of debris: 1 twig

Color: 10YR 2/1 | Biological Structures: None

Stratification: <1cm sand silt overlying Massively bedded | Shells: Trace

Density: Loose | Sheen/Odor: None

Presence/Absence silica glass: Abundant | Other Notes: Video: 0926_094114A ; 0926_094158A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only | SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) | Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): — | Total Mass of Sediment (kg): —

Mass of Sediment 5 mm to 3 inches (gravel) (kg): —

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: 4-B6-2019-SE-1-092619 Time: 0942

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.4 *gallons*
	1 x 2.5 gallon white bucket	2.15 *gallons*

SE Duplicate Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: — Time: — | 8 oz WMGJ

EPA TX Split Sample ID: — Time: — | 2.5 gallon white bucket — *gallons*

BMI Primary Sample ID: 4-B6-2019-BMI-1-092619 Time: 0942 | Yellow 5-gallon bucket 1 1.5 gal 1 1.6 *gallons*

BMI Duplicate Sample ID: — Time: — | Yellow 5-gallon bucket — *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CP Date: 9/26/19 | Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 **Area of Interest:** Evans

Anchored? (NO) YES **Location ID:** 4-B6-2019

Attempt # 2 Cast Time: 1018 Water Depth (m): 24.7

GPS Target Parameters Sheave Counter Depth (m): ~

Name: 4-B6-2019-2-~~BMI~~ SM 9-26 Estimated Hydrowire angle (degrees): ~

Easting: 423101.06 Sampler Penetration (inches): 9

Northing: 5391739.64 Sample Interval (0 to X inches bss): ~

Sample Type: Physical/Chemical/Bioassay ~~BMI~~ Cultural Resource Check Completed? ~~YES~~ NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: ~~Van Veen~~ Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Rejected, small woody debris in jaws caused all water to drain prior to siphoning Video: 0426_1017.46A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket*
			Total Metals & TOC	8 oz WMGJ	*volumes*
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9/26/19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698 | **Area of Interest:** Evans

Anchored? (NO) YES | **Location ID:** 4-B6-2019

Attempt # 3 | Cast Time: 1027 | Water Depth (m): 24.5

GPS Target Parameters | Sheave Counter Depth (m): —

Name: 4-B6-2019-3-BMI | Estimated Hydrowire angle (degrees): —

Easting: 423100.60 | Sampler Penetration (inches): 10

Northing: 5391739.33 | Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) | Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool | Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine-med SAND w/ trace (<1% fine gravel

Redox Boundary: None

Presence of debris: fine needle, 1/2 inch small woody debris @ 5" depth in places

Color: 10 YR 2/1

Biological Structures: None

Stratification: <1cm silt overlying massively-bedded sand

Shells: Trace

Density: loose

Sheen/Odor: None

Presence/Absence silica glass: Abundant

Other Notes: Video: 0926_102649A

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ | SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No | Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ | Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	4-B6-2019-BMI-1-092619	Time: 0942		Yellow 5-gallon bucket	1.5 gal 1.16gal *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR | Date: 9/26/19 | Field Supervisor Initials JAP | Date: 1-17-20

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/2/19

Project Number: 60612698 **Area of Interest:** EVANS
Vessel: YETI **Location ID:** 4-B6-2019
Vessel Crew: R. TREADEAU, R. MCCLEESE **Sampling Crew:** J. KAY, J. MOORE, J. GUERRERO
EPA Observer: STEVE COX
Arrival Time: 0810 **Departure Time:** 1115
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 38 Wind (mph): <1 mph
Clouds/Precipitation: OVERCAST, LIFTING FOG
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
MAP LISTS BEDROCK, SAND BASED ON SED SAMPLING SUCCESS
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 708 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic NONE
>SAND IN MIXED BOULDER/COBBLE (mBs)
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
SE SHORE ERODED SLOPE. NW SHORE SANDY/ROCKS W/ PUMP HOUSE

GPS Target Parameters and Water Depth

GPS Name: 4-B6-2019-1-TW Water Depth (m): 25.0
Easting: 423103.35
Northing: 5391740.17 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

GPS Name: 10/2/19 Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: 4-B6-2019-PW-1-100219 Time: 1009

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type:
EPA Split Sample ID: — Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials [illegible] Date: 10/2/19 Field Supervisor Initials NM Date: 10/2/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB002 (ALT for 8)
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGood
C.R. Observer: Michelle Stegner
EPA Observer: NA
Arrival Time: 1338
Departure Time: 1458

River Stage:
Water Surface Elev. (ft): 1297.59
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): 2
Clouds/Precipitation: Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on West shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
4 attempts, 3 accepted (#2,3,4)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-16-19
Field Supervisor Initials MS Date: 10.16.19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-002

Attempt # 1 Cast Time: 1346 Water Depth (m): 12.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB-002-1 Estimated Hydrowire angle (degrees): NA

Easting: 429474.01 Sampler Penetration (inches): NA

Northing: 5407448.74 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: AH. for CB-008	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: SAND Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Rejected due to overpenetration

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
NA		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials MS Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-002

Attempt # 2 Cast Time: 1353 Water Depth (m): 12

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB-002-2-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429474.01 Sampler Penetration (inches): 6

Northing: 5407448.74 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: Alt for CB-008	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: fine to med SAND trace silt

Redox Boundary: ~~None~~ ~~EHD~~ @ 1mm on surface

Presence of debris: wood pieces

Color: 10YR 2/1

Biological Structures: trace larve, wood fragments

Stratification: homogenous

Shells: None Pine needles, leaves

Density: loose

Sheen/Odor: None

Presence/Absence silica glass: Present

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): all Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): none

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

SE Primary Sample ID: CB002-SE-1-101619 Time: 1353

		Cross off containers NOT filled	
SEM-AVS		8 oz WMGJ (no headspace)	
Total Metals & TOC		8 oz WMGJ	
Grain Size		8 oz WMGJ	
BEM		16 oz Amber WMGJ	
Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays		1 x 5 gallon white bucket	4.3 gallons
		1 x 2.5 gallon white bucket	1.7 gallons

SE Duplicate Sample ID: Time:

			sediment bucket volumes
SEM-AVS		8 oz WMGJ (no headspace)	
Total Metals & TOC		8 oz WMGJ	
Grain Size		8 oz WMGJ	
BEM		16 oz Amber WMGJ	
Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:		Time:	8 oz WMGJ	
EPA TX Split Sample ID:		Time:	2.5 gallon white bucket	gallons
BMI Primary Sample ID:	CB002-BMI-1-101619	Time: 1431	Yellow 5-gallon bucket	3.4 gallons
BMI Duplicate Sample ID:		Time:	Yellow 5-gallon bucket	gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials JL Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-002

Attempt # 3 Cast Time: 1409 Water Depth (m): 12.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: ~~46~~ CB-002-3-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429474.63 Sampler Penetration (inches): 6

Northing: 5407449.44 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: Alt for CB-008	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as attempt 2

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: see Attempt 2 SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): all Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): none

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: see Attempt 2 Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials JR Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB002

Attempt # 4 Cast Time: 1431 Water Depth (m): 12.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB002-4-BMI Estimated Hydrowire angle (degrees): NA

Easting: 429473.98 Sampler Penetration (inches): 6

Northing: 5407449.52 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: Alt per CB008	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: fine to med SAND trace silt

Redox Boundary: 21mm redox

Presence of debris: scattered wood fragments, leaves, pine needles

Color: 10YR 2/1

Biological Structures: trace larvae

Stratification: homogenous

Shells: ~~NED~~ none

Density: loose

Sheen/Odor: none

Presence/Absence silica glass: Present

Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	See attempt 2	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials JLC Date: 10.16.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10/16/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Wet7 **Location ID:** CB002

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** C. Pickerell, S. Kinmer, B. Chadwick

EPA Observer: L. Ritcrink

Arrival Time: 1456 **Departure Time:** 1436

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 59 Wind (mph): 0
Clouds/Precipitation: overcast, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

N/A

GPS Target Parameters and Water Depth

GPS Name: CB002-1-PW Water Depth (m): 12.8 m

Easting: 429475.36

Northing: 5487451.73 Water Sample Color: Clear.

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: CB002-PW-1-101619 Time: ~~1010~~ 1014 1529

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type: _____

EPA Split Sample ID: — Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials CEKK Date: 10/16/19 Field Supervisor Initials AU Date: 10/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/18/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB005
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoag, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier
Arrival Time: 0825
Departure Time: 1120

River Stage:
Water Surface Elev. (ft): 1298.66
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): S 3 mph
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
riprap slope

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): #2 rejected - no recovery
4 attempts, 3 accepted (#1, 3, 4)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: les Date: 10.18.19
Field Supervisor Initials: mm Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 4
Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB005

Attempt # 1 Cast Time: 0858 Water Depth (m): 41.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB005-1-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429456.59 Sampler Penetration (average) (inches): 5

Northing: 5407329.70

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: fine to med. GRAVEL rounded to subrounded, little fine to coarse sand, trace silt

Color: VG. Gravel-variable color Sand = 10YR2/1

Stratification: homogenous

Density: ~~medium~~ / medium dense

Presence/Absence silica glass: present

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes.

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1,3 SEM-AVS Container Collected from Attempt #: 1,3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 4.2, includes some overlying water Total Mass of Sediment (kg): 5.5

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 1.3

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

SE Primary Sample ID: CB005-SE-1-~~101919~~ SHD 101819 Time: 0858

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

BMI Primary Sample ID: CB005-BMI-1-101819 Time: 1037 Yellow 5-gallon bucket *Sediment Volume* 1.0 *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials GLS Date: 10.18.19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 4
Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB005

Attempt # 2 Cast Time: 0925 Water Depth (m): 42.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB005-2 Estimated Hydrowire angle (degrees): NA

Easting: 429456.09 Sampler Penetration (average) (inches): 0

Northing: 5407322.54

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO NA

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES **NO** NA
2. Minimum sampler penetration depth (4 to 6 inches) acheived? **YES** (NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? **YES** NO NA
4. Sample is: **Accepted** (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) No recovery Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No recovery

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

NA

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials QDS Date: 10.18.19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB005

Attempt # 3 Cast Time: ~~0935~~ 0949 Water Depth (m): 43.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB005-3-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429471.49 Sampler Penetration (average) (inches): 4

Northing: 5407337.61

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: coarse SAND
some fine GRAVEL
few medium sand

Color: variable

Stratification: ~~no~~ homogenous

Density: medium

Presence/Absence silica glass: Yes, trace

Redox Boundary: None

Presence of debris: None

Biological Structures: None

Shells: None

Sheen/Odor: none

Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See Attempt #2 SHD 1 SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: See attempt 1 Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JES Date: 10-18-19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 4 of 4

Date 10-18-19

QA MEB 11/20/2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? ~~NO~~ YES **Location ID:** ~~CB005~~ CB005

Attempt # 4 Cast Time: 1037 Water Depth (m): 42.5

GPS Target Parameters Sta BMI Sheave Counter Depth (m): NA

Name: ~~CB005~~ CB005-4-~~CHEM~~ Estimated Hydrowire angle (degrees): NA

Easting: 424472.28 Sampler Penetration (average) (inches): 5

Northing: 540733.55

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: med to coarse SAND little rounded to subrounded gravel

Redox Boundary: none

Presence of debris: trace driftwood

Color: 10YR 2/1

Biological Structures: none

Stratification: homogeno

Shells: none

Density: med. dense

Sheen/Odor: no no

Presence/Absence silica glass: present

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container ~~Collected from Attempt #~~:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: See Attempt 2 Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LES Date: 10.18.19 Field Supervisor Initials MM Date: 10-18-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/19/19

Project Number: 60612698 **Area of Interest:** China bend

Vessel: Yeti **Location ID:** CB0005

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Kintner, B. Chadwick, C. Dickerson

EPA Observer: L. Ratcliff

Arrival Time: 1042 **Departure Time:**

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 5 N
Clouds/Precipitation: overcast, occassional sprinkle

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB0005-1-PW Water Depth (m): 40.1 m

Easting: 429468.44

Northing: 5407338.98 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: CB0005-PW-1-101919 Time:

Note: 2 bottles were collected for EPA they wanted a split duplicate

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type: —

EPA Split Sample ID: CB0005-PW-3-101919 Time:

1B. Dissolved Metals (x2 bottles) With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SEKL Date: 10/19/19 Field Supervisor Initials bjr Date: 10/19/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/2019

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Ingalls **Location ID:** CB006

Vessel Crew: Pete Jenkins (PJ), Jeff Schot (JS) **Sampling Crew:** Michelle Stegner (MS), Michaela McCoog (MMc), Linda Howard (LH)

C.R. Observer: Michelle Stegner (MS) **EPA Observer:** Elle Anzinger (EA)

Arrival Time: 1010 **Departure Time:** 1130

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 43 Wind (mph): 4
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Rowered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 721.5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: Ø

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional cliff on west bank

Sampling Information

Sampler Used: Hamon
3 attempts, 3 accepted

# of Sampling Attempts (Accepted vs. Rejected): #1 accepted, #2 accepted, #3 accepted

SE
BM

Video Reconnaissance Information

GPS Target Name:	Observations:
Easting:	
Northing:	
GPS Target Name:	Observations:
Easting:	
Northing:	
GPS Target Name:	Observations:
Easting:	
Northing:	
GPS Target Name:	Observations:
Easting:	
Northing:	

Sample Lead Initials: MS Date: 10.9.19 Field Supervisor Initials: LH Date: 10-9-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** CB

Anchored? (NO) YES **Location ID:** CB006

Attempt # 1 Cast Time: 1012 Water Depth (m): 15.2

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB006-1-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 481540.05 Sampler Penetration (inches): 6

Northing: 54074.14.43 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): None

Sediment Characteristics

Sediment Type / Texture: f-m SAND Redox Boundary: <1 mm

Presence of debris: Scattered twigs

Color: 10YR 2/1 Biological Structures: none

Stratification: homogeneous Shells: none

Density: loose Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 for SE sample SEM-AVS Container Collected from Attempt #: 1

Sieving Information: all SAND 1 for BMI sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg).

Sample Identification Information

SE Primary Sample ID: CB006-SE-1-100919 Time: 1012

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.5 gallons
	1 x 2.5 gallon white bucket	2.14 gallons

SE Duplicate Sample ID: N/A Time:

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: N/A Time: — 8 oz WMGJ

EPA TX Split Sample ID: N/A Time: — 2.5 gallon white bucket — gallons

BMI Primary Sample ID: CB006-BMI-1-100919 Time: 1012 Yellow 5-gallon bucket 4.3 gallons

BMI Duplicate Sample ID: N/A Time: — Yellow 5-gallon bucket — gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: L.M. Date: 10-9-19 Field Supervisor Initials: MO Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** CB

Anchored? (NO) YES **Location ID:** CB0010

Attempt # 2 Cast Time: 1031 Water Depth (m): 16

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB0010-1 - CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 429539.21 Sampler Penetration (inches): 6

Northing: 5107415.24 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): None

Sediment Characteristics

Sediment Type / Texture: f-m SAND Redox Boundary: none

Presence of debris: Scattered small twigs

Color: 10yr 2/1 Biological Structures: none

Stratification: homogenous Shells: none

Density: loose Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 for SE, 1 for BMI SEM-AVS Container Collected from Attempt #: 1

Sieving Information: all SAND

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: on COC 1 2H.	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-9-19 Field Supervisor Initials JP Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB00.0

Attempt # 3 Cast Time: 1054 Water Depth (m): 17.4

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB00.0-3-BMI Estimated Hydrowire angle (degrees): n/a

Easting: 429540.33 Sampler Penetration (inches): 6

Northing: 5407410.86 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: f-m SAND

Color: 10YR 2/1

Stratification: homogenous

Density: loose

Presence/Absence silica glass: yes

Redox Boundary: none

Presence of debris: scattered small twigs

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 for BMI sample SEM-AVS Container Collected from Attempt #: _____
2-for SE

Sieving Information: all SAND

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

on PSI
YH

Sample Lead Initials YH Date: 10-9-19 Field Supervisor Initials JH Date: 10/9/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10-10-19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Yeti
Location ID: CB&Q6
Vessel Crew: R. Trudeau, E. Rigbey
Sampling Crew: J. Pretare, J. Moore, C. Pickerell
EPA Observer: N. Badon
Arrival Time: 0930
Departure Time: 1159
River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___
Weather Conditions Upon Arrival:
Temp (°F): 33 Wind (mph): 1-2
Clouds/Precipitation: no clouds now sunny
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ___
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None except Sediment sampling crew
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep slope w/ some erosion

GPS Target Parameters and Water Depth

GPS Name: CB006-1-PW
Water Depth (m): 15.8
Easting: 429538.86
Northing: 5407415.57
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: ___
Observations:
Easting: ___
Northing: ___

GPS Name: ___
Observations:
Easting: ___
Northing: ___

Sample Identification Information

Primary Sample ID: CB&Q6-PW-1-101019 Time: 1100

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: ___
Analyte and Bottle Type: ___
EPA Split Sample ID: — Time: ___
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JP Date: 10-10-19
Field Supervisor Initials ___ Date: ___

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB007
Vessel Crew: Pete Jenkins, Jake Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1329
Departure Time: 1539

River Stage:
Water Surface Elev. (ft): 1298.78
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): NNE 4
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): #1 & #2 accepted #3 & #5 rejected (didn't close) #4 rejected (no recovery) #6 (no recovery) #7 accept
7 attempted, 3 accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MP Date: 10-9-19
Field Supervisor Initials LH Date: 10.9.19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

QA ME 11/20/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB007

Attempt # 1 Cast Time: 1336 Water Depth (m): 7.4

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB007-1-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 429566.72 Sampler Penetration (inches): 4

Northing: 5107462.49 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: gravelly f-c SAND f-c sr-r gravel w/ cobble sr-r, some silt ^f-c

Color: 10yr 4/2

Stratification: homogeneous

Density: loose

Presence/Absence silica glass: yes, trace

Redox Boundary: less than 1mm

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 attempts in SEM-AVS Container Collected from Attempt #: 1

(SE = 1&2, BMI = 7 3-6 Rejected sample, 4 attempts no material (WH 10.9.19)

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No 25.6% 10/9/19 Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 8.7 ~~(25.6%) 34.5%~~ Total Mass of Sediment (kg): 33.9

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 15

Mass of Sediment > 3 inches (cobble) (kg): 10.2

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: CB007-SE-1-100919	Time: 1336	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	~~1 x 5 gallon white bucket~~ ~~1.84~~ gallons	NOT FILLE
			1 x 2.5 gallon white bucket 1.84 gallons	
SE Duplicate Sample ID: n/a	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: n/a	Time:		8 oz WMGJ	
EPA TX Split Sample ID: n/a	Time:		2.5 gallon white bucket ____ gallons	
BMI Primary Sample ID: CB007-BMI-1-100919	Time: 1336		Yellow 5-gallon bucket 9.5 gallons	
BMI Duplicate Sample ID: n/a	Time:		Yellow 5-gallon bucket ____ gallons	

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: ~~AH~~ Date: 10.9.19 Field Supervisor Initials: MS Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB007

Attempt # 2 Cast Time: 1354 Water Depth (m): ~6.5

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB007-2-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 4295621.03 Sampler Penetration (inches): 5

Northing: 5407464.58 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: gravelly f-c SAND, sr-r f-c gravel, w/cobble sr-r, some silt f-c

Color: 10YR 4/2

Stratification: homogeneous

Density: loose

Presence/Absence silica glass: yes, trace

Redox Boundary: less than 1 mm

Presence of debris: none

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in ~~Sample if~~ Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: on Pg 1

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): LH Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____ Time: _____ on Pg 1 LH

		Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10.9.19 Field Supervisor Initials MR Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** C

Attempt # 3 Cast Time: 1411 Water Depth (m): 6.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB007-3-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429563.69 Sampler Penetration (inches):

Northing: 5407460.85 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO MS

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: rejected YH

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: on Pg 1

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

on Pg 1

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials YH. Date: 10.9.19 Field Supervisor Initials MR Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB007

Attempt # 4 Cast Time: 1417 Water Depth (m): ~8.0 m

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB007-4-CHEM Estimated Hydrowire angle (degrees): na

Easting: 429562.45 Sampler Penetration (inches):

Northing: 5407462.37 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO MS

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: rejected YH

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: on Pg 1

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): YH Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

on Pg 1

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: YH. Date: 10.9.19 Field Supervisor Initials: M Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB007

Attempt # 5 Cast Time: 1428 Water Depth (m): 12.6

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB007-5-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 429658.71 Sampler Penetration (inches):

Northing: 5407453.60 Sample Interval (0 to X inches bss): n/a

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) ~~NO~~ MS

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	(YES)	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: rejected YH

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: on Pg 1

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): YH Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time: on Pg 1

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time. Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials YH Date: 10.9.19 Field Supervisor Initials MM Date: 10-9-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 6 of 7

Date 10-9-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB007

Attempt # 6 Cast Time: 1437 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB007-6-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 429557.78 Sampler Penetration (inches):

Northing: 5407456.9 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO MS

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	(YES)	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 150 lbs

Sediment Characteristics

Sediment Type / Texture: rejected

Color:

Stratification:

Density: YH

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures: grab empty

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No on Pg 1 Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): YH Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time: on Pg 1

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials YH. Date: 10-9-19 Field Supervisor Initials MM Date: 10-9-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698

Area of Interest: ~~CB007~~ China Ben

Anchored? (NO) YES

Location ID: CB007

Attempt # 7 Cast Time: 1513

Water Depth (m): 16.2

GPS Target Parameters

Sheave Counter Depth (m): na

Name: CB007-7-BMI

Estimated Hydrowire angle (degrees): na

Easting: 4295564.98

Sampler Penetration (inches): 5

Northing: 5407464.58

Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 150 lbs

Sediment Characteristics

Sediment Type / Texture: gravelly F-C SAND, with F-C, sr-r cobble and gravel

Redox Boundary: none

Presence of debris: none

Color: 10 yr 4/2

Biological Structures:

Stratification: homogeneous

Shells:

Density: loose

Sheen/Odor:

Presence/Absence silica glass: yes, trace

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 for BMI

SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No (BMI) LH

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____ Time: _____

On Pg 1 LH

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-9-19

Field Supervisor Initials MM Date: 10-9-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___

Date 10-11-19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Trudeau E. Rigbey
EPA Observer: N. Badon
Arrival Time: 1418

Area of Interest: China Bend
Location ID: CBRR7
Sampling Crew: J. Pretare, J. Moore, C. Pickerell
Departure Time: 1640

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 2
Clouds/Precipitation: none

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mPs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ___

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

~~None~~ JP 10.11.19 Steep Slope

GPS Target Parameters and Water Depth

GPS Name: CBRR7-1-PW
Easting: 429560.08
Northing: 5407458.23

Water Depth (m): 8.0
Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: ___
Easting: ___
Northing: ___

Observations:

GPS Name: ___
Easting: ___
Northing: ___

Observations:

Sample Identification Information

Primary Sample ID: CBRR7-PW-1-101119 Time: 1547

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. Sulfide — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: ___ Time: ___

EPA Split Sample ID: ___ Time: ___

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type: ___

1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials JP Date: 10/11/19

Field Supervisor Initials QDS. Date: 10/12/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB008
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1030
Departure Time: 1102

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 38 Wind (mph): ENE 2 mph
Clouds/Precipitation: Clear, dry, cold

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Circled by J. Pretare on 11-21-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Hamon
Target facies not found - cobbles
# of Sampling Attempts (Accepted vs. Rejected): 3 attempts, 3 rejected

Video Reconnaissance Information

GPS Target Name: CB008-SV-1
Observations: boulders, IMG# 104631A
Easting: 429582.21
Northing: 5407441.13

GPS Target Name:
Observations:
Easting:
Northing:

GPS Target Name:
Observations:
Easting:
Northing:

GPS Target Name:
Observations:
Easting:
Northing:

Sample Lead Initials: MS Date: 10.12.19
Field Supervisor Initials: 10-12-19 Date: MM

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

QA - MEB 11/20/2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB008

Attempt # 1 Cast Time: 1036 Water Depth (m): 15.21

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB008-1 Estimated Hydrowire angle (degrees): na

Easting: 4295471.91 Sampler Penetration (inches): 0

Northing: 5407441.21 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO) NO Recovery
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: No Recovery

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: cobble.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ZH Date: 10-12-19 Field Supervisor Initials: JLO Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB008

Attempt # 2 Cast Time: 1046 Water Depth (m): 16.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB008-2 Estimated Hydrowire angle (degrees): NA

Easting: 4295728.74 Sampler Penetration (inches): 0

Northing: 5407435.64 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO) ND Recovery
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: No Recovery Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Cobble

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LN Date: 10-12-19 Field Supervisor Initials: MC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB008

Attempt # 3 Cast Time: 1049 Water Depth (m): 16.20

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB008-3 Estimated Hydrowire angle (degrees): na

Easting: 4295901.05 Sampler Penetration (inches): 0

Northing: 5407434.08 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO) No Recovery
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	(NO)
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: No Recovery Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date 10-12-19 Field Supervisor Initials [illegible] Date: 10.12.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Ingalls **Location ID:** CB 009

Vessel Crew: Pete Jenkins, Jeff Schut **Sampling Crew:** Michelle Stegner, Michaela McLeay, Linda Hound

C.R. Observer: Michelle Stegner **EPA Observer:** Ellie Anzinger

Arrival Time: 1112 **Departure Time:** 1420

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 2
Clouds/Precipitation: clear, dry, cool

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Mile: 721.5
Boat Traffic: 0

River Current: (Swift) (Eddie) (Calm) (Ripple)
Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
Total 10 Attempts; (3 accepted; ~~7~~ 7 rejected)
Accepted: #3, 4, 7, 10 Rejected: 2, 3, ~~4~~, 5, 6, 8, 9

Video Reconnaissance Information

GPS Target Name: CB0009-SV-1
Easting: 429613.68
Northing: 5407452.43 9.5m
Observations: cobble + boulders

GPS Target Name: CB0009-SV-2
Easting: 429610.51
Northing: 5407450.81 9.5m
Observations: cobble + boulders

GPS Target Name: CB0009-SV-3
Easting: 429619.69
Northing: 5407450.15
Observations: cobble + boulders

GPS Target Name: CB0009-SV-4
Easting: 429601.11
Northing: 5407430.83
Observations: all cobble

Sample Lead Initials MM Date: 10-12-19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of ~~7~~ 10
Date 10-12-19

Project Number: 60612698
Area of Interest: China Bend
Anchored? (NO) YES
Location ID: CB09
Attempt # 1 Cast Time: 1123
Water Depth (m): 11.4
GPS Target Parameters
Sheave Counter Depth (m): na
Name: CB09-1-CHEM
Estimated Hydrowire angle (degrees): na
Easting: 429603.79
Sampler Penetration (inches): 5
Northing: 5407439.90
Sample Interval (0 to X inches bss): na
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): ~~only sample #'s of 5 gravel~~

Sediment Characteristics
Sediment Type / Texture: F-M SAND and F-C GRAVEL - sr-r, some r-cobble, little silt
Redox Boundary: none
Color: 10yr 3/2
Presence of debris: none
Biological Structures: none
Stratification: homogeneous
Shells: none
Density: loose - medium density
Sheen/Odor: none
Presence/Absence silica glass: yes, some
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information
Attempt #s in Sample if Composite of Multiple Attempts: ~~1, 4, 7~~ (2 thru 10-12-19) 1, 4, & 7
SEM-AVS Container Collected from Attempt #: 1
Sieving Information:
Sieved with 5 mm Sieve? (Yes) No
Removed by Hand > 5mm? (Yes) No
Mass of Sediment < 5 mm (kg): 10.5 - 2.8 = 7.7
Total Mass of Sediment (kg): 27.5
Mass of Sediment 5 mm to 3 inches (gravel) (kg): 9.6
Mass of Sediment > 3 inches (cobble) (kg): 10.2

Sample Identification Information

SE Primary Sample ID: CB09-SE-1-101219 Time: 1123

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	~~1 x 5 gallon white bucket~~	~~gallons~~
	1 x 2.5 gallon white bucket	1.22 gallons

SE Duplicate Sample ID: na Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	na	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	na	Time:	2.5 gallon white bucket	____ gallons
BMI Primary Sample ID:	CB09-BMI-1-101219	Time: 1123	Yellow 5-gallon bucket	2.5 gallons
BMI Duplicate Sample ID:	na	Time:	Yellow 5-gallon bucket	____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AH Date: 10-12-19 Field Supervisor Initials: MO Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? NO YES

Location ID: CB09

Attempt # 2 Cast Time: 1152

Water Depth (m): 15.2

GPS Target Parameters

Sheave Counter Depth (m): na

Name: CB09-2

Estimated Hydrowire angle (degrees): na

Easting: 429605.21

Sampler Penetration (inches): 0

Northing: 5407439.00

Sample Interval (0 to X inches bss): na

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): only a couple pieces of gravel, Poor Recovery

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: PH Date: 10-12-19 Field Supervisor Initials: JLO Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB009

Attempt # 3 Cast Time: 1156 Water Depth (m): 15.2

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB009-3- Estimated Hydrowire angle (degrees): na

Easting: 429602.41 Sampler Penetration (inches): 0

Northing: 5407438.12 Sample Interval (0 to X inches bss): na

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO) NO Recovery
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: No Recovery

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10-12-19 Field Supervisor Initials: [illegible] Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB0009

Attempt # 4 Cast Time: 1201 Water Depth (m): 16.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB0009-H-CHEM Estimated Hydrowire angle (degrees): NA

Easting: ~~4261002.41~~ 4296009.36 Sampler Penetration (inches): 4

Northing: ~~5407438.1~~ 5407433.89 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

HOLD = 2 of 4 10-12-19

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: F-mSAND and F-cGRAVEL-sr-r, some cobbles-r, little silt

Color: 10yr 3/2

Stratification: homogenous

Density: loose – medium density

Presence/Absence silica glass: some

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: RH Date: 10-12-19 Field Supervisor Initials: ME Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB0009

Attempt # 5 Cast Time: 1226 Water Depth (m): 16.5

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB0009-5 Estimated Hydrowire angle (degrees): na

Easting: 429613760 Sampler Penetration (inches): 1

Northing: 5407443291 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO) ND
2. Overlying water present?	(YES)	NO Recovery
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	(NO)
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Poor Recovery

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ~~SH~~ Date: 10-12-19 Field Supervisor Initials: JS Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES 1232

Location ID: CB0609

Attempt # 6

Cast Time: ~~1237~~ (LH 10-12-19)

Water Depth (m): 16.50

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: CB0609-6

Estimated Hydrowire angle (degrees): NA

Easting: 429616.35

Sampler Penetration (inches): <1

Northing: 5407434.84

Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	~~YES~~	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Poor recovery

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date 10-12-19

Field Supervisor Initials MC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698
Area of Interest: China Bend
Anchored? (NO) YES
Location ID: CB009
Attempt # 7 Cast Time: 1237
Water Depth (m): 12.50
GPS Target Parameters
Sheave Counter Depth (m): na
Name: CB009-7-CHEM
Estimated Hydrowire angle (degrees): na
Easting: 429611.45
Sampler Penetration (inches): 3
Northing: 5407435.05
Sample Interval (0 to X inches bss): 0-3
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) **
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

** 4

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: F-m SAND and F-c GRAVEL, sr-r, some r-cobble, little silt
Redox Boundary: none
Presence of debris:
Color: 10YR 3/2
Biological Structures:
Stratification: homogeneous
Shells:
Density: loose - medium density
Sheen/Odor:
Presence/Absence silica glass: yes, some
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No
Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: SAH Date: 10-12-19 Field Supervisor Initials: JC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB006 9

Attempt # 8 Cast Time: 1320 Water Depth (m): 16.8

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB006 9-8 Estimated Hydrowire angle (degrees): na

Easting: 429611.49 Sampler Penetration (inches): 0

Northing: 5407431.94 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	**Accepted**	Rejected

No Recovery

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: No Recovery

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: _____	Time. _____		Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10-12-19 Field Supervisor Initials: JC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB0009

Attempt # 9 Cast Time: 1338 Water Depth (m): 16.5

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB0009-9 Estimated Hydrowire angle (degrees): na

Easting: 429604.74 Sampler Penetration (inches): 0

Northing: 5407428.28 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO) ND Recovery
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary: ND Recovery

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RH. Date: 10-12-19 Field Supervisor Initials MO Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB0089

Attempt # 10 Cast Time: 1353 Water Depth (m): 18.5

GPS Target Parameters BMI Sheave Counter Depth (m): na

Name: CB0089-10-GHF Estimated Hydrowire angle (degrees): na

Easting: 429600.50 Sampler Penetration (inches): 5

Northing: 5407425.10 Sample Interval (0 to X inches bss): 0-5

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Fm SAND, ~~trace~~ silt with

Color: 10YR 2/1

Stratification: Homogeneous.

Density: loose

Presence/Absence silica glass: yes

Redox Boundary: none

Presence of debris: none

Biological Structures: leaves, pine needles, organic material

Shells: shell

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: BMI

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

OV Pg 1

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

Cross off containers NOT filled

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-12-19 Field Supervisor Initials: JLS Date: 10.12.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___

Date 10/14/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeti **Location ID:** SEKK 10/14/19 CB009Ø • CB009

Vessel Crew: E. Raby, R. Trudeau **Sampling Crew:** S. Kintner, B. Chadwick, C. Pickerell

EPA Observer: L. Ratternick

Arrival Time: 1143 [Initial Reanchor After CBØ1Ø] **Departure Time:** 1170

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 60 Wind (mph): 3 NE
Clouds/Precipitation: Sunny; dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ___ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic ___

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

N/A

GPS Target Parameters and Water Depth

GPS Name: CB009-1-PW Water Depth (m): 14.6 m

Easting: 429612.77

Northing: 5407433.37 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: ___ Observations:

Easting: ___

Northing: ___

GPS Name: ___ Observations:

Easting: ___

Northing: ___

Sample Identification Information

Primary Sample ID: CB009-PW-1-101419 Time: 1515

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: ___ Analyte and Bottle Type: ___

EPA Split Sample ID: — Time: ___ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SEKK Date: 10/14/19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB01D
Vessel Crew: Pete Jenkins
Jeff Schut
Sampling Crew: Michelle Stegner, Michaela McCoo
Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1440
Departure Time: 1600

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph). N 3 mph
Clouds/Precipitation: clear, dry, cold

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
Total: 6 (3 accepted: 3 rejected
Accepted #'s 1, 4, 6 Rejected 2, 3, 5

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations: none

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MS Date: 10-12-19
Field Supervisor Initials MM Date: 10-12-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

QA MB 11/20/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB010

Attempt # 1 Cast Time: 1425 Water Depth (m): 21.8

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB010 Estimated Hydrowire angle (degrees): na

Easting: 429619.68 Sampler Penetration (inches): 6

Northing: ~~5407419.61~~ 5407419.69 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: 0-1": SILT, trace f-sand; 1-6": f-m SAND, trace silt, trace f,r- gravel, pockets of r, f-m sand

Color: 10YR4/1 (0-1" and 1-6")

Stratification: yes

Density: 0-1": very loose; 1-6": loose

Presence/Absence silica glass: small pockets

Redox Boundary: no

Presence of debris: no

Biological Structures: lots of- leaves, pine needles.

Shells: no

Sheen/Odor: no

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 4 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 28.8 Total Mass of Sediment (kg): 38.5

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 6.1

Mass of Sediment > 3 inches (cobble) (kg): 3.6

Sample Identification Information

SE Primary Sample ID: CB010-SE-1-101219 Time: 1425

SE Duplicate Sample ID: na Time:

EPA SE Split Sample ID: CB010-SE-3-101219 Time: 1425

EPA TX Split Sample ID: DM 10/14/19 CB010-~~TX~~SE-3-101219 Time: 1425

BMI Primary Sample ID: CB010-BMI-1-101219 Time: 1425

BMI Duplicate Sample ID: na Time:

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SE Primary	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	4.05 gallons
		1 x 2.5 gallon white bucket	1.07 gallons
SE Duplicate	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split		8 oz WMGJ	
EPA TX Split		2.5 gallon white bucket	1.07 gallons
BMI Primary		Yellow 5-gallon bucket	2.5 + 2.0 gallons
BMI Duplicate		Yellow 5-gallon bucket	____ gallons

Sample Lead Initials: ~~LH~~ Date: 10-12-19 Field Supervisor Initials: JLS Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB010

Attempt # 2 Cast Time: 1454 Water Depth (m): 21.8

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB010-2 Estimated Hydrowire angle (degrees): NA

Easting: 429620.73 Sampler Penetration (inches): 0

Northing: 5407419.49 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	**Accepted**	Rejected

NO Recovery

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Color: Presence of debris: No recovery

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:			*sediment bucket volumes*
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: JH Date: 10-12-19 Field Supervisor Initials: MC Date: 10.12.19

Date 10-12-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: CB01Ø

Attempt # 3 Cast Time: 1455

Water Depth (m): 22.10

GPS Target Parameters

Sheave Counter Depth (m): na

Name: 4 CBØ1Ø-3

Estimated Hydrowire angle (degrees): na

Easting: 429620.92

Sampler Penetration (inches): ~~8~~ <6

Northing: 5407415.10

Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~	NO
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: f SAND and SILT

Redox Boundary:

Presence of debris:

Rejected

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JH Date: 10-12-19 Field Supervisor Initials MS Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB010

Attempt # 4 Cast Time: 1502 Water Depth (m): 22.1

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB010 - 4 - CHEM Estimated Hydrowire angle (degrees): na

Easting: 429619.98 Sampler Penetration (inches): 6

Northing: 5407415.91 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: f-m SAND, some silt w/ f-c gravel, sr-r, little sr-cobble

Color: 10YR 3/2

Stratification: homogeneous

Density: loose

Presence/Absence silica glass: yes, some

Redox Boundary: none

Presence of debris: none

Biological Structures: ~~none~~ scattered leaves + pine needles

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____ Time: _____ on Pg 1

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: _____ Time: _____

BMI Duplicate Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	_____ gallons
	Yellow 5-gallon bucket	_____ gallons
	Yellow 5-gallon bucket	_____ gallons

Sample Lead Initials: ~~LH~~ Date: 10-12-19 Field Supervisor Initials: MP Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB010

Attempt # 5 Cast Time: 1538 Water Depth (m): 21.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB010-5- Estimated Hydrowire angle (degrees): na

Easting: 429621.39 Sampler Penetration (inches): 0

Northing: 5407418.68 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): Sampler walked No recovery

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

No recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-12-19 Field Supervisor Initials: MC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB01Ø

Attempt # 6 Cast Time: 1543 Water Depth (m): 21.1

GPS Target Parameters Sheave Counter Depth (m): na

Name: CBØ1Ø-6-BMI Estimated Hydrowire angle (degrees): na

Easting: 429620.86 Sampler Penetration (inches): 6

Northing: 5407417.30 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: f-m SAND, some silt w/ f-c gravel sr-r, little sr-cobble

Color: 10yr 3/2

Stratification: homogeneous

Density: loose

Presence/Absence silica glass: yes, some

Redox Boundary: none

Presence of debris: none

Biological Structures: scattered leaves + pine needles

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in ~~Sample if Composite~~ of Multiple Attempts: BMI SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

On Pg 1.

		Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: Time:

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ~~LH~~ Date 10-12-19 Field Supervisor Initials: MW Date: 10.12.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10/14/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeti **Location ID:** CB010

Vessel Crew: E. Rigby, R. Trudeau **Sampling Crew:** S Kintner, B. Chadwick, C. Pickerell

EPA Observer: L. Rakerink

Arrival Time: 1143 **Departure Time:** Not Reanchoring. Can reach next sample locale from here.

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 0
Clouds/Precipitation: Sunny ~~Cloudy~~ dry 101419 SEKIC

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Ingalls Tramp; no other traffic

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB010-1-DW Water Depth (m): 21.1

Easting: 4791020.88

Northing: 640749.22 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

10/14/2019

Primary Sample ID: CB010-PW-1-101419 Time: ~~1228~~ 1235

Duplicate Sample ID: CB010-PW-2-101419 Time: 1331

EPA Split Sample ID: — Time: —

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. ~~Sulfide~~ — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Analyte and Bottle Type: DOC, 125 ml amber

1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials SEKIC Date: 10/14/2019 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB012
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Atzinger
Arrival Time: 1135
Departure Time: 1250

River Stage:
Water Surface Elev. (ft): 1298.78
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): NNE 5
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): 3 attempts, 3 accepted
#1 accepted, S
#2 accepted, T
#3 accepted. BI

Video Reconnaissance Information

GPS Target Name:
Easting.
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-9-19
Field Supervisor Initials LH. Date: 10-9-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-09-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB012

Attempt # 1 Cast Time: 1136 Water Depth (m): 21.4

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB012-1-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 429601.06 Sampler Penetration (inches): 6

Northing: 5407387.15 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: f-m SAND, trace silt Redox Boundary: none

Presence of debris: none

Color: 0-2" - 10yr 2/1, 2-6" - 10yr 4/3 Biological Structures: ~~Algae~~ scattered twigs and leaves

Stratification: ~~homogeneous~~ stratified Shells: none

Density: loose Sheen/Odor: none

Presence/Absence silica glass: Yes in top 2" inches Other Notes: ~~plus~~ scattered 1" pockets, thermister (21:10-09-19(a)) biological structures

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~2-5~~ (2 HD09 19) SEM-AVS Container Collected from Attempt #: 1

SE=1&2, BMI=3

Sieving Information: all SAND

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: CB012-SE-1-100919 Time: 1136

SE Duplicate Sample ID: n/a Time:

EPA SE Split Sample ID: n/a

EPA TX Split Sample ID: n/a

BMI Primary Sample ID: CB012-BMI-1-100919 Time: 1136

BMI Duplicate Sample ID: n/a Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.3 gallons
	1 x 2.5 gallon white bucket	~~2.3~~ 3.0 gallons
		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Time: — 8 oz WMGJ	
	Time: — 2.5 gallon white bucket	— gallons
	Time: 1136 2- Yellow 5-gallon bucket	3.4 gallons
	Time: — Yellow 5-gallon bucket	3.8 gallons

Sample Lead Initials JH Date: 10-9-19 Field Supervisor Initials JS Date: 10-9-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB012

Attempt # 2 Cast Time: 1201 Water Depth (m): 21.5

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB012-2-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 4291605.89 Sampler Penetration (inches): 6

Northing: 5407386.22 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): None

Sediment Characteristics

Sediment Type / Texture: f-m SAND, trace silt

0-2" – 10yr 2/1

Color: 2-6" – 10yr 4/3

Stratification: stratified

Density: loose

Presence/Absence silica glass: 0-2"

Redox Boundary: none

Presence of debris: trace leaves

Biological Structures: ~~trace burrows~~ (SH 10-09-19)

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~2~~, SE= 1 & 2, BM=3 SEM-AVS Container Collected from Attempt #: 1

Sieving Information: all SAND

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg): on Pg 1 LH

Sample Identification Information

SE Primary Sample ID:	Time:		***Cross off containers NOT filled***	
on Pg 1 LH.		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-9-19 Field Supervisor Initials: MD Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-09-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB012

Attempt # 3 Cast Time: 1225 Water Depth (m): 22.1

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB012-3-BMI Estimated Hydrowire angle (degrees): n/a

Easting: 429599.90 Sampler Penetration (inches): 6"

Northing: 5407387.36 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: m-f SAND Redox Boundary: none

Color: 0-1" 10yr 2/1, 1-6" 10yr 4/3 Presence of debris: Scattered twigs, leaves

Stratification: stratified Biological Structures: none

Density: loose Shells: none

Presence/Absence silica glass: yes, concentrated in top 1", scattered throughout Sheen/Odor: none

Other Notes: None

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials ZH Date: 10-9-19 Field Supervisor Initials JES Date: 10.9.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10·10·19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Trudeau, E. Rigbey
EPA Observer: N. Badon
Arrival Time: 1215

Area of Interest: China Bend
Location ID: CBP12
Sampling Crew: J. Pretare, J. Moore, C. Pickerell
Departure Time: 1428

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 40 Wind (mph): 1-2
Clouds/Precipitation: none

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ___
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
steep slope

GPS Target Parameters and Water Depth

GPS Name: CBP12-1-PW
Easting: 4291601.41
Northing: 5407389.45

Water Depth (m): 21.1
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: ___
Easting: ___
Northing: ___
Observations:

GPS Name: ___
Easting: ___
Northing: ___
Observations:

Sample Identification Information

Primary Sample ID: CBP12-PW-1-101019 Time: 1323

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: N/A Time: ___
Analyte and Bottle Type: ___

EPA Split Sample ID: CBP12-PW-3-101019 Time: ___
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JP Date: 10-10-19
Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB014
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1310
Departure Time: 1330

River Stage:
Water Surface Elev. (ft): 1298.78
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): NNE 4
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on West bank

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
1 attempt rEjected - Return with Van Veen - Cover penetrated 4/ Hamor

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations.

Sample Lead Initials 10-9-19 Date: MM
Field Supervisor Initials LH Date: 10-9-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-9-19

Project Number: 60612698
Area of Interest: China Bend
Anchored? NO YES
Location ID: CB014
Attempt # 1 Cast Time: 1310
Water Depth (m): 38.9
GPS Target Parameters
Sheave Counter Depth (m): n/a
Name: CB014-1-CHEM
Estimated Hydrowire angle (degrees): n/a
Easting: 429613.47
Sampler Penetration (inches): >6
Northing: 5407336.69
Sample Interval (0 to X inches bss): 0-6
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO MS

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	~~NO~~ (LH 10.9.19)
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES NA	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	~~YES~~	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Rejected LH. * Plan to return with Van Veen
Redox Boundary:
Color:
Presence of debris:
Stratification:
Biological Structures:
Density:
Shells:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:
Sieving Information: Rejected LH
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Rejected LH
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-9-19
Field Supervisor Initials MM Date: 10-9-19

Revised 9/21/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB014
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Steginer, Michaela McCoog, Shira DeGroot
C.R. Observer: Michelle Steginer
EPA Observer: Marilyn Gauthier
Arrival Time: 1255
Departure Time: 1418

River Stage:
Water Surface Elev. (ft): 1297.97
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 53 Wind (mph): N 3 mph
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected):
3 attempts, 2 accepted (#2, #3) 1 rejected #1 on 10/9

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations: * Collected Duplicate (SE Hemon and EPA SPLIT (TX)

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MS Date: 10.15.19
Field Supervisor Initials MM Date: 10-15-19

Revised 9/18/2019

Attempt #1 was on 10-9-19. JAP.

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 101519

QA'd MEB 11/20/19

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: CB014

Attempt # X 2 JAP 1-17-20 Cast Time: 1312

Water Depth (m): 37.1

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: CB014-2-CHEM

Estimated Hydrowire angle (degrees): NA

Easting: 429612.39

Sampler Penetration (inches): 8

Northing: 5407339.91

Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: fine to medium SAND

Redox Boundary: None

Presence of debris: None

Color: 10YR 2/2

Biological Structures: None

Stratification: Homogenious

Shells: None

Density: loose

Sheen/Odor: None

Presence/Absence silica glass: Present throughout

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2

SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)

Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): None

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

SE Primary Sample ID: CB014-SE-1-101519 Time: 1312

SE Duplicate Sample ID: CB014-SE-2-101519 Time: ~~1312~~ SHD 1317

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket 4.7	~~4.3~~ 4.0 gallons
	1 x 2.5 gallon white bucket	1.84 gallons

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: CB014-SE-3-101519 Time: 1312 2.5 gallon white bucket 1.84 gallons

BMI Primary Sample ID: CB014-BMI-1-101519 Time: 1358 Yellow 5-gallon bucket 2.9 gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JS Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** 1CB014

Attempt # 3 Cast Time: 1358 Water Depth (m): 37.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB014-3 - BMI Estimated Hydrowire angle (degrees): NA

Easting: 429613.47 Sampler Penetration (inches): 9

Northing: 5407339.85 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Same as Attempt 2

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: See attempt 2 Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JS Date: 10-15-19 Field Supervisor Initials MM Date: 10-15-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/18/19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Mudeau, E Rigby
EPA Observer: L. Reitrink
Arrival Time: 0817
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Area of Interest: China bend
Location ID: CB014
Sampling Crew: S. Kinmer, B. Chadwick, C. Pickarell
Departure Time: 1030
Weather Conditions Upon Arrival:
Temp (°F): 43 Wind (mph): 0
Clouds/Precipitation: overcast, occassional sprinkle

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Mile:
Boat Traffic none
River Current: (Swift) (Eddie) (Calm) (Ripple)
Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB014-1-PW
Easting: 429614.20
Northing: 5407342.37
Water Depth (m): 37.8
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: CB014-PW-1-101919 Time: 0936
Duplicate Sample ID: — Time: —
EPA Split Sample ID: — Time: —
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: —
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials SKK Date: 10/18/19
Field Supervisor Initials DM Date: 10/19/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB015
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGood
C.R. Observer: Michelle Stegner
EPA Observer: NA
Arrival Time: 1149
Departure Time: 1220

River Stage:
Water Surface Elev. (ft): 1297.59
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): N 2 mph
Clouds/Precipitation: Cloudy, light rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO Incorrect facies, incorrect strata

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope along west shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
3 attempts, 3 rejected (incorrect facies) 2 video (one photo)

Video Reconnaissance Information

GPS Target Name: CB015-SV-1
Easting: 429691.84
Northing: 5407422.28
13.1
Observations: Cobbles Incorrect facies

GPS Target Name: CB015-SV-2
Easting: 429687.16
Northing: 5407413.31
13.1
Observations: Cobbles Incorrect facies

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: MM Date: 10-16-19
Field Supervisor Initials: LE Date: 10.16.19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698

Area of Interest: ~~DAFS~~ 2nd China Bend

Anchored? (NO) YES

Location ID: CB-015

Attempt # 1

Cast Time: 1205

Water Depth (m): ~~13.1~~ to 17.0

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: CB-015-1

Estimated Hydrowire angle (degrees): NA

Easting: ~~429691.84~~ 429689.52

Sampler Penetration (inches): NA

Northing: ~~5407428.28~~ 5407411.22

Sample Interval (0 to X inches bss): NA

Sample Type: (Physical/Chemical/Bioassay) ~~BMI~~

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO NA
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes: No recovery Alt for CB-008

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
NA		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19

Field Supervisor Initials _____ Date: 10-16-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** ~~AAF-5~~ China Bend

Anchored? NO YES **Location ID:** CB-015

Attempt # 2 Cast Time: ~~11:55~~ SHD 1209 Water Depth (m): ~~14.0~~ SHD 20.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB-015-2 Estimated Hydrowire angle (degrees): NA

Easting: ~~429687.16~~ SHD 429691.85 Sampler Penetration (inches): 1

Northing: ~~5407413.31~~ SHD 5407406.41 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is: Sampler walked, scraped top	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Sand with gravel Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Alt for CB-008

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: NA	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ gallons
			1 x 2.5 gallon white bucket _____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket _____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials [illegible] Date: 10-16-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-015

Attempt # 3 Cast Time: ~~21.2~~ SHO 1214 Water Depth (m): 21.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB-015-3 Estimated Hydrowire angle (degrees): NA

Easting: 429695.1 Sampler Penetration (inches): 2

Northing: 3407401.60 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: Grimpler walked, scraped top	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Sand with gravel Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Alt for CB-008

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? NA Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
		NA	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ gallons
				1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials LCS Date: 10.16.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB016
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1354
Departure Time: 1555

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 2
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: 9 attempts, 2 accepted
# of Sampling Attempts (Accepted vs. Rejected):
#3 = SE
#9 = BMI

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials JLC Date: 10/11/19
Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 7

Date 10-11-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: C13016

Attempt # 1

Cast Time: 1358

Water Depth (m): 20.7

GPS Target Parameters

Sheave Counter Depth (m): na

Name: C13016-1-CHEM

Estimated Hydrowire angle (degrees): na

Easting: 429676.69

Sampler Penetration (inches): >16

Northing: 5407402.17

Sample Interval (0 to X inches bss): na

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): over penetrated

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Rejected – over penetrated

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____	Time: _____		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: RH Date: 10-11-19

Field Supervisor Initials: MC Date: 10.11.19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB016

Attempt # 2 Cast Time: 1417 Water Depth (m): 20.7

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB016-2-CHEM Estimated Hydrowire angle (degrees): na

Easting: 429683.49 Sampler Penetration (inches): < 1

Northing: 5407403.96 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): no recovery

Sediment Characteristics

Sediment Type / Texture: SAND Redox Boundary:

Color: Presence of debris: Rejected - no recovery

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ gallons
			1 x 2.5 gallon white bucket _____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket _____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket _____ gallons

sediment bucket volumes

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-11-19 Field Supervisor Initials: JH Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB016

Attempt # 3 Cast Time: 1422 Water Depth (m): 20.7

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB016-3-CHEM Estimated Hydrowire angle (degrees): na

Easting: 429681.02 Sampler Penetration (inches): 5

Northing: 5407406.65 Sample Interval (0 to X inches bss): 0-5

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7 Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Removed 150lbs

Sediment Characteristics

Sediment Type / Texture: (MFS) f-m SAND w/sr-r F-c gravel, trace r-cobble, trace silt

Color: 10YR 3/2

Stratification: homogeneous

Density: loose

Presence/Absence silica glass: some

Redox Boundary: none

Presence of debris: none

Biological Structures: sticks & pine needles

Shells: fragments

Sheen/Odor: none

Other Notes: matches target

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: #3(SE), #9(BMI) SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 11.2 (lbs) Total Mass of Sediment (kg): 18.1

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 4.9

Mass of Sediment > 3 inches (cobble) (kg): 2.0

Sample Identification Information

SE Primary Sample ID: CB016-SE-1-101119 Time: 1422

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	~~1 x 5 gallon white bucket~~ did not collect	~~gallons~~
	1 x 2.5 gallon white bucket	0.92 gallons

(LH 10-19) 1.35gal

SE Duplicate Sample ID: na Time:

SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: na Time: 8 oz WMGJ

EPA TX Split Sample ID: na Time: 2.5 gallon white bucket ____ gallons

BMI Primary Sample ID: CB016-BMI-1-101119 Time: 1422 Yellow 5-gallon bucket ____ gallons

BMI Duplicate Sample ID: na Time: Yellow 5-gallon bucket ____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-11-19 Field Supervisor Initials: [illegible] Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB016

Attempt # 4 Cast Time: 1446 Water Depth (m): 20.7

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB016-4-CHEM Estimated Hydrowire angle (degrees): na

Easting: 4296746.64 Sampler Penetration (inches): <1

Northing: 5407401.48 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: f-m SAND and f-GRAVEL Redox Boundary:

Presence of debris: Rejected - poor recovery

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ gallons
				1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AH Date: 10-11-19 Field Supervisor Initials MS Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB016

Attempt # 5 Cast Time: 1456 Water Depth (m): 20.7

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB016-5-CHEM Estimated Hydrowire angle (degrees): na

Easting: 429675.83 Sampler Penetration (inches): 3

Northing: 5407400.64 Sample Interval (0 to X inches bss): na

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs)

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected <3" recovery

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): on pg 3

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	____ gallons
			1 x 2.5 gallon white bucket	____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	____ gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-11-19 Field Supervisor Initials: [illegible] Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB016

Attempt # 6 Cast Time: 1502 Water Depth (m): 20.7

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB016-6-CHEM Estimated Hydrowire angle (degrees): na

Easting: 429681.16 Sampler Penetration (inches): 0

Northing: 5407404.89 Sample Interval (0 to X inches bss): na

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs).

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected - no recovery

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

sediment bucket volumes

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: SH Date: 10-11-19 Field Supervisor Initials: MP Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB016

Attempt # 7 Cast Time: 1505 Water Depth (m): 20.7

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB016-7-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429684.17 Sampler Penetration (inches): 0

Northing: 5407402.93 Sample Interval (0 to X inches bss): NA

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is.	Accepted	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Rejected - no recovery

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): on pg 3 Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

sediment bucket volumes

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-11-19 Field Supervisor Initials: JLS Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB016

Attempt # 8 Cast Time: 1531 Water Depth (m): 19.6

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB016-8-BM1 Estimated Hydrowire angle (degrees): na

Easting: 429673.91 Sampler Penetration (inches): 0

Northing: 5407409.31 Sample Interval (0 to X inches bss): na

Sample Type: ~~Physical/Chemical/Bioassay~~ (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria JH 10-11-19

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected - no recovery

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ gallons
		1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____ Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____ Time: _____		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: _____ Time: _____		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: _____ Time: _____		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JH Date: 10-11-19 Field Supervisor Initials MS Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB016

Attempt # 9 Cast Time: 1536 Water Depth (m): 20.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB016-9-BMI Estimated Hydrowire angle (degrees): na

Easting: 4296616.19 Sampler Penetration (inches): 4

Northing: 5407399.56 Sample Interval (0 to X inches bss): 0-4

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: f-m SAND with silt, trace r-gravel

Color: 10YR 2/1

Stratification: homogeneous

Density: very loose

Presence/Absence silica glass: yes, clump of sand in silica

Redox Boundary: < 0.5 mm

Presence of debris: none

Biological Structures: pine needles + leaves

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt ~~#s in Sample~~ if Composite of Multiple Attempts: BMI SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

~~SE~~ Primary Sample ID. Time:

on P3

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time. Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ZH Date: 10-11-19 Field Supervisor Initials: JLC Date: 10.11.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10-12-19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Trudeau, E. Rigbey
EPA Observer: N. Badon
Arrival Time: 1250

Area of Interest: China Bend
Location ID: CBQ16
Sampling Crew: J. Pretare, S. Kintner, J. Moore, C. Pickerell
Departure Time: 1502

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 1-2
Clouds/Precipitation: high, thin clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ___
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep slope

GPS Target Parameters and Water Depth

GPS Name: CBQ16-1-PW
Easting: 429675.36
Northing: 5407400.49
Water Depth (m): 21.9
Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: ___
Easting: ___
Northing: ___
Observations:

GPS Name: ___
Easting: ___
Northing: ___
Observations:

Sample Identification Information

Primary Sample ID: CBQ16-PW-1-101219 Time: 1331

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: ___ Time: ___
Analyte and Bottle Type: ___

EPA Split Sample ID: CBQ16-PW-3-101219 Time: 1331
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? (Yes) No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JP Date: 10.12.19
Field Supervisor Initials JMS Date: 10-12-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB018
Vessel Crew: Pete Jenkins
Jeb Schut
Sampling Crew: Michelle Stegner Michaela McPowe
Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1542
Departure Time: 1633

River Stage:
Water Surface Elev. (ft): 1298.78
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): N 4
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NO

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
3 attempts, 2 accepted (#1 & #3) #2 Rejected (no recovery)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: ZH. Date: 10.9.19
Field Supervisor Initials: JLS Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698 **Area of Interest:** ~~CB018~~ China Bar

Anchored? (NO) YES **Location ID:** CB018

Attempt # 1 Cast Time: 1546 **Water Depth (m):** 22.3

GPS Target Parameters **Sheave Counter Depth (m):** na

Name: CB018-1-CHEM **Estimated Hydrowire angle (degrees):** na

Easting: 429705.54 **Sampler Penetration (inches):** 6

Northing: 5407378.91 **Sample Interval (0 to X inches bss):** 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Added Weights on Sampler (lbs):** none

Sediment Characteristics

Sediment Type / Texture: f-m SAND **Redox Boundary:** 42 mm

Color: 10YR 2/1 with pockets of 10yr 4/3 **Presence of debris:** pine needles, leaves, twigs

Stratification: ~~Stratified~~ homogenous MM 10919 w/pockets of lighter sand **Biological Structures:** ~~none~~ gelatinous plant material

Density: loose **Shells:** ~~none~~ snail

Presence/Absence silica glass: yes, throughout **Sheen/Odor:** none

Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+3, 2 rejected **SEM-AVS Container Collected from Attempt #:** 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) **Removed by Hand > 5mm?** (Yes) ~~No~~ (ZH 10.9.19)

Mass of Sediment < 5 mm (kg): 51.7 Kg **Total Mass of Sediment (kg):** 52 Kg

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0.3 Kg

Mass of Sediment > 3 inches (cobble) (kg): ~~51.7~~ Kg (ZH 10.9.19)

Sample Identification Information

SE Primary Sample ID: CB018-SE-1-100918 Time: 1546

SE Duplicate Sample ID: CB018-SE-2-100918 Time: ~~1546~~ 1551 (ZH 10.9.19)

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5 gallons
	1 x 2.5 gallon white bucket	2.5 gallons

sediment bucket volumes

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: n/a Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: " Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ZH Date: 10-9-19 Field Supervisor Initials MS Date 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB018

Attempt # 2 Cast Time: 1600 **Water Depth (m):** 20.3

GPS Target Parameters **Sheave Counter Depth (m):** n/a

Name: CB018-2-CHEM **Estimated Hydrowire angle (degrees):** n/a

Easting: 429706.53 **Sampler Penetration (inches):** door did not close

Northing: 540738l.16 **Sample Interval (0 to X inches bss):** 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO MS

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	(YES)	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool **Added Weights on Sampler (lbs):**

Sediment Characteristics

Sediment Type / Texture: rejected **Redox Boundary:**

Color: LH **Presence of debris:**

Stratification: **Biological Structures:**

Density: **Shells:**

Presence/Absence silica glass: **Sheen/Odor:**

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: **SEM-AVS Container Collected from Attempt #:**

Sieving Information: rejected

Sieved with 5 mm Sieve? LH Yes No **Removed by Hand > 5mm?** Yes No

Mass of Sediment < 5 mm (kg):* **Total Mass of Sediment (kg):**

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time: LH 20191

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10.9.19 Field Supervisor Initials MS Date: 10.9.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB018

Attempt # 3 Cast Time: 1608 Water Depth (m): 22.3

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB018-3-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 429707.12 Sampler Penetration (inches): 6

Northing: 5407378.20 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: f-m SAND, trace of f-r gravel

Color: 10yr 2/1 w/ pockets of 10yr 4/3 homogenous MM 10919

Stratification: Stratified w/ pockets

Density: loose

Presence/Absence silica glass: Yes, throughout

Redox Boundary: 42 mm

Presence of debris: pine needles, leaves, twigs

Biological Structures: none

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: on pg 1

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
on pg 1		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials YH Date: 10.9.19 Field Supervisor Initials MC Date: 10.9.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB018
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Steiner, Michaela Neil, Linda Howard
C.R. Observer: Michelle Steiner
EPA Observer: Elle Anzinger
Arrival Time: 1553
Departure Time: 1610

River Stage:
Water Surface Elev. (ft): 1898
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 53 Wind (mph): 1
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on West Shore

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
Returned to loc, previously here 10/9, to collect BMI 2 attempts, 1 accepte

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations: (BM Colle ex from A2

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: US Date: 10.11.19
Field Supervisor Initials: MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: CB018

Attempt # 4 Cast Time: 1557

Water Depth (m): 21.20

GPS Target Parameters

Sheave Counter Depth (m): na

Name: CB018-4-BM1

Estimated Hydrowire angle (degrees): na

Easting: 429705.93

Sampler Penetration (inches): 26

Northing: 5407380.91

Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Rejected - over penetration

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____ Time: ~~1607~~ (2H) 10/19

On pg 2

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2 5 gallon white bucket _____ gallons

Cross off containers NOT filled

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2 5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/11/19

Field Supervisor Initials: [illegible] Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB018

Attempt # 5 Cast Time: 1607 Water Depth (m): 21.60

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB018-5-BM1 Estimated Hydrowire angle (degrees): na

Easting: 429707.20 Sampler Penetration (inches): 4

Northing: 5407383.85 Sample Interval (0 to X inches bss): 0-4

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is.	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: f-m SAND with silt Redox Boundary: none

Presence of debris: none

Color: 10yr 2/1 Biological Structures: pine needles & twigs

Stratification: homogeneous Shells: none

Density: loose Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 5 for BMT SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No BM1 Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time: ~~1607~~ (LH 101119)

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ (LH 101119)
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket ~~2.6~~ gallons
	1 x 2.5 gallon white bucket ____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons

BMI Primary Sample ID: CB018-BM1-1-101119 Time: 1607 Yellow 5-gallon bucket 2.6 gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 101119 Field Supervisor Initials: JLS Date: 10-11-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend
Vessel: Yeti **Location ID:** CB018
Vessel Crew: R. Trudeau, E. Rigbey **Sampling Crew:** J. Pretare, J. Moore, C. Pickerell
EPA Observer: N. Badon
Arrival Time: 1441 **Departure Time:** 1635
River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___
Weather Conditions Upon Arrival:
Temp (°F): 47 Wind (mph): 1-2
Clouds/Precipitation: none
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ___
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep slope w/ some erosion

GPS Target Parameters and Water Depth

GPS Name: CB018-1-PW
Water Depth (m): 20.0
Easting: 429709.35
Northing: 5407377.43
Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: ___
Easting: ___
Northing: ___
Observations:

GPS Name: ___
Easting: ___
Northing: ___
Observations:

Sample Identification Information

Primary Sample ID: CB018-PW-1-101019 Time: 1535
Duplicate Sample ID: ___ Time: ___
EPA Split Sample ID: ___ Time: ___
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: ___
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials JP Date: 10-10-19
Field Supervisor Initials ___ Date: ___

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CBOZO
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shirra DeGroot
C.R. Observer: Michelle Stegner
~~EPA~~ Spokane Observer: Tamara Knudson
Arrival Time: 1014
Departure Time: 1215

River Stage:
Water Surface Elev. (ft): 1297.78
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 37 Wind (mph): E 2 mph
Clouds/Precipitation: ~~50~~ light fog, Ø precip

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: VanVeen
# of Sampling Attempts (Accepted vs. Rejected):
3 attempts, 3 accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-14-19
Field Supervisor Initials MM Date: 10-14-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB020

Attempt # 1 Cast Time: 1019 Water Depth (m): 22.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB020-1-Chem Estimated Hydrowire angle (degrees): NA

Easting: 429734.52 Sampler Penetration (inches): 9

Northing: 5407367.04 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: fine to med ~~sand~~ SAND mm 10-14-19 trace fine, subrounded gravel

Color: 10YR 2/1

Stratification: homogenous

Density: loose

Presence/Absence silica glass: present

Redox Boundary: 1mm on surface, sandy silt

Presence of debris: trace twigs

Biological Structures: scattered leaves & pine

Shells: none needles

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: #1(SE) SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Sand, no measurements needed Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg): <1 kg

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: CB020-SE-1-101419 Time: 1019

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: → CB020-BMI-1-101419 Time: _____

BMI Primary Sample ID: SHP ~~CB020-2-BMI-1~~ Time: 1115

BMI Duplicate Sample ID: ~~CB020-BMI-2-101419~~ CB020-BMI-2-101419 Time: 1144

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	✓ 8 oz WMGJ (no headspace)		
Total Metals & TOC	✓ 8 oz WMGJ		
Grain Size	✓ 8 oz WMGJ		
BEM	✓ 16 oz Amber WMGJ		
Organics	✓ 2 x 8 oz WMGJ (3/4 full except in Reference Area)		
Bioassays	✓ 1 x 5 gallon white bucket	5.0	gallons
	✓ 1 x 2.5 gallon white bucket	2.0	gallons

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*	
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
	8 oz WMGJ		
	2.5 gallon white bucket	_____	gallons
	Yellow 5-gallon bucket	2.5	gallons
	Yellow 5-gallon bucket	3.4	gallons

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DW Date: 10.14.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB020

Attempt # 2 Cast Time: ~~1118~~ SHP 1014/19 1115 Water Depth (m): 22.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB020-2-BMI Estimated Hydrowire angle (degrees): NA

Easting: 429734.38 Sampler Penetration (inches): 8

Northing: 5407360.95 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Same as attempt 1

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: Not Applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
See attempt 1		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DM Date: 10.14.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB020

Attempt # 3 Cast Time: 1144 Water Depth (m): 22.5

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB020-3 Estimated Hydrowire angle (degrees): NA

Easting: 429730.42 Sampler Penetration (inches): 8.5

Northing: 5407362.58 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Same as attempt 1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: Not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:		*Cross off containers NOT filled*	
See attempt 1		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: See attempt 1 STLD 101419	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: ~~CB020-BMI-2-101419~~	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DJY Date: 10.14.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10/15/2019

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeti **Location ID:** CB020

Vessel Crew: R Trudeau, E. Rigny **Sampling Crew:** S. Kintner, B. Chadwick, C Pickarell

EPA Observer: L. Ratcliff

Arrival Time: 0835 **Departure Time:** 1058

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 33 Wind (mph): 0
Clouds/Precipitation: overcast, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

N/A

GPS Target Parameters and Water Depth

GPS Name: CB020-1-PW Water Depth (m): 20.8

Easting: 429733.38

Northing: 5407363.18 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: CB020-PW-1-10519 Time: 0959

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc~~ (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type: —

EPA Split Sample ID: — Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: SKK Date: 10/15/19 Field Supervisor Initials: DM Date: 10/15/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB021
Vessel Crew: Pete. Jenkins, Charlie Kellogg
Sampling Crew: Michelle. Stegner, Michaela McCoog, Shira DeGroot
C.R. Observer: Michelle Stegner
~~EPA~~ Spokane Observer: Tamara Knudson
Arrival Time: 1232
Departure Time: 1350

River Stage:
Water Surface Elev. (ft): 1297.97
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): 2
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare 11-21-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional shoreline

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): #1 rejected (cobble)
3 attempts, 2 accepted
#2 accepted (SE + TX collected BM)
#3 accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-14-19
Field Supervisor Initials DMF Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB921

Attempt # 1 Cast Time: 1232 Water Depth (m): 9.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB921-1 Estimated Hydrowire angle (degrees): NA

Easting: 429789.85 Sampler Penetration (inches): NA

Northing: 5407361.65 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0 Gravel in Sampler jaws

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No recovery, gravel stuck in jaws

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: rejected

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

Rejected

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials PM Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB021

Attempt # 2 Cast Time: 1237 Water Depth (m): 9.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB021-2-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429792.08 Sampler Penetration (inches): 8

Northing: 5407362.05 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: silt with pockets of fine sand, trace rounded gravel Redox Boundary: 1mm at surface

SHO ~~Seal~~ spongy Presence of debris: none

Color: 10YR 2/1 Biological Structures: scattered leaves, pine needles

Stratification: homogenous with pockets of fine sand, bottom 2 inches few rounded to sub-rounded gravel Shells: one chironomid in water

Density: Soft Sheen/Odor: none

Presence/Absence silica glass: scattered silica Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~#SHO #2 (SED~~ ~~#3 BMI~~) #SHO SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): NA Total Mass of Sediment (kg): NA

Mass of Sediment 5 mm to 3 inches (gravel) (kg): <1 kg

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: CB021-SE-1-101419 Time: 1237

	Cross off containers NOT filled	
SEM-AVS	✓8 oz WMGJ (no headspace)	
Total Metals & TOC	✓8 oz WMGJ	
Grain Size	✓8 oz WMGJ	
BEM	✓16 oz Amber WMGJ	
Organics	✓2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.2 gallons
	1 x 2.5 gallon white bucket	1.84 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: CB021-BMI-1-101419 Time: 1328 2x Yellow 5-gallon bucket 2.7 2.0 gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DM Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB021

Attempt # 3 Cast Time: 1328 Water Depth (m): 9.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB021-3-BMI Estimated Hydrowire angle (degrees): NA

Easting: 429780.74 Sampler Penetration (inches):

Northing: 5467362.45 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as last, See attempt 2

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: N/A

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: See attempt 2	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DM Date: 10/14/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yen **Location ID:** CB021

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Kintner, C. Pickrell, B. Chadwick

EPA Observer: L. Ratcrink

Arrival Time: 0830 **Departure Time:** 1025

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 41 Wind (mph): 0
Clouds/Precipitation: overcast, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (Mud (M)) *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

N/A

GPS Target Parameters and Water Depth

GPS Name: CB021-1-PW Water Depth (m): 12.50 m

Easting: 429788.37

Northing: 5407363.62 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: CB021-PW-1-101619 Time: 0921

Duplicate Sample ID: CB021-PW-2-101619 Time: 0921

EPA Split Sample ID: — Time: —

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. ~~Sulfide~~	~~250 mL Poly with NAOH~~ & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: TOC, 125mL amber

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials SLKC Date: 10/16/19 Field Supervisor Initials AH Date: 10/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB022
Vessel Crew: Pete Re Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, ~~Michelle~~ Michaela McCoody, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: Tamara Knudson
Arrival Time: 0924
Departure Time: 1010

River Stage:
Water Surface Elev. (ft): 1297.78
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 37 Wind (mph): E 2 mph
Clouds/Precipitation: foggy, light precip.

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) mm 10/15/19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west bank

Sampling Information

mm 10/15/19

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): ~~1 rejected (gravel)~~
4 attempts, 4 rejected. - incorrect facies (gravels and cobble)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-14-19
Field Supervisor Initials DM Date: 10-14-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698
Area of Interest: ~~CB022~~ SH China Bend
Vessel: RV Tieton
Location ID: CB022
Vessel Crew: J. Schaefer, R McEllece
Sampling Crew: S. Holmes (photo/video).
C.R. Observer: N/A
EPA Observer: G. Sedberry
Arrival Time: 1402
Departure Time: 1410
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 0
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mEs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: CB022-SV-5
Easting: 429780.99
Northing: 5407330.30
@1404
D: 20.1m
Observations: Gravel and Sand

GPS Target Name: CB022-SV-6
Easting: 429768.61
Northing: 5407334.39
D: 23.0m
@1406
Observations: Very difficult to see. Probable sand w/ gravel.

GPS Target Name: CB022-SV-7
Easting: 429761.23
Northing: 5407332.59
D: 24.1m
@1408
Observations: Very difficult to see. Rock observed w/ possible sand

GPS Target Name:
Easting:
Northing:
Observations:
Note: Very difficult to see river bottom due to depth, and turbulence when camera light is turned on

Sample Lead Initials SH Date: 10/23/19
Field Supervisor Initials DH Date: 10/23/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB022

Attempt # 1 Cast Time: 0930 Water Depth (m): 24.1 -50 10/14

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB022-1 Estimated Hydrowire angle (degrees): NA

Easting: 429780.49 Sampler Penetration (inches): NA

Northing: 5407320.89 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	NO NA
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Sand with cobble Redox Boundary: Rejected, gravel stuck in jaws

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Gravel stuck in jaws of Van Veen

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DH Date: 10-14-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB022

Attempt # 2 Cast Time: 0940 Water Depth (m): 24.1 SO 10-14-2019

GPS Target Parameters

Name: CB022-2 Sheave Counter Depth (m): NA

Easting: 429773.40 Estimated Hydrowire angle (degrees): NA

Northing: 5407322.08 Sampler Penetration (inches): NA

Sample Type: (Physical/Chemical/Bioassay) BMI Sample Interval (0 to X inches bss): NA

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO) NA
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Sand with cobbles, no gravel

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris: Rejected, gravel stuck in jaws of sampler

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ gallons
		1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: Time:		8 oz WMGJ	
EPA TX Split Sample ID: Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DM Date: 10-14-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO / YES **Location ID:** CB022

Attempt # 3 Cast Time: 0949 Water Depth (m): 24.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB022-3 Estimated Hydrowire angle (degrees): NA

Easting: 429776.46 Sampler Penetration (inches): NA

Northing: 5407332.47 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO NA
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Sand with gravels

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures: Rejected, gravel stuck in jaws of sampler

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DM Date: 10-14-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CBØ22

Attempt # 4 Cast Time: 1002 Water Depth (m): 26.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CBØ22-4 Estimated Hydrowire angle (degrees): NA

Easting: 429767.32 Sampler Penetration (inches): NA

Northing: 5407342.15 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	NO NA
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200 Lowered legs (raise penetration depth)

Sediment Characteristics

Sediment Type / Texture: Sand with gravel Redox Boundary:

Presence of debris:

Color: Biological Structures: Rejected, gravel in jaws of sampler

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials [illegible] Date: 10-14-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB024
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, ~~Linda~~ Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: ~~Spokane~~ Tamara Knudson
Arrival Time: 1350
Departure Time: ~~1615~~ MS 1507

River Stage:
Water Surface Elev. (ft): 1297.97
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): NNW 2
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west slope

Sampling Information

Sampler Used: Van Veen (MS)
# of Sampling Attempts (Accepted vs. Rejected):
~~2 attempts, 1 accepted. Return 10/15 for BM1~~ 2 attempts, 2 accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-14-19
Field Supervisor Initials DM Date: 10.14.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB024

Attempt # 1 Cast Time: 1357 Water Depth (m): 17.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB024-1-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429795.28 Sampler Penetration (inches): 7.5

Northing: 5407333.81 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: ~~SILT and fine sand~~ SAND Fine ~~sand~~ SAND, little silt mm 10-14-19

Redox Boundary: @ 1mm on top

Presence of debris: scattered leaves and twigs, pine needles

Color: 10YR2/1

Biological Structures:

Stratification: none

Shells: ~~One~~ trace mussels

Density: Soft

Sheen/Odor: none

Presence/Absence silica glass:

Other Notes: spongy

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): ~~None~~ SAD Not measured Total Mass of Sediment (kg): Not measured

Mass of Sediment 5 mm to 3 inches (gravel) (kg): None

Mass of Sediment > 3 inches (cobble) (kg): None

Sample Identification Information

SE Primary Sample ID: CB024-SE-1-101419	Time: 1357		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	4.7 gallons
			1 x 2.5 gallon white bucket	1.4 gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	gallons
BMI Primary Sample ID: CB024-BMI-1-101419	Time: 1440		Yellow 5-gallon bucket	2.5 gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DY Date: 10.14.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB024

Attempt # 2 Cast Time: 1440 Water Depth (m): 17.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB024-2-BMI Estimated Hydrowire angle (degrees): NA

Easting: 429795.31 Sampler Penetration (inches): 5.5

Northing: 5407332.87 Sample Interval (0 to X inches bss): 0-5.5

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: fine SAND with silt Redox Boundary: ~~none~~ 2 cm, silt

Presence of debris: scattered leaves, wood, pine needles, clams, mites

Color: 10YR 2/1 Biological Structures:

Stratification: none Shells: ~~clam shells, mites~~

Density: soft Sheen/Odor: none

Presence/Absence silica glass: none Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: Not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	6 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: See Attempt 1	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DM Date: 10.14.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10/15/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeti **Location ID:** CB024

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Kintner, C. Pickerell, B. Chadwick

EPA Observer: L. ~~Ratterink~~ 10/15/19 Ratterink

Arrival Time: 1124 [shared anchor location w/ CB027] **Departure Time:** 1314 ~~taffer CB027~~ SEKK 10/15/19

River Stage:

Water Surface Elevation (ft): _____

Elevation Source: _____

Weather Conditions Upon Arrival: @ 1329, when pursing started

Temp (°F): 51 Wind (mph): 0

Clouds/Precipitation: cloudy, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (*Mud (M)*) *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

N/A

GPS Target Parameters and Water Depth

GPS Name: CB024-1-PW Water Depth (m): 17.7

Easting: 429797.45

Northing: 5407333.52 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: CB024-PW-1-101919 Time: 1402

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH &~~ ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type: _____

EPA Split Sample ID: — Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SEKK Date: 10/15/19 Field Supervisor Initials DW Date: 10/15/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/2019

Project Number: 60612698
Area of Interest: ~~CB027~~ China Bend
Vessel: Ingalls
Location ID: CB027
Vessel Crew: Pete Jenkins
Charlie Kellogg
Sampling Crew: Michelle Stegner Michaela McCon
Shira DeGrood (Spokane)
C.R. Observer: Michelle Stegner
EPA Observer: Tamara Knudson
Arrival Time: ~~1510~~ (WS) 1520
Departure Time: 1615

River Stage:
Water Surface Elev. (ft): 1297.97
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): NNW 3 mph
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) ~~MS~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 72[illegible]5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional shoreline on west bank

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected):
2 attempts, 1 accepted - return for BMI

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DW Date: 10.14.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CBØ27

Attempt # 1 Cast Time: 1520 Water Depth (m): 20.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CBØ27-1 Estimated Hydrowire angle (degrees): NA

Easting: 429796.79 Sampler Penetration (inches): 3.5

Northing: 5407317.02 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris: Insufficient

Biological Structures: Sample depth

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 0

Sieving Information: no sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

no sample

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials DM Date: 10.14.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date _____

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB027

Attempt # 2 Cast Time: 1530 **Water Depth (m):** 20.2

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: CB027-2-CHEM **Estimated Hydrowire angle (degrees):** NA

Easting: 429793.49 **Sampler Penetration (inches):** 6.5

Northing: 5407320.52 **Sample Interval (0 to X inches bss):** 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Added Weights on Sampler (lbs):** 0

Sediment Characteristics

Sediment Type / Texture: silty fine SAND

Color: 10YR 2/1

Stratification: ~~soft~~ none

Density: soft

Presence/Absence silica glass: trace silica in ½-cm pockets

Redox Boundary: 1mm on surface

Presence of debris: scattered wood fragment, pine needles, leaves

Biological Structures:

Shells: trace shell fragments

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~1~~ 2 SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): NA Total Mass of Sediment (kg): NA

Mass of Sediment 5 mm to 3 inches (gravel) (kg): none

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

SE Primary Sample ID: CB027-SE-1-101419 Time: 1530

	Cross off containers NOT filled	
SEM-AVS	✓ 8 oz WMGJ (no headspace)	
Total Metals & TOC	✓ 8 oz WMGJ	
Grain Size	✓ 8 oz WMGJ	
BEM	✓ 16 oz Amber WMGJ	
Organics	✓ 2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	✓ 1 x 5 gallon white bucket	5.6 gallons
	✓ 1 x 2.5 gallon white bucket	1.84 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-14-19 Field Supervisor Initials JM Date: 10.14.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB027
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier
Arrival Time: 0841
Departure Time: 0921

River Stage:
Water Surface Elev. (ft): 1297.97
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 38 Wind (mph): E 1 mph
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected):
BMI Collected from attempt #3 (#1 & #2 attempted 10/14)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MK Date: 10.15.19
Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10-15-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? NO YES

Location ID: CB027

Attempt # 3

Cast Time: 0852

Water Depth (m): 20.3

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: CB027-3-BMI

Estimated Hydrowire angle (degrees): NA

Easting: 429794.25

Sampler Penetration (inches): 7.5

Northing: 5407319.72

Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	~~Accepted~~	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool

Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: fine SAND little silt

Redox Boundary: 2mm on surface

Presence of debris: scattered leaves, pine needles

Color: 10YR 2/1

Biological Structures: wood fragments

Stratification: none

Shells: none

Density: loose

Sheen/Odor: None

Presence/Absence silica glass: ~~SHD NOT~~ trace silica

Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information: not applicable

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: see attempt 2 Time: _____

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: CB027-BMI-1-101519 Time: 0852 2x Yellow 5-gallon bucket 2.3 gallons 91.6

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: MS Date: 10.15.19

Field Supervisor Initials: MM Date: 10-15-19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeti **Location ID:** CB027

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Kintner, B. Chadwick, C. Pickerell

EPA Observer: L. Retrink

Arrival Time: 1120 **Departure Time:** 1516 [after CB024]

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): 0
Clouds/Precipitation: overcast, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (*Mud (M)*) *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NO

GPS Target Parameters and Water Depth

GPS Name: CB027-1-PW Water Depth (m): 21.8m

Easting: 429794.35

Northing: 5407318.59 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: CB027-PW-1-101519 Time: 1214

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type: —

EPA Split Sample ID: — Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: KKC Date: 10/15/19 Field Supervisor Initials: DM Date: 10/15/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB029
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGood
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier
Arrival Time: 0921
Departure Time: 1106

River Stage:
Water Surface Elev. (ft): 1297
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 39 Wind (mph): E 1 mph
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Van Veen
6 attempts, 3 accepted
Collected DUP BMI
# of Sampling Attempts (Accepted vs. Rejected): #1 & #2 rejected #3 accepted (SE and Tx collected & Tx split)
#5 accepted (BMI) #4 BMI dupe

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MC Date: 10.15.19
Field Supervisor Initials MM Date: 10-15-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB029

Attempt # 1 Cast Time: 0928 Water Depth (m): 9.8

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB029-1 Estimated Hydrowire angle (degrees): NA

Easting: 429831.50 Sampler Penetration (inches): NA

Northing: 5407317.35 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO NA
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Redox Boundary: Rock stuck in jaws of sampler

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: not sampled

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

not sampled

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ		
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MC Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698
Area of Interest: China Bend
Anchored? NO YES
Location ID: CB029
Attempt # 2 Cast Time: 0932
Water Depth (m): 11.2
GPS Target Parameters
Sheave Counter Depth (m): NA
Name: CB029-2
Estimated Hydrowire angle (degrees): NA
Easting: 429828.94
Sampler Penetration (inches): NA
Northing: 5407311.54
Sample Interval (0 to X inches bss): NA
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES MG NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO NA
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Mud with rounded gravel and small cobbles
Redox Boundary:
Color:
Presence of debris: Cobble and gravels stuck in jaws of sampler
Stratification:
Biological Structures:
Density:
Shells:
Presence/Absence silica glass:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:
Sieving Information: not sampled
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:
not sampled

Cross off containers NOT filled		
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MC Date: 10.15.19
Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: CB029

Attempt # 3

Cast Time: 0940

Water Depth (m): 14.2

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: CB029-3-CHEM

Estimated Hydrowire angle (degrees): NA

Easting: ~~429810~~ SHO 429819.83

Sampler Penetration (inches): 7

Northing: 5407310.21

Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: ~~silt~~ SHO fine SAND, little silt, trace rounded gravel

Redox Boundary: 2 cm, color 10YR 4/2.

Presence of debris: silty fine SAND

Color: 5Y 3/1

Biological Structures: scattered leaves & pine needles, well-decomposed

Stratification: homogenous

Shells: ~~SHO none~~ trace (found 1 mussle)

Density: loose

Sheen/Odor: none

Presence/Absence silica glass: not evident

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~N~~ SHO 3

SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)

Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): all

Total Mass of Sediment (kg): Not measured

Mass of Sediment 5 mm to 3 inches (gravel) (kg): ~~none~~ SHO not weighed, only one gravel noted

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

SE Primary Sample ID: CB029-SE-1-101519 Time: 0940

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: MS CB029-SE-3-101519 Time: 0940

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: ~~CB029-SE~~ CB029-BMI-1-101519 Time: 1024

BMI Duplicate Sample ID: CB029-BMI-2-101519 Time: 1050

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	2.9 gallons
	1 x 2.5 gallon white bucket	1.22 gallons

sediment bucket volumes

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	~~8 oz WMGJ~~	1.22 gal
	2.5 gallon white bucket	_____ gallons
	Yellow 5-gallon bucket	2.9 gallons
	Yellow 5-gallon bucket	2.7 gallons

Sample Lead Initials: ME Date: 10.15.19

Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CBØ29

Attempt # 4 Cast Time: 1018 Water Depth (m): 15.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CBØ29-4-~~BAT~~ SHO Estimated Hydrowire angle (degrees): NA

Easting: 429816.59 Sampler Penetration (inches): NA

Northing: 5407311.53 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay ~~BMI~~ SHO Cultural Resource Check Completed? (YES) ~~NO~~

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0 Slope noted on video

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Not Sampled

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: Not Sampled

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
Not Sampled		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CBØ29

Attempt # 5 Cast Time: 1024 Water Depth (m): 15.7

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CBØ29-5-BMI Estimated Hydrowire angle (degrees): NA

Easting: 429816.14 Sampler Penetration (inches): 5

Northing: 5407316.49 Sample Interval (0 to X inches bss): 0-5

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as CBØ29-3 except no mussel

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: See Attempt 3	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 101519

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CBØ29

Attempt # 6 Cast Time: 1050 Water Depth (m): 13.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CBØ29-6-BMI Estimated Hydrowire angle (degrees): NA

Easting: 429821.05 Sampler Penetration (inches): 8.5

Northing: 5407314.18 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as attempt 3 except 2 mussels

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: See attempt 3	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.15.19 Field Supervisor Initials 10-15-19 Date: mm

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 10/16/19

Project Number: 60612698 **Area of Interest:** china bend

Vessel: Yeti **Location ID:** CB029

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Kintner, B. Chadwick, C. Pickerell

EPA Observer: L. Raterink

Arrival Time: 1032 **Departure Time:** 1215

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 0
Clouds/Precipitation: overcast dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (Mud (M)) *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple) SEKK 101019

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

N/A

GPS Target Parameters and Water Depth

GPS Name: CB029-1-DW Water Depth (m): 13.9 m

Easting: 429820.94

Northing: 5407309.49 Water Sample Color: light translucent tan

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: CB029-PW-1-101619 Time: 1130

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide~~ — ~~250 mL Poly with NAOH~~ & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: — Time: — Analyte and Bottle Type: _____

EPA Split Sample ID: — Time: — 1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SEKK Date: 10/16/19 Field Supervisor Initials AM Date: 10/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB030
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGood
C.R. Observer: Michelle Stegner
EPA Observer: NA
Arrival Time: 1302
Departure Time: 1322

River Stage:
Water Surface Elev. (ft): 1297.59
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): 2
Clouds/Precipitation: Clear Overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) incorrect strata

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope along west shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: CB-030-SV-1
Easting: 429845.74
Northing: 5407266.07
Observations: Incorrect facies

GPS Target Name: CB-030-SV-2
Easting: 429837.23
Northing: 5407268.72
Observations: Incorrect facies

GPS Target Name: CB-030-SV-3
Easting: 429852.69
Northing: 5407266.28
Observations: Incorrect facies

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: MS Date: 10/16/19
Field Supervisor Initials: SD Date: 10-16-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10-16-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: CB-030

Attempt # 1

Cast Time: 1312

Water Depth (m): 23.5

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: CB-030-1

Estimated Hydrowire angle (degrees): NA

Easting: 429833.28

Sampler Penetration (inches): 0

Northing: 5407273.54

Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO** NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO NA
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color: NA

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes: No recovery Alt for CB608

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

NA

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19

Field Supervisor Initials MS Date: 10.16.19

Revised 9/21/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB031
Vessel Crew: Pete Jenkins, Jake Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1450
Departure Time: 1540

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): 1
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) large cobbles, some grave

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: ∅

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Very steep erosional slope on west shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): #1 no recovery
2 Video recon, 2 attempts, no recovery – large cobbles

Video Reconnaissance Information

GPS Target Name: CB031-SV-1
Easting: 429859.33
Northing: 5407246.77
Observations: large cobble

GPS Target Name: CB031-SV-2
Easting: 429850.57
Northing: 5407255.25
Observations: large cobble

GPS Target Name: CB031-SV-3
Easting: 429830.32
Northing: 5407258.49
Observations: boulders, some gravel

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-10-19
Field Supervisor Initials MS Date: 10.10.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB031

Attempt # 1 Cast Time: 1457 Water Depth (m): 22.8

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB031-1-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429859.3757 Sampler Penetration (inches): <1

Northing: 5407246.77 55.25 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

<1 teaspoon of Sand

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): no additional

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor: LH

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg): NO ACCEPTED GRABS INCORRECT FACIES WAS COARSE & MIXED COARSE.

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB031

Attempt # 2 Cast Time: 1529 Water Depth (m): 23.10

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB031-2-CHEM Estimated Hydrowire angle (degrees): na

Easting: 429331.25 Sampler Penetration (inches): < 4

Northing: 5407260.95 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 200 lbs

Sediment Characteristics

Sediment Type / Texture: a few cobbles + about 1 teaspoon of sand

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Rejected LH.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg): ON

Sample Identification Information

SE Primary Sample ID: Time:

SE Duplicate Sample ID: Time:

EPA SE Split Sample ID: Time:

EPA TX Split Sample ID: Time:

BMI Primary Sample ID: Time:

BMI Duplicate Sample ID: Time:

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: Time:	8 oz WMGJ	
EPA TX Split Sample ID: Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: Time:	Yellow 5-gallon bucket	_____ *gallons*

Sample Lead Initials: LH Date: 10-10-19 Field Supervisor Initials: LLS Date: 10-10-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB032
Vessel Crew: Pete Jenkins (PJ), Jeff Schot (JS)
Sampling Crew: Michelle Stegner (MS), Michaela McCoog (MM), Linda Howard (LH)
C.R. Observer: Michelle Stegner (MS)
EPA Observer: Ella Anzinger (EA)
Arrival Time: 9:25
Departure Time: 955

River Stage:
Water Surface Elev. (ft): 1278.37
Water Surface Elevation Source: wdfw.data.usgs.gov

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): 8
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.8
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ∅

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west, China Bend boat launch on east bank

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected):
4 video attempts, dense cobbles and boulders, no fines visible

Video Reconnaissance Information

GPS Target Name: CB032-SV-1
Easting: 430024.32
Northing: 5407204.57
15m
Observations: Cobbles, no fines

GPS Target Name: CB032-SV-2
Easting: 430023.48
Northing: 5407211.83
15m
Observations: Cobbles & boulder, no fines

GPS Target Name: CB032-SV-3
Easting: 43007.68
Northing: 5407215.11
18m
Observations: Cobbles & boulders, no fines

GPS Target Name: " SV-4
Easting: 430007.31
Northing: 5407215.11
16m
Observations: Cobbles, no fines

Sample Lead Initials: mm Date: 10/8/19
Field Supervisor Initials: MS Date: 10/8/2019

Revised 9/18/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB034
Vessel Crew: Jeff Schut, Pete Jenkins
Sampling Crew: Michelle Stegner, Michaela McConog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1000
Departure Time: ~~1020~~ 1017 (MS)

River Stage:
Water Surface Elev. (ft): 129.37
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 6
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.8
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ∅
Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on ~~West~~ Shore, China Bend boat launch on east

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): Attempt #1 rejected, Attempt #2 accepted (MS)
4 video recon attempts, all dense cobbles, no fines visible

Video Reconnaissance Information

GPS Target Name: CB034-SV-1
Easting: 430252.38
Northing: 5407087.66
24.5 m
Observations: dense cobbles, no fines

GPS Target Name: CB034-SV-2
Easting: 430140.26
Northing: 5407093.60
24.5 m
Observations: "

GPS Target Name: CB034-SV-3
Easting: 430127.25
Northing: 5407107.42
22.5 m
Observations: "

GPS Target Name: CB034-SV-4
Easting: 430124.05
Northing: 5407132.94
22.5 m
Observations: "

Sample Lead Initials MM Date: 10-8-19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB035
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Nicky Moody, Andy Clodfelter
C.R. Observer: Anisa Sheppard-Becker
EPA Observer: Brad Sample
Arrival Time: 0844
Departure Time: 1430

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 42 (North port) Wind (mph): 0
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722.1
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none to low - some activity at boat ramp
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline, steep slope/terrace on Right bank

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected):
Accepted: 1, 2, 3 (sediment)
Accepted: 4, 5, 6 (BMI)

Video Reconnaissance Information

GPS Target Name: CB035-SV-1
Easting: 430353.20
Northing: 5407154.81
Observations: 18.5 m sand w/ mixed coarse
video: 090542A
image: 090548A
coarser sand material than Evans — more riverine environment here.

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials JP for Nicky Moody Date: 1-7-20
Field Supervisor Initials NM Date: 10/3/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-035

Attempt # 1 Cast Time: 0922 Water Depth (m): 19.70

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB035-1-CHEM Estimated Hydrowire angle (degrees): 0

Easting: 4302354.38 Sampler Penetration (average) (inches): 4

Northing: 5407155.37

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: cobble (subrounded) med. to coarse sand some gravel.

Color: black sand - variable - predom. mostly dark

Stratification: homogeneous

Density: loose

(Presence)/Absence silica glass: Presence

Redox Boundary: —

Presence of debris: NO

Biological Structures: NO

Shells: NO

Sheen/Odor: NO

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2, 3 SEM-AVS Container Collected from Attempt #: 2, 3 Az

Sieving Information:

Sieved with 5 mm Sieve? NM (Yes) ~~NO~~ Az Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): ~~.5528~~ 5.0 Total Mass of Sediment (kg): 10.07

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0.9

Mass of Sediment > 3 inches (cobble) (kg): 4.8

Sample Identification Information

SE Primary Sample ID: CB035-SE-1-100319 Time: ~~NM~~ ~~1005~~ 0940

SE Duplicate Sample ID: CB035-SE-2-100319 Time: 0945

+ DUP → CB035-SE-3DUP-100319

EPA SE Split Sample ID: CB035-SE-3-100319

BMI Primary Sample ID: ~~CB035-BMI-1-100319~~ az

BMI Duplicate Sample ID: _____

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

			Sediment Volume
SEM-AVS		8 oz WMGJ (no headspace)	
Total Metals & TOC		8 oz WMGJ	
Grain Size		8 oz WMGJ	
~~BEM~~		~~16 oz Amber WMGJ~~	
Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Primary Sample ID: CB035-SE-1-100319	Time: ~~NM~~ ~~1005~~ 0940	*Cross off containers NOT filled*	
SEM-AVS		8 oz WMGJ (no headspace)	
Total Metals & TOC		8 oz WMGJ	
Grain Size		8 oz WMGJ	
~~BEM~~		~~16 oz Amber WMGJ~~	
Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: CB035-SE-2-100319	Time: 0945	Stet filled all	
Organics → 0946		8 oz WMGJ	
EPA SE Split Sample ID: CB035-SE-3-100319	Time: → 0940	8 oz WMGJ	
BMI Primary Sample ID: ~~CB035-BMI-1-100319~~ az	Time: _____	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ gallons

Stet filled all

Sample Lead Initials az Date: 10/3/19 Field Supervisor Initials NM Date: 10/3

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-035

Attempt # 2 Cast Time: 0951 Water Depth (m): 19.90

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB035-2-CHEM Estimated Hydrowire angle (degrees): 0

Easting: 430352.99 Sampler Penetration (average) (inches): 4

Northing: 5407157.12

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: Accepted Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 3 cobbles removed gravelly sand

Color: mostly dark grey Redox Boundary: —

Stratification: grads - fine and coarse sand. medium + coarse heterogeneous Presence of debris: NO

Density: loose Biological Structures: NO

Presence/Absence silica glass: Presence Shells: NO

Sheen/Odor: NO

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3 ac

Sieving Information:

Sieved with 5 mm Sieve? Yes (NO) AC Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time: Included + composited with CB035-SE-1-100319

Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time: Included + composited with CB035-SE-2-100319

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ac Date: 10/3/19 Field Supervisor Initials NM Date: 10/3

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB035-

Attempt # 3 Cast Time: 1043 Water Depth (m): 20.20

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB035-3CHEM Estimated Hydrowire angle (degrees): 0

Easting: 430352.81 Sampler Penetration (average) (inches): 4

Northing: 5407150.12

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HEC1

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 1 cobble retained. gravelly sand - see CB035-2 for additional information on sample composition as this sample was very similar.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) AC Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: ~~CB035-SE-1-10031~~ Time: ~~0940~~ AC

Used part of sample to fill SEM-AVS jars for primary + duplicate samples. AC

SE Duplicate Sample ID: ~~CB035-SE-2-10031~~ Time: ~~0945~~

AC ~~Used~~ Remaining material included + composited into primary + duplicate samples.

EPA SE Split Sample ID: Time:

BMI Primary Sample ID: Time:

BMI Duplicate Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

		Cross off containers NOT filled	
SE Primary	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split		8 oz WMGJ	*Sediment Volume*
BMI Primary		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate		Yellow 5-gallon bucket	_____ *gallons*

Sample Lead Initials AC Date: 10/3/19 Field Supervisor Initials NM Date: 10/3

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-035

Attempt # 4 Cast Time: 1223 Water Depth (m): 19.4

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB035-4-Chem Estimated Hydrowire angle (degrees): 0

Easting: 430352.60 Sampler Penetration (average) (inches): 4

Northing: 5407150.73

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) achieved? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: ac/ ~~gravelly~~ sand w/some gravel medium to coarse sand gravels are fine

Color: black brown sand

Stratification: homogeneous

Density: loose

(Presence)/Absence silica glass: Presence

Redox Boundary: —

Presence of debris: bark, twigs .. scattered material wood chips/pine needles observed

Biological Structures: 1 macroinvertebrate observed

Shells: —

Sheen/Odor: —

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 4, 5, 6 SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	CB035-BMI-1-100319	Time: 1235		Yellow 5-gallon bucket	1 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ac Date: 10/3/19 Field Supervisor Initials NM Date: 10/3

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB035

Attempt # 5 Cast Time: 1255 Water Depth (m): 19.6

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB035-5-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 430349.52 Sampler Penetration (average) (inches): 4

Northing: 5407157.21

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HOLD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: gravelly sand, fine gravels, medium to coarse sand — 1 cobble fell off sampler during retrieval

Color: variable - black to brown

Stratification: homogenous

Density: loose

(Presence)/Absence silica glass: Presence

Redox Boundary: —

Presence of debris: scattered reed chunks + structures

Biological Structures: no

Shells: no

Sheen/Odor: no

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 4-5 ar SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: included + composited into	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: CB035-BMI-1-100319	Time _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ar Date: 10/3/19 Field Supervisor Initials 10/3 Date: NM

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB035

Attempt # 6 Cast Time: 1346 Water Depth (m): 19.4

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB035-6-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 430350.01 Sampler Penetration (average) (inches): 4

Northing: 5407152.95

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) achieved? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer ~~w/o Hammer~~ Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 1 cobble cleaned + released At least 2 cobbles fell off during retrieval Redox Boundary: med to coarse sand-

Presence of debris: one small stick

Color: ~~Sediment very similar~~ variable, predominantly black

Biological Structures: —

Stratification: in composition to sediment

Shells: —

Density: Collected by AL

Sheen/Odor: —

~~Presence~~/Absence silica glass: Presence

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:	8 oz WMGJ	*Sediment Volume*	
BMI Primary Sample ID: Mulded + Composited	Time:	Yellow 5-gallon bucket	_____ *gallons*	
BMI Duplicate Sample ID: NTO CB035-BM1-1-100319	Time:	Yellow 5-gallon bucket	_____ *gallons*	

Equipment Blank Collected? Yes (No) *See Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/3/19 Field Supervisor Initials NM Date: 10/3

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Trudeau, E. Rigby
EPA Observer: L. Riterink
Arrival Time: 1146

Area of Interest: china bend
Location ID: CB0035
Sampling Crew: S. Kintner, B. Chadwick, C. Pickerell
Departure Time: 1331

River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:
Temp (°F): 62 Wind (mph): 0
Clouds/Precipitation: partly sunny, dry

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB0035-1-PW
Easting: 430355.34
Northing: 5407157.41
Water Depth (m): 20.2m
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: CB0035-1-PW-101719 Time: 1241
Duplicate Sample ID: — Time: —
EPA Split Sample ID: — Time: —
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials STEV Date: 10/17/19
Field Supervisor Initials AH Date: 10-17-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: ~~CB-036~~ ac CB-036
Vessel Crew: Pete Jenkins
Jeff Schut
Sampling Crew: Nicky Moody
Andy Clodfelter
C.R. Observer: Anisa Sheppherd-Barker
EPA Observer: Brad Sample
Arrival Time: 0955
Departure Time: 1538

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 41 Wind (mph): 0
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 722.1
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: ac ~~none~~ some

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
same as CB-037, CB-038

Sampling Information

Sampler Used: Freeze Grab

# of Sampling Attempts (Accepted vs. Rejected):
Rejected: 1, 3, ~~4, 5, 6~~ ac
Accepted: (2) ~~4~~ (5, 6, 7, 8, 9)
SED BMI

Video Reconnaissance Information

GPS Target Name: CB036-SV1
Easting: 430399.67
Northing: 5407111.80
T= 10:00
Observations: 19.5 m cobble
Image: 095941A
Video: 095944A

GPS Target Name: CB036-SV2
Easting: 430393.43
Northing: 5407132.85
T= ~~10:05~~ 10:01
Observations: 19.5 m cobble. no image.
Image: 100231A
Video: 100238A

GPS Target Name: CB036-SV3
Easting: 430400.34
Northing: 5407137.45
T= 10:03
Observations: 19.5 m gravels/cobble mix

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: ac Date: 10/4/19
Field Supervisor Initials: NM Date: 10/4

Revised 9/18/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-036

Attempt # 1 Cast Time: 1014 **Water Depth (m):** 20.2

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: CB-036-1 **Estimated Hydrowire angle (degrees):** 0

Easting: 430396.59 **Sampler Penetration (average) (inches):** unknown

Northing: 5407134.26

Sample Type: Physical/Chemical BMI **Cultural Resource Check Completed?** YES NO (NA)

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO unknown
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES (NO)
4. Sample is: Accepted (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) **Added Weights on Sampler (lbs):** 100

Sediment Characteristics

Sediment Type / Texture: NO sediment collected. 2 cobbles fell off during retrieval. **Redox Boundary:**

Presence of debris:

Color: Very hard material — **Biological Structures:**

Stratification: Cobbles w/ some sand on top **Shells:**

Density: gravels ac **Sheen/Odor:**

Presence/Absence silica glass: **Other Notes:**

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:		Time.	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ac Date: 10/4/19 Field Supervisor Initials NM Date: 10/4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-036

Attempt # 2 Cast Time: 1054 Water Depth (m): 20.6

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB036-2-CHEM Estimated Hydrowire angle (degrees): 0

Easting: 430401.75 Sampler Penetration (average) (inches): 4

Northing: 5407138.99

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: cobbles subrounded subrounded fine coarse gravels

Color: var. gravelly cobble w/ sand blackish/brown speckles sand med to coarse sand predominant medium

Stratification: NA

Density: NA

Presence/Absence silica glass: Presence

Redox Boundary: —

Presence of debris: scattered wood twigs/chips + clumps/debris

Biological Structures: —

Shells: —

Sheen/Odor: slight organic odor

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~2~~ 1 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 4.3-2.8 = 1.5 26-1 sand Total Mass of Sediment (kg): 5.8

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 1.3

Mass of Sediment > 3 inches (cobble) (kg): 30

Sample Identification Information

SE Primary Sample ID: CB036-SE-1-100419 Time: 1110

All containers filled with sediment.

		Cross off containers NOT filled
	SEM-AVS	8 oz WMGJ (no headspace)
	Total Metals & TOC	8 oz WMGJ
	Grain Size	8 oz WMGJ
	BEM	16 oz Amber WMGJ
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

	SEM-AVS	8 oz WMGJ (no headspace)
	Total Metals & TOC	8 oz WMGJ
	Grain Size	8 oz WMGJ
	BEM	16 oz Amber WMGJ
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials dr Date: 10/4/19 Field Supervisor Initials 10/4 Date: NM

1 AL

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 3 of 7

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** PB-036

Attempt # 3 Cast Time: 1218 Water Depth (m): 20.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: PB036-3 Estimated Hydrowire angle (degrees): 0

Easting: 430399.56 Sampler Penetration (average) (inches): unknown

Northing: 5407139.50

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? YES NO (NA)

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? YES NO (NA)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO (unknown)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES (NO)
4. Sample is: Accepted (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Dropped sampler a few times on bottom and could not penetrate sediment. The sampler moved off location and was retrieved at 1225. No sample collected.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures: unintentionally

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/4/19 Field Supervisor initials NM Date: 10/4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-036

Attempt # 4 Cast Time: 1240 Water Depth (m): 21.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB036-4-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 430401.24 Sampler Penetration (average) (inches): 4

Northing: 5407138.60

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HOLD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 4 cobbles Redox Boundary: —

Color: same sediment characterization as attempt 2 OR CB036-SE-1-100419 Presence of debris: trace wood debris

Stratification: Biological Structures: —

Density: Shells: —

(Presence)/Absence silica glass: Sheen/Odor: —

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 4,5,6,7,8,9 SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ		*Sediment Volume*
BMI Primary Sample ID:	CB036-BM1-1-100419	Time: 1254	Yellow 5-gallon bucket		1.1 *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket		_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/4/19 Field Supervisor Initials NM Date: 10/4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-036

Attempt # 5 Cast Time: 1317 Water Depth (m): 20.1

GPS Target Parameters Sheave Counter Depth (m): N/A

Name: CB036-5-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 430401.14 Sampler Penetration (average) (inches): 4

Northing: 5407139.44

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 2 cobbles removed same sample composition as attempts 2+4, with scattered woody debris

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris: scattered wood fragments (needles/debris)

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: included and composited	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: with CB036-BM1-1-100419	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/4/19 Field Supervisor Initials NM Date: 10/4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-036

Attempt # 6 Cast Time: 1346 Water Depth (m): 20.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB036-6_BM1 Estimated Hydrowire angle (degrees): 0

Easting: 430400-84 Sampler Penetration (average) (inches): 4

Northing: 5407140.03

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: 6 cobbles removed same sample composition as attempts 2, 4, + 5.

Color:

Stratification:

Density:

(Presence)/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: Included + composited	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: with CB036-BMI-1-100419	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AR Date: 10/4/19 Field Supervisor Initials 10/4 Date: NM

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** Cmha Bend

Anchored? (NO) YES **Location ID:** CB-036

Attempt # 7 Cast Time: 1420 Water Depth (m): 20.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB036-7-BMI Estimated Hydrowire angle (degrees): 0

Easting: 430398.65 Sampler Penetration (average) (inches): 4

Northing: 5407139.22

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Discarded 3 cobbles of ~~Same~~ Similar composition as previous sample - CB036-6-BMI

Color:

Stratification:

Density:

(Presence)/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Included + composited w/ CB036-BMI-1-100419	Time:	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:		Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/4/19 Field Supervisor Initials MM Date: 10/4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB-036

Attempt # 8 Cast Time: 1454 **Water Depth (m):** 20.0

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: CB036-8-BMI **Estimated Hydrowire angle (degrees):** 0

Easting: 430401.61 **Sampler Penetration (average) (inches):** 4

Northing: 5407137.28

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HELD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Similar to previous sample in terms of composition

Color:

Stratification: more sand collected in this sample.

Density:

(Presence)/Absence silica glass: 3 cobbles discarded

Redox Boundary:

Presence of debris: trace wood fragments

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: Included + Composited w/ CB036-BMI-1-100419	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials dc Date: 10/4/19 Field Supervisor Initials NM Date: 10/4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** Cinna Bend

Anchored? (NO) YES **Location ID:** CB-036

Attempt # 9 Cast Time: 1522 Water Depth (m): 20.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB036-9-BM1 Estimated Hydrowire angle (degrees): 0

Easting: 430398.90 Sampler Penetration (average) (inches): 4

Northing: 5407142.28

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected HECD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Very similar sediment composition to attempt #2 - CB036-SE-1-100419

Redox Boundary: 4 cobbles discarded

Presence of debris: 12 large gravels discarded

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

(Presence)/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Included + composited	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	w/ CB036-BMI-1-100419	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CL Date: 10/4/19 Field Supervisor Initials MM Date: 10/4

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10/18/19

Project Number: 60612698
Vessel: Yeh
Vessel Crew: R Trudeau, E Rigby
EPA Observer: L Rakrink, R Tan
Arrival Time: 0825
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Area of Interest: China Bend
Location ID: CB0036
Sampling Crew: B Chadwick, C Pickerell, S. Kammer
Departure Time: 1040
Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): 7
Clouds/Precipitation: Overcast, dry

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Mile:
Boat Traffic none
River Current: (Swift) (Eddie) (Calm) (Ripple)
Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB0036-1-PW
Easting: 430402.56
Northing: 5407139.35
Water Depth (m): 20.9 m
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: CB0036-PW-1-101819 Time: 0949
Duplicate Sample ID: — Time: —
EPA Split Sample ID: — Time: —
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
Analyte and Bottle Type:	
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials SEKK Date: 10/18/19
Field Supervisor Initials SHD Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-037

Attempt # 1 Cast Time: 0900 Water Depth (m): 20.9

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB037-1 Estimated Hydrowire angle (degrees): 0

Easting: 430480.04 Sampler Penetration (average) (inches): most unknown

Northing: 5407140.92

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? YES NO (NA)

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? YES NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? ac (YES) NO Unknown
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: Accepted (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: No sample material collected during deployment. River bottom is very hard despite presence of gravels + some fines in video survey

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ac Date: 10/4/19 Field Supervisor Initials NM Date: 10/4

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-037

Attempt # 2 Cast Time: 0934 **Water Depth (m):** 20.9

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: CB037-2 **Estimated Hydrowire angle (degrees):** 0

Easting: 430475.41 **Sampler Penetration (average) (inches):** unknown

Northing: 5407141.06

Sample Type: (Physical/Chemical) BMI **Cultural Resource Check Completed?** YES NO (NA)

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO (unknown)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES (NO)
4. Sample is: Accepted (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) **Added Weights on Sampler (lbs):** 100

Sediment Characteristics

Sediment Type / Texture: No sample material. Likely not sufficient penetration due to hard sediment.

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: Gravels + some fines observed in video but material was comprised of cemented gravels.

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	*Sediment Volume*	
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*	

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/4/19 Field Supervisor Initials NM Date: 10/4

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Ingalls **Location ID:** CB-038

Vessel Crew: Pete Jenkins, Jeff Schott **Sampling Crew:** Nicky Moody, Andy Cledfelter

C.R. Observer: Anna Sheppherd-Becker **EPA Observer:** Brad Sample

Arrival Time: 1435 **Departure Time:** 1632

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 56 Wind (mph): 1
Clouds/Precipitation: ~~partly~~ mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 722.2 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: negligible

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline next to steep cliff w/ terrace - similar to CB-035

Sampling Information

Sampler Used: Freire Grab

# of Sampling Attempts (Accepted vs. Rejected): ~~Accepted~~ #1, #2 as Rejected

Video Reconnaissance Information

GPS Target Name: CB-038-SV-1
Easting: 430547.56
Northing: 5407139.94
T= ~~1450~~ 1449
Observations: 20.6m. cobble
Image: 144922A

GPS Target Name: CB038-SV-2
Easting: 430536.55
Northing: 5407134.41
T=1450
Observations: 20.6m. ~~cobble~~ cobble
Video: 145025A
Image: 145050A

GPS Target Name: CB038-SV-3
Easting: 430522.85
Northing: 5407128.74
T=1451
Observations: 20.6m cobble
Image: 145104A
Video: 145111A

GPS Target Name: CB038-SV-4
Easting: 430539.32
Northing: 5407158.11
T=1453
Observations: 20.6m gravel
Image: 145317A
Video: 145322A
Image: 145343A

Sample Lead Initials AC Date: 10/3/19 Field Supervisor Initials NM Date: 10/3/19

Revised 9/18/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Ingalls **Location ID:** CB-038

Vessel Crew: Pete Jenkins, Jeff Schott **Sampling Crew:** Nicky Moody, Andy Cledfelter

C.R. Observer: Anna Sheppherd-Becker **EPA Observer:** Brad Sample

Arrival Time: 1435 **Departure Time:** 1632

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 56 Wind (mph): 1
Clouds/Precipitation: ~~partly~~ mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 722.2 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: negligible

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
rocky shoreline next to steep cliff w/ terrace - similar to CB-035

Sampling Information

Sampler Used: Freire Grab

# of Sampling Attempts (Accepted vs. Rejected): ~~Accepted~~ #1, #2 as Rejected

Video Reconnaissance Information

GPS Target Name: CB-038-SV-1
Easting: 430547.56
Northing: 5407139.94
T= ~~1450~~ 1449
Observations: 20.6m. cobble
Image: 144922A

GPS Target Name: CB038-SV-2
Easting: 430536.55
Northing: 5407134.41
T=1450
Observations: 20.6m. ~~cobble~~ cobble
Video: 145025A
Image: 145050A

GPS Target Name: CB038-SV-3
Easting: 430522.85
Northing: 5407128.74
T=1451
Observations: 20.6m cobble
Image: 145104A
Video: 145111A

GPS Target Name: CB038-SV-4
Easting: 430539.32
Northing: 5407158.11
T=1453
Observations: 20.6m gravel
Image: 145317A
Video: 145322A
Image: 145343A

Sample Lead Initials AC Date: 10/3/19 Field Supervisor Initials NM Date: 10/3/19

Revised 9/18/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-038

Attempt # 1 Cast Time: 1513 **Water Depth (m):** 21.2

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: CB038-1 **Estimated Hydrowire angle (degrees):** 0

Easting: 430539.32 **Sampler Penetration (average) (inches):** 4

Northing: 5407158.17

Sample Type: Physical/Chemical (BMI) **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was ~~not~~ lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? ~~YES~~ NO
4. Sample is: ~~Accepted~~ (Rejected) HOLD

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) **Added Weights on Sampler (lbs):** 100

Sediment Characteristics

Sediment Type / Texture: fine and coarse gravels ~~fine~~ ~~some~~ sand - fine to coarse 7% sand

Color: variable - brown/black sand

Stratification: homogeneous

Density: med. dense ~~based on~~ ac

Presence/Absence silica glass: Presence

Redox Boundary: —

Presence of debris: no

Biological Structures: no

Shells: no

Sheen/Odor: no

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ		*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/3/19 Field Supervisor Initials NM Date: 10/3

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB-038

Attempt # 2 Cast Time: 1610 Water Depth (m): 22.20

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB038-2 Estimated Hydrowire angle (degrees): 0

Easting: 430539.90 Sampler Penetration (average) (inches): 4

Northing: 5207161.90

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was not lost during retrieval (i.e, no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES (NO)
4. Sample is: Accepted (Rejected)

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Sediment Composition same as attempt #1 about 10% less than 2mm in size sample

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials AL Date: 10/3/19 Field Supervisor Initials NM Date: 10/3

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB039
Vessel Crew: Pete Jenkins, Jeff Schaf
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1548
Departure Time: 1609

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: Clear; dry, cold

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare 11-21-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): #1 rejected (no recovery) #2
2 attempts, 2 rejected - return to 11

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-10-19
Field Supervisor Initials JLS Date: 10.10.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 1 Cast Time: 1553 **Water Depth (m):** 30.30

GPS Target Parameters **Sheave Counter Depth (m):** n/a

Name: CB039-1-CHEM **Estimated Hydrowire angle (degrees):** n/a

Easting: 430645.53 **Sampler Penetration (inches):** <4

Northing: 5407203.54 **Sample Interval (0 to X inches bss):** 0-6

Sample Type: Physical/Chemical/Bioassay BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Rejected

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

JH

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Gravel & some sand @ bottom MM 10-10-19

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

NO accepted grabs today. JH

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: JH Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 2

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 2 Cast Time: 1557 **Water Depth (m):** 20.3

GPS Target Parameters **Sheave Counter Depth (m):** n/a

Name: CB039-2-CHEM **Estimated Hydrowire angle (degrees):** n/a

Easting: 420644.85 **Sampler Penetration (inches):** < 4

Northing: 5407196.72 **Sample Interval (0 to X inches bss):** 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor: ZH

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ		
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials ZH Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB039
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: ~~0835~~ 0845 (RH 10-11-19)
Departure Time: 1102
River Stage:
Water Surface Elev. (ft): ^1248
Water Surface Elevation Source: USGS
Weather Conditions Upon Arrival:
Temp (°F): 33 Wind (mph): NE 2 mph
Clouds/Precipitation: Clear, dry, cold

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 122
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
Return (Attempts 1+2, 10-10-19)
Attempts Accepted: #4, 7 used for SE;
Attempts Rejected: #3, 5, 6 (for SE); #8, 9

Video Reconnaissance Information

GPS Target Name: CB039-SV-1
Easting: 430637.79
Northing: 5407186.84
Observations: Cobble
IMG# 085500A

GPS Target Name: CB039-SV-2
Easting: 430646.67
Northing: 5407186.79
Observations: Cobble
IMG# 085751A

GPS Target Name: CB039-SV-3
Easting: 430619.21
Northing: 5407165.37
Observations: Cobble, some gravels
Water depth 20.40
IMG# 094551A

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: ME Date: 10.11.19
Field Supervisor Initials: MS Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** ChinaBend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 3 Cast Time: 0900 **Water Depth (m):** 20.20

GPS Target Parameters **Sheave Counter Depth (m):** na

Name: ~~430649.75~~ CB039-3-CHEM **Estimated Hydrowire angle (degrees):** na

Easting: 430649.75 **Sampler Penetration (inches):** 1

Northing: 5407206.66 **Sample Interval (0 to X inches bss):** 0-1

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Added Weights on Sampler (lbs):** Total 600 lbs

Sediment Characteristics

Sediment Type / Texture: ~~gravelly sand~~ (LH 10-11-19) sandy gravel / gravelly sand

Color:

Stratification:

Density: LH

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: matched target mixed fines

Rejected → < min sample penetration

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): 9.5 Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Ch Pg. 5

Sample Identification Information

SE Primary Sample ID: _____	Time: _____		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-11-19 Field Supervisor Initials JLS Date: 10-11-19

On Pg. 5

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 4 Cast Time: 0911 Water Depth (m): 19.8

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB039-4-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 430638.98 Sampler Penetration (inches): 4

Northing: 5407206.63 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Total 160lbs

Sediment Characteristics

Sediment Type / Texture: gravelly m-c SAND, gravel is sr-r f-c, some r-cobble

Color: 10YR2/1

Stratification: homogeneous

Density: medium dense

Presence/Absence silica glass: yes

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: matched target facies mixed fines

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: 4

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): on pg. 5 Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

on pg. 5

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-11-19 Field Supervisor Initials MLS Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 5 Cast Time: 0927 Water Depth (m): 19.8

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-5-CHEM Estimated Hydrowire angle (degrees): na

Easting: 430639.95 Sampler Penetration (inches): <10

Northing: 5407207.35 Sample Interval (0 to X inches bss): 0 - < 1

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Total 1600 lbs

Sediment Characteristics

Sediment Type / Texture: M-C SAND

Color:

Stratification:

Density:

Presence/Absence silica glass:

Rejected - < min penetration

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes: grab recovered only about 1 cup of SAND

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: On pg 5 SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:		Time:		*Cross off containers NOT filled*	
			SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ gallons
				1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:		Time:			
			SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ gallons

On pg 5

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-11-19 Field Supervisor Initials JLO Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 6 Cast Time: 0934 Water Depth (m): 19.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-6-CHEM Estimated Hydrowire angle (degrees): na

Easting: 430641.84 Sampler Penetration (inches): 1

Northing: 5407207.86 Sample Interval (0 to X inches bss): (WA) DI 0-1

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Total 1600 lbs

Sediment Characteristics

Sediment Type / Texture: M-C SAND Redox Boundary:

Color: Rejected <min penetration. Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes: matched target facies mixed fines

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: On pg. 5

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

On pg. 5

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	____ gallons
			1 x 2.5 gallon white bucket	____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	____ gallons

Cross off containers NOT filled

sediment bucket volumes

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LLS Date: 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 7 Cast Time: 1005 Water Depth (m): 19.8

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB039-7-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 430659.15 Sampler Penetration (inches): 4

Northing: 5407208.70 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Total 1400lbs

Sediment Characteristics

Sediment Type / Texture: gravelly m-c SAND, gravel is sr-r, foc; some r-cobble. Redox Boundary: none

Presence of debris: none

Color: 10yr 2/1 Biological Structures: none

Stratification: homogeneous Shells: 1 shell

Density: medium dense Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes: matches target facies - mixed fines

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 4, 7(SE); SEM-AVS Container Collected from Attempt #: 4

Sieving Information: 3.4 + 1.3(AVS) = 9.7

Sieved with 5 mm Sieve? (Yes) No (487) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 11.2 - 2.8(tub) = ~~8.4~~ (44.2 lbs) (SH 10-11-19) Total Mass of Sediment (kg): ~~19~~ 20.3 (SH 10-11-19)

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 8.2 - 0.3(bowl) = 7.9

Mass of Sediment > 3 inches (cobble) (kg): 3.7

Sample Identification Information

SE Primary Sample ID: CB039-SE-1-101119 Time: 0911

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	~~1 x 5 gallon white bucket~~ ~~gallons~~
	1 x 2.5 gallon white bucket 1.22 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 101119 Field Supervisor Initials MS Date: 10.11.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 8 Cast Time: 1044 Water Depth (m): 19.8

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-8-BM1 Estimated Hydrowire angle (degrees): na

Easting: 430659.11 Sampler Penetration (inches): < 1

Northing: 5407210.26 Sample Interval (0 to X inches bss): 0 – <1

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	~~NO~~
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Total 6000 lbs

Sediment Characteristics

Sediment Type / Texture: Rejected Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: BM1

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

On Pg. 5

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MP Date: 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB039

Attempt # 9 Cast Time: 1051 Water Depth (m): 19.4

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-9-BMI Estimated Hydrowire angle (degrees): na

Easting: 430653.49 Sampler Penetration (inches): 1

Northing: 5407203.98 Sample Interval (0 to X inches bss): 0-1

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 600 lbs total

Sediment Characteristics

Sediment Type / Texture: Rejected Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: on pg 5

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time: on pg 8

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket ____ gallons
	1 x 2.5 gallon white bucket ____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket ____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LP Date: 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: ~~CB036~~ CB039 J.A.P 11-21-19
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Michael McCoog, Linda Howard
C.R. Observer: Michelle. Stegner
EPA Observer: Elle Ahzinger
Arrival Time: 0848
Departure Time: 1020

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 33 Wind (mph): ENE 2
Clouds/Precipitation: Clear, dry, cold

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Rowered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
RR

Sampling Information

Sampler Used: Hamon (7 attempts, 1 accepted) # of Sampling Attempts (Accepted vs. Rejected):
Return to collect BMI - Total of 16 attempts, #16 Collected for BMI

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-12-19 Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 10 Cast Time: 0856 Water Depth (m): 20.80

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-10 Estimated Hydrowire angle (degrees): na

Easting: 430654.29 Sampler Penetration (inches): 2

Northing: 5407211.15 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Rejected < 2" recovery

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials KH Date: 10-12-19 Field Supervisor Initials JLC Date 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 11 Cast Time: 0902 Water Depth (m): 20.80

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-11 Estimated Hydrowire angle (degrees): na

Easting: 430654.82 Sampler Penetration (inches): 2.5

Northing: 5407210.90 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: M-C SAND, F-gravel Redox Boundary:

Presence of debris: Rejected due to poor recovery ~ 2.5"

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: KH Date: 10-12-19 Field Supervisor Initials: JLC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 12 Cast Time: 0911 Water Depth (m): 20.8

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-12 Estimated Hydrowire angle (degrees): na

Easting: 430654.35 Sampler Penetration (inches): 1.5

Northing: 5407210.31 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected, poor recovery ~1.5 in

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-12-19 Field Supervisor Initials: MC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 13 Cast Time: 0918 Water Depth (m): 20.8

GPS Target Parameters Sheave Counter Depth (m):

Name CB039-13 Estimated Hydrowire angle (degrees):

Easting: 430655.80 Sampler Penetration (inches): < 1

Northing: 5407208.32 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) achieved?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Rejected, poor recovery < 1"

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials LH Date 10-12-19 Field Supervisor Initials JLC Date: 10-12-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 14 Cast Time: 0927 Water Depth (m): 19.7

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-14 ~~-BMI~~ Estimated Hydrowire angle (degrees): na

Easting: 4301656.83 Sampler Penetration (inches): 2

Northing: 5407203.45 Sample Interval (0 to X inches bss): 0-2

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) **
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: M-SAND and F-mGRAVEL trace r-cobble

Color: 10yr 2/1

Stratification: homogeneous

Density: Medium dense

Presence/Absence silica glass: yes

Redox Boundary: none

Presence of debris: non

Biological Structures: none

Shells: non

Sheen/Odor:

Other Notes: ~~Psc~~ less than min. penetration, but will hold and use if further attempts are also less than min.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 14, 16 SEM-AVS Container Collected from Attempt #:

Sieving Information: BMI

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

~~Attempts # 14 + 16~~

* ** Using #16 which has enough for > 1 gal.

SE Duplicate Sample ID: Time:

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: ~~CB039-BMI-1-101219~~ Time: 0927 ~~Yellow 5-gallon bucket~~ ~~1.1~~ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials ~~SH~~ Date 10-12-19 Field Supervisor Initials JLC Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 15 Cast Time: 0946 Water Depth (m): 19.80

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-18 Estimated Hydrowire angle (degrees): na

Easting: 430659.55 Sampler Penetration (inches): < 1"

Northing: 5407203.88 Sample Interval (0 to X inches bss): na

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

D to 101219

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected, Poor recovery < 1"

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in ~~Sample if Composite of Multiple Attempts~~: ~~11,16~~ SEM-AVS Container Collected from Attempt #:

Sieving Information: BMI

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	~~2 x 8 oz~~ WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials ~~LH~~ Date: 10-12-19 Field Supervisor Initials MP Date: 10.12.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-12-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB039

Attempt # 16 Cast Time: 0952 Water Depth (m): 19.58

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB039-16-BMT Estimated Hydrowire angle (degrees): na

Easting: 430685963 (@ H10-12-19) Sampler Penetration (inches): 8 3

Northing: 5407206.50 Sample Interval (0 to X inches bss): 0-2

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) **
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted) **	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: M-F SAND and f-m GRAVEL, trace r-gravel

Redox Boundary: none

Presence of debris: some twigs

Color: 10yr 2/1

Biological Structures: non

Stratification: homogeneous

Shells: none

Density: medium dense

Sheen/Odor: none

Presence/Absence silica glass: yes

Other Notes: ** accepted following contigency protocol in FSP for multiple unsuccessful attempts.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: na	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: na	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: na	Time:		8 oz WMGJ	
EPA TX Split Sample ID: na	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: CB039-BM1-1-101219	Time: 0952		Yellow 5-gallon bucket	1.1 *gallons*
BMI Duplicate Sample ID: na	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: KH Date: 10-12 Field Supervisor Initials: MC Date: 10.12.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeti **Location ID:** CB039

Vessel Crew: E. Rigby R. Trudeau **Sampling Crew:** S. Kintner, B. Chadwick C. Pickrell

EPA Observer: L. Ratcliff

Arrival Time: 0900 **Departure Time:** 1114

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 20 Wind (mph): 0
Clouds/Precipitation: cloudy, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
none

GPS Target Parameters and Water Depth

GPS Name: CB039-1-PW Water Depth (m): 19.3

Easting: 430645.66

Northing: 5407204.21 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: CB039-PW-1-101419 Time: 1011

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: Analyte and Bottle Type:

EPA Split Sample ID: — Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SCHK Date: 10/14/19 Field Supervisor Initials JAP Date: 1-17-20

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/18/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB040 (ALT for SD)
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCabe, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier
Arrival Time: 1120
Departure Time: 1550

River Stage:
Water Surface Elev. (ft): 1298.66
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 3
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 72.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0
Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Freeze Grab
~~7~~ attempts, ~~7~~ accepted
# of Sampling Attempts (Accepted vs. Rejected): (attempts 1-4 chem; #5,6,7 BMI)

Video Reconnaissance Information

GPS Target Name: CB040-SV-1
Easting: 430626.17
Northing: 5407242.74
21.5
Observations:

GPS Target Name: CB040-SV-2
Easting: 430612.91
Northing: 5407232.44
D=22.4
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: MS Date: 10-18-19
Field Supervisor Initials: MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB040

Attempt # 1 Cast Time: 1204 Water Depth (m): 22.8

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB040-1-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 430617.80 Sampler Penetration (average) (inches): 5

Northing: 5407248.02

Sample Type: (Physical/Chemical) BMI All for CB050 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: fine to coarse GRAVEL rounded to subrounded, variable (grs); little sand/medium to fine, trace silt

Color: 10YR2/1 (sand)

Stratification: homogenous

Density: medium dense

Presence/Absence silica glass: present

Redox Boundary: none

Presence of debris: trace leaves

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: None

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2, 3, 4 SEM-AVS Container Collected from Attempt #: ~~1,2,3~~ SD 1,2 500g sample

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 2.3 Total Mass of Sediment (kg): 8.2 + AVS = 8.7 total

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 3.2

Mass of Sediment > 3 inches (cobble) (kg): 2.7

Sample Identification Information

SE Primary Sample ID: CB040-SE1-101819 Time: 1204

	Cross off containers NOT filled
SEM-AVS	✓ 8 oz WMGJ (no headspace)
Total Metals & TOC	✓ 8 oz WMGJ
Grain Size	✓ 8 oz WMGJ
BEM	✓ 16 oz Amber WMGJ
Organics	✓ 2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: CB040-BMI-1-101819 Time: 1415 Yellow 5-gallon bucket 1.1 *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials les Date: 10-18-19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 7
Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB040

Attempt # 2 Cast Time: 1235 Water Depth (m): 22.8

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB040-2-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 430612.38 Sampler Penetration (average) (inches): 4

Northing: 5407247.87

Sample Type: (Physical/Chemical) BMI Alt for CB050 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: cobbly fine to med ~~sand~~ SAND, trace silt ↑ rounded to subrounded cobble mm 10-18-19

Color: 10YR 2/1

Stratification: homogenous

Density: med. dense

Presence/Absence silica glass: present

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: see attempt #1 SAD SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg) Total Mass of Sediment (kg):

Mass of Sediment ~~5 mm~~ to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled
SE Primary Sample ID: See attempt #1 SAD	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10-18-19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB040

Attempt # 3 Cast Time: 1309 Water Depth (m): ~~1309~~ 22.6

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB040-3-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 430620.87 Sampler Penetration (average) (inches): 4

Northing: 5407251.42

Sample Type: (Physical/Chemical) BMI Alt for CB050 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: gravelly SAND, fine to med sand, rounded to subrounded <gravel, trace silt mm 10-18-19

Color: 10YR 2/1

Stratification: homogenous

Density: med dense

Presence/Absence silica glass: present

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: see attempt 1 SEM-AVS Container Collected from ~~Attempt #~~:

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: see attempt 1	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	Sediment Volume
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	____ gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LES Date: 10.18.19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 4 of 7
Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB040

Attempt # 4 Cast Time: 1351 Water Depth (m): 22.4

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB040-4-Chem Estimated Hydrowire angle (degrees): NA

Easting: 430619.51 Sampler Penetration (average) (inches): 4

Northing: 5407250.25

Sample Type: (Physical/Chemical) BMI Alt for CB050 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as attempt 3

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See Attempt 1 SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: See attempt 1	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date 10.18.19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB040

Attempt # 5 Cast Time: 1415 Water Depth (m): 22.8

GPS Target Parameters Sheave Counter Depth (m): NA

Name: ~~CB05~~ CB040-5-BMI Estimated Hydrowire angle (degrees): NA

Easting: 430615.49 Sampler Penetration (average) (inches): 5

Northing: 5407247.35

Sample Type: Physical/Chemical (BMI) All for CB050 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: ~~Same as~~ Gravelly fine to med SAND, few cobbles (rounded) mm 10-18-19

Color: 10YR 2/1

Stratification: homogenized

Density: med. dense

Presence/Absence silica glass: present

Redox Boundary: none

Presence of debris: none

Biological Structures none

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 5, 6, SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? NA Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:		*Cross off containers NOT filled*	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:			
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: See attempt 1 CB040-BMI-1-101819	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: See att. 1	Time: 1415		Yellow 5 gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5 gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials MS Date 10-18-19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB040

Attempt # 6 Cast Time: 1447 Water Depth (m): 22.4

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB040-6-BMI Estimated Hydrowire angle (degrees): NA

Easting: 430616.25 Sampler Penetration (average) (inches): 5

Northing: 5407250.56

Sample Type: Physical/Chemical (BMI) A/H for CB050 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as attempt 5

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: see attempt 5 SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: see attempt 1 Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.18.19 Field Supervisor Initials MM Date: 10-18-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 7
Date 10-18-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB040

Attempt # 7 Cast Time: 1523 Water Depth (m): 22.4

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB040-7-BMI Estimated Hydrowire angle (degrees): NA

Easting: 430611.47 Sampler Penetration (average) (inches): 5

Northing: 5407246.48

Sample Type: Physical/Chemical (BMI) AH for CB050 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer ~~w/o Hammer~~ Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as attempt 5

Redox Boundary:

Presence of ~~debris~~:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See attempt 5 SEM-AVS ~~Container~~ Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 ~~mm~~ to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
~~Total Metals & TOC~~	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: See attempt 1 Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.18.19 Field Supervisor Initials MM Date: 10-18-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-21-19

Project Number: 60612698
Area of Interest: China Bend
Vessel: RV Yeti
Location ID: CB040
Vessel Crew: R. Trudeau, E. Rigby
Sampling Crew: S. Holmes, B. Chadwick, J. Guerrero
EPA Observer: Lisa Raterink
Arrival Time: 0815
Departure Time: 1030
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 42 Wind (mph): 1-3
Clouds/Precipitation: Overcast
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB040-1
Water Depth (m): 2.3
Easting: 430618.67
Northing: 5407248.57
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Observations:
Easting:
Northing:

GPS Name:
Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: CB040-PW-1-102119 Time: 0947

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time:
Analyte and Bottle Type:
EPA Split Sample ID: Time:
~~1B. Dissolved Metals~~ With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-21-19
Field Supervisor Initials DH Date: 10/21/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-21-19

Project Number: 60612698 **Area of Interest:** Chiney Bend

Vessel: RV Yeti **Location ID:** CB041

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Holmes, B. Chadwick, J. Guerrero

EPA Observer: L Reterink

Arrival Time: 1052 **Departure Time:** 1310

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 3
Clouds/Precipitation: Light rain, overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Rock outcrop on northern bank

GPS Target Parameters and Water Depth

GPS Name: CB041-1-PW Water Depth (m): 18.2

Easting: 430770.67

Northing: 5407130.11 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations

Easting:

Northing:

Sample Identification Information

Primary Sample ID: CB041-PW-1-102119 Time: 1203

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. ~~Sulfide~~ — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: CB041-PW-3-102119 Time: 1203 1B Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-21-19 Field Supervisor Initials DH Date: 10/21/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: ~~CB030~~ (US) CB042
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: NA
Arrival Time: 1230
Departure Time: 1250

River Stage:
Water Surface Elev. (ft): 1297.59
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 51 Wind (mph): 2
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Incorrect facies

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): 1

Video Reconnaissance Information

GPS Target Name: CB042-SV-1
Easting: 430686.51
Northing: 5407214.78
Observations: Incorrect facies

GPS Target Name: CB042-SV-2
Easting: ~~430690.43~~ 430684.37
Northing: ~~5407184.46~~ 5407211.91
Observations: incorrect facies

GPS Target Name: CB042-SV-3
Easting: 430690.43
Northing: 5407184.46
Observations: incorrect facies

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-16-19
Field Supervisor Initials LL Date: 10-16-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-16-19

Project Number: 60612698
Area of Interest: China Bend

Anchored? NO YES
Location ID: CB-042

Attempt # 1 Cast Time: 1237
Water Depth (m): 19.8

GPS Target Parameters
Sheave Counter Depth (m): NA

Name: CB-042-1
Estimated Hydrowire angle (degrees): NA

Easting: 430686.51
Sampler Penetration (inches): 4

Northing: 5407215.03
Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is: wrong strata	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Gravel fine to coarse, subrounded to rounded, little sand
Redox Boundary: None
Presence of debris: none
Color: varied
Biological Structures: trace sticks, seaweed
Stratification: none
Shells: none
Density: medium dense
Sheen/Odor: none
Presence/Absence silica glass: present
Other Notes: none, Alt for CB-008

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container ~~Collected from Attempt #~~: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~
Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19
Field Supervisor Initials JES Date: 10.16.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-21-19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: RV Yeti **Location ID:** CB043

Vessel Crew: R. Trudeau, E. Rigsby **Sampling Crew:** S. Holmes, B. Chadwick, J. Guerrero

EPA Observer: L. Ratelink

Arrival Time: 1315 ~~Ratelink~~ SH **Departure Time:** 1540

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 2
Clouds/Precipitation: Overcast, light rain

Trident Sampler Type: Push Pole Vibraframe ~~Driveframe~~

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB043-1-PW Water Depth (m): 19.4

Easting: 430661.04

Northing: 5407261.39 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: CB043-PW-1-102119 Time: 1429

Duplicate Sample ID: CB043-PW-2-102119 Time: 1500

EPA Split Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: Sulfate/Cl/Alk in 125 mL Poly

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials SH Date: 10-21-19 Field Supervisor Initials DH Date: 10/21/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB044
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier
Arrival Time: 1128
Departure Time: 1255

River Stage:
Water Surface Elev. (ft): 1247.97
Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival:
Temp (°F): 47 Wind (mph): NE 3 mph
Clouds/Precipitation: Overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 721.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): #1 rejected
3 attempts, 2 accepted
#2 + 3 accepted

Video Reconnaissance Information

GPS Target Name: CB044 - SV-1
Easting: ~~430632.48~~ 430625.44
Northing: ~~5407339.75~~ 5407341.06
Observations: incorrect stratum (gravel)

GPS Target Name: CB044 - SV-2
Easting: 430632.48
Northing: 5407339.75
Observations: " incorrect stratum (gravel)

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: MC Date: 10.15.19
Field Supervisor Initials: MM Date: 10-15-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 3

Date 101519

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: CBØ44

Attempt # 1 Cast Time: 1137

Water Depth (m): 10.2

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: CBØ44-1

Estimated Hydrowire angle (degrees): NA

Easting: 430632.48

Sampler Penetration (inches): NA

Northing: 5407339.75

Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: gravelly SAND

Redox Boundary: Rejected because

Presence of debris: wrong stratum and

Color:

Biological Structures: gravel in jaws of

Stratification:

Shells: sampler

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: Not sampled

Sieved with 5 mm Sieve? Yes / No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

not sampled

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JLC Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 101519

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CBØ44

Attempt # 2 Cast Time: 1149 Water Depth (m): ~~10.5~~ SHD 12.6

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CBØ44-2-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 430667.03 Sampler Penetration (inches): ~~7.5~~ SHD 6.0

Northing: 5407348.33 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: fine SAND, little silt, trace fine rounded gravel

Color: 5Y 3/1

Stratification: ~~5Y 3/1~~ SHD pockets of light brown sand (10YR 3/2)

Density: loose

Presence/Absence silica glass: trace pockets, 1cm diameter

Redox Boundary: 4 cm 10YR 3/2 fine SAND few silt

Presence of debris: SHD ~~none~~ trace pockets of leaves, fine needles, disintegrated wood

Biological Structures: none

Shells: trace

Sheen/Odor: None

Other Notes: none

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): not measured Total Mass of Sediment (kg): not measured

Mass of Sediment 5 mm to 3 inches (gravel) (kg): < 1 kg, 3 pieces

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

SE Primary Sample ID: CB044-SE-101519 Time: 1149

	Cross off containers NOT filled	
SEM-AVS	✓ 8 oz WMGJ (no headspace)	
Total Metals & TOC	✓ 8 oz WMGJ	
Grain Size	✓ 8 oz WMGJ	
BEM	✓ 16 oz Amber WMGJ	
Organics	✓ 2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	✓ 1 x 5 gallon white bucket	5.0 gallons
	✓ 1 x 2.5 gallon white bucket	1.84 gallons

SE Duplicate Sample ID: _____ Time: _____

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: CB044-BMI-1-101519 Time: 1220 Yellow 5-gallon bucket 3.4 gallons

BMI Duplicate Sample ID: * Collected full van Veen, rather than half Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JLS Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB044

Attempt # 3 Cast Time: 1228 Water Depth (m): 12.6

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB044-3-BMI Estimated Hydrowire angle (degrees): NA

Easting: 430665.16 Sampler Penetration (inches): 6

Northing: 5407348.04 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: ~~As~~ attempt 2

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary: ~~then~~ As Attempt 2

Presence of debris: except trace

Biological Structures: snail

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: See attempt 2 Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JLC Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeti **Location ID:** CB044

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Kintner, B. Chadwick, C. Pickrell

EPA Observer: L. Ratterink

Arrival Time: 1238 **Departure Time:** 1441

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 53 Wind (mph): 0
Clouds/Precipitation: overcast, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (*Mud (M)*) *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Ingaus nearby; no other traffic

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Win 1-2 yards of shore.
↑ anchored

GPS Target Parameters and Water Depth

GPS Name: CB044-1-DW Water Depth (m): 12.4

Easting: 430000.53

Northing: 5407349.12 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:
Easting: _____
Northing: _____

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: CB044-PW-1-101619 Time: 1350

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: — Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SKK Date: 10/16/19 Field Supervisor Initials AU Date: 10/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB046
Vessel Crew: Pete Jenkins, Seff Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1030
Departure Time: 1500

River Stage:
Water Surface Elev. (ft): 1298.37
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 6
Clouds/Precipitation: Partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No) – Some vegetation on cable of Attempt #

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep Sloped shoreline to Southwest, China Bend boat launch NE east shoreline

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected): Accepted = 1,2,3,4,5
2 video, 5 attempts all accepted. SE from Attempts #1, #2
BME from Attempts #3, #4, #5

Video Reconnaissance Information

GPS Target Name: CB046 - SV-1
Easting: 430797.30
Northing: 5407335.13
18.2
Observations: Cobbles

GPS Target Name: SV-2
Easting: 430799105.05
Northing: 5407138.27
18.2
Observations: Sand and cobbles - attempt #1 adjacent
Time = 10:48

GPS Target Name: ~~SV-3~~ MS
Easting:
Northing:
Observations:

GPS Target Name: ~~SV-4~~ MS
Easting:
Northing:
Observations:

Sample Lead Initials 10-8-19 Date: MM
Field Supervisor Initials 10.8.19 Date: MS

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-8-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO (YES) **Location ID:** CB046

Attempt # 1 Cast Time: 1048 **Water Depth (m):** 18 17.9

GPS Target Parameters 12-CHEM (LH 100819) **Sheave Counter Depth (m):** n/a

Name: LB046-SE-1-100819 **Estimated Hydrowire angle (degrees):** n/a

Easting: 430804.35 **Sampler Penetration (average) (inches):** n/a

Northing: 5467316.64

Sample Type: (Physical/Chemical) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab) w/ Hammer (w/o Hammer) **Added Weights on Sampler (lbs):**

Sediment Characteristics

Sediment Type / Texture: MCS / medium Sand w/ trace fine rounded cobble <4" diam

Color: 10YR 2/1

Stratification: homogeneous

Density: na

Presence/Absence silica glass: yes

Redox Boundary: none

Presence of debris: small sticks

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 4.4 Total Mass of Sediment (kg): 9.2

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0.1

Mass of Sediment > 3 inches (cobble) (kg): ~~0.1~~ (LH 100819) 4.7

Sample Identification Information

SE Primary Sample ID: CB046-SE-1-100819 Time: 1048

	Cross off containers NOT filled
SEM-AVS	~~8 oz WMGJ (no headspace)~~
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	~~16 oz Amber WMGJ~~
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

(LH 100819) (did collect)

SE Duplicate Sample ID: n/a Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: ~~CB046-DUP1-100819~~ Time: ~~1305~~ MM 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: CB046-BMI-1-100819 Time: 1305 Yellow 5-gallon bucket 1.35 gallons

BMI Duplicate Sample ID: n/a Time: 1048 (LH 100819) Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

* using time of first sample collected

Sample Lead Initials MM Date: 10-8-19 Field Supervisor Initials MS Date: 10/8/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-08-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO (YES) **Location ID:** CB046

Attempt # 2 Cast Time: 1149 Water Depth (m): 17.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB046-2-CHEM Estimated Hydrowire angle (degrees): na

Easting: 430799.71 Sampler Penetration (average) (inches): na

Northing: 5407319.70

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO) n
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: ~~Accepted~~ Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) (w/o Hammer) Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: MCS, medium ~~Sand~~ SAND (um 10-8-19) Redox Boundary: none

^cobbly, Subrounded to rounded cobbles, travel rounded gravel

Color: 10YR 2/1 Presence of debris: small twigs

Stratification: homogenous Biological Structures: ~~none~~ small (JH 10/8/19)

Density: na Shells: none

Presence/Absence silica glass: yes Sheen/Odor: none

Other Notes: Lost 1 football-size cobble during retrieval

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 4.4 Total Mass of Sediment (kg): 9.2

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0.1

Mass of Sediment > 3 inches (cobble) (kg): 4.7

Sample Identification Information

SE Primary Sample ID: CB046-SE-1-100819 Time: 1048

SE Duplicate Sample ID: n/a Time:

EPA SE Split Sample ID: ~~CB046-BMI-1-100819~~ Time: ~~1308~~

BMI Primary Sample ID: CB046-BMI-1-100819 Time: ~~1308~~ 1048

BMI Duplicate Sample ID: n/a Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

	SE Primary	SE Duplicate	EPA SE Split	BMI Primary	BMI Duplicate
SEM-AVS	8 oz WMGJ (no headspace)	8 oz WMGJ (no headspace)			
Total Metals & TOC	8 oz WMGJ	8 oz WMGJ			
Grain Size	8 oz WMGJ	8 oz WMGJ			
BEM	16 oz Amber WMGJ	16 oz Amber WMGJ			
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	2 x 8 oz WMGJ (3/4 full except in Reference Area)			
			8 oz WMGJ	Yellow 5-gallon bucket	Yellow 5-gallon bucket
Sediment Volume				1.35 gallons	gallons

Sample Lead Initials MM Date: 10-8-19 Field Supervisor Initials MS Date: 10.8.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.08.19

Project Number: 60612698

Anchored? NO (YES)

Attempt # 3 Cast Time: 1308

GPS Target Parameters

Name: CB046-3-BMI

Easting: 430749.40

Northing: 5407320.13

Sample Type: Physical/Chemical (BMI)

Area of Interest: ChinaBend

Location ID: CB046

Water Depth (m): 17.5

Sheave Counter Depth (m): na

Estimated Hydrowire angle (degrees): na

Sampler Penetration (average) (inches): na

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) (w/o Hammer)

Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: Same as attempt 2

Color: 10 yr 2/1

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary: none

Presence of debris: twigs and pine needles

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 & 3

SEM-AVS Container Collected from Attempt #: na

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Lab: na

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: CB046-SE-1-100819 Time: 1048

SE Duplicate Sample ID: n/a Time:

EPA SE Split Sample ID: n/a

BMI Primary Sample ID: CB046-BMI-1-100819 Time: ~~1308~~

BMI Duplicate Sample ID: n/a Time 1044

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

		Sediment Volume
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
8 oz WMGJ		
Yellow 5-gallon bucket	1.35 gallons	
Yellow 5-gallon bucket	gallons	

using time of 1st grab

Sample Lead Initials MM Date: 10-8-19

Field Supervisor Initials MS Date: 10-8-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-8-19

Project Number: 60612698 — **Area of Interest:** China Bend

Anchored? NO (YES) — **Location ID:** CB046

Attempt # 4 — Cast Time: 1347 — Water Depth (m): 17.8

GPS Target Parameters — Sheave Counter Depth (m): na

Name: CB046-4-BMI — Estimated Hydrowire angle (degrees): na

Easting: 436794.23 — Sampler Penetration (average) (inches): na

Northing: 5407319.61

Sample Type: Physical/Chemical (BMI) — Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab) w/ Hammer (w/o Hammer) — Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: medium SAND, little rounded gravel (LITHOSIC) — Redox Boundary: none

Color: 10yr 2/1 — Presence of debris: pine needles

Biological Structures: none

Stratification: same as attempt 2 — Shells: none

Density: — Sheen/Odor: none

Presence/Absence silica glass: — Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1,3 — SEM-AVS Container Collected from Attempt #: na

Sieving Information:

Sieved with 5 mm Sieve? Yes No — Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): na — Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: CB046-SE-1-100819 Time: 1048

SE Duplicate Sample ID: n/a Time:

EPA SE Split Sample ID: n/a Time:

BMI Primary Sample ID: CB046-BMI-1-100819 Time: ~~1347~~ 1048

BMI Duplicate Sample ID: n/a Time: ~~1304~~ 1048

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SE Primary Sample ID: CB046-SE-1-100819 Time: 1048	SEM-AVS	8 oz WMGJ (no headspace)
	Total Metals & TOC	8 oz WMGJ
	Grain Size	8 oz WMGJ
	BEM	16 oz Amber WMGJ
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID: n/a Time:	SEM-AVS	8 oz WMGJ (no headspace)
	Total Metals & TOC	8 oz WMGJ
	Grain Size	8 oz WMGJ
	BEM	16 oz Amber WMGJ
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID: n/a Time:		8 oz WMGJ
BMI Primary Sample ID: CB046-BMI-1-100819 Time: ~~1347~~ 1048		Yellow 5-gallon bucket — Sediment Volume: 1.35 gallons
BMI Duplicate Sample ID: n/a Time: ~~1304~~ 1048		Yellow 5-gallon bucket — Sediment Volume: ____ gallons

using time of first grab

Sample Lead Initials MM Date: 10-8-19 — Field Supervisor Initials MS Date: 10.8.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.08.19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO (YES) **Location ID:** CB046

Attempt # 5 Cast Time: 1421 Water Depth (m): 18.8

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: CB046-5-BMI Estimated Hydrowire angle (degrees): n/a

Easting: 430798.25 Sampler Penetration (average) (inches): n/a

Northing: 5406732.137

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e, no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) (w/o Hammer) Added Weights on Sampler (lbs): none

Sediment Characteristics

Sediment Type / Texture: Cobbly m - SAND, cobbles Redox Boundary: none
sm-R gravel

Presence of debris: twings & pine needles

Color: 10yR 2/1 Biological Structures: none

Stratification: homogeneous Shells: none

Density: n/a Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes: none

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3 SEM-AVS Container Collected from Attempt #: n/a

Sieving Information:

Sieved with 5 mm Sieve? Yes No n/a LH Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: CB046-SE-1-100819 Time: 1048

SE Duplicate Sample ID: n/a Time:

EPA SE Split Sample ID: n/a Time:

BMI Primary Sample ID: CB046-BMI-1-100819 Time: ~~1422~~ ~~1304~~ 1048

BMI Duplicate Sample ID: n/a Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

		Cross off containers NOT filled
SE Primary Sample ID	SEM-AVS	8 oz WMGJ (no headspace)
	Total Metals & TOC	8 oz WMGJ
	Grain Size	8 oz WMGJ
	BEM	16 oz Amber WMGJ
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID	SEM-AVS	8 oz WMGJ (no headspace)
	Total Metals & TOC	8 oz WMGJ
	Grain Size	8 oz WMGJ
	BEM	16 oz Amber WMGJ
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID		8 oz WMGJ
BMI Primary Sample ID		Yellow 5-gallon bucket — *Sediment Volume* 1.35 *gallons*
BMI Duplicate Sample ID		Yellow 5-gallon bucket — *gallons*

using time of 1st grab

Sample Lead Initials MM Date: 10-8-19 Field Supervisor Initials MS Date: 10.8.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10/17/19

101719

Project Number: 60612698
Area of Interest: ~~CB046~~ ChinaBend
Vessel: Yeti
Location ID: CB046
Vessel Crew: R. Trudeau, E. Rigby
Sampling Crew: S. Kinner, B. Chadwick, C. Pickerell
EPA Observer: L. Raterink
Arrival Time: 1410
Departure Time: 1105
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 60 Wind (mph): 5 W
Clouds/Precipitation: partly sunny, dry
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *(Mixed Coarse (mCs))* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB046-1-PW
Water Depth (m): 18.4 m
Easting: 430800.08
Northing: 5407321.00
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: CB046-PW-1-101719 Time: 1451
Duplicate Sample ID: CB046-PW-2-101719 Time: 1451
EPA Split Sample ID: — Time: —
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & Z~~nAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
Analyte and Bottle Type:	sulfate, 125ml poly
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials SEKK Date: 10/17/19
Field Supervisor Initials AM Date: 10-17-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB049
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Anzinger
Arrival Time: 1108
Departure Time: 1345

River Stage:
Water Surface Elev. (ft): 1298
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 2
Clouds/Precipitation: Clear, cool, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
China Bend terrace along west shoreline

Sampling Information

Sampler Used: Hamon
9 attempts, 5 accepted
MS # of Sampling Attempts (Accepted vs. Rejected): ~~1,2,~~ 3,4,5,8 accepted = SE
9 accepted - BMI

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MS Date: 10.11.19
Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 1 Cast Time: 1113 Water Depth (m): 15.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-1-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431008.44 Sampler Penetration (inches): < 1

Northing: 5407420.06 Sample Interval (0 to X inches bss): 0 - < 1

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Total 1600 lbs

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass. Other Notes:

Rejected < min. pene

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: On Pg 3

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
On Pg 3		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: JB Date: 10.11.19 Field Supervisor Initials: MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 2 Cast Time: 1119 Water Depth (m): 15.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-2-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431016.76 Sampler Penetration (inches): 2.5

Northing: 5407420.91 Sample Interval (0 to X inches bss): 0=0 0-2.5 (JH 10-11-19)

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 600 lbs total

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Color: Presence of debris: Rejected

Stratification: Biological Structures: less than min. penetration

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: on pg 3

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

sediment bucket volumes

on pg 3

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 3 Cast Time: 1124 Water Depth (m): 15.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-3-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431024.22 Sampler Penetration (inches): 5

Northing: 5407420.76 Sample Interval (0 to X inches bss): 0 - 5

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 600 lbs total

Sediment Characteristics

Sediment Type / Texture: ~~gravelly~~ M-C SAND and f-c GRAVEL sr-r

Color: 10yr 2/1

Stratification: homogeneous

Density: med. mm dense

Presence/Absence silica glass: yes

Redox Boundary: none

Presence of debris: none

Biological Structures: pine needles & twigs, unidentified organic matter

Shells: shell fragment

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3,4,5,8(SE), 9(BMI) SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 30.1 - 2.8 = 27.3 (57%) Total Mass of Sediment (kg): 47.9

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 16.2 + 4.7 - 0.3(bowl) = 20.6

Mass of Sediment > 3 inches (cobble) (kg): none

Sample Identification Information

SE Primary Sample ID: CB047-SE-1-101119 Time: 1124

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	2.0 gallons
	1 x 2.5 gallon white bucket	1.22 gallons

SE Duplicate Sample ID: n/a Time:

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: CB047-SE-3-101119 Time: 1124 — 8 oz WMGJ

EPA TX Split Sample ID: CB047-SE-3-101119 Time: 1124 — 2.5 gallon white bucket 1.07 gallons

BMI Primary Sample ID: CB047-BMI-1-101119 Time: 1124 — Yellow 5-gallon bucket 1.2 gallons

BMI Duplicate Sample ID: n/a Time: — Yellow 5-gallon bucket ____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials JV Date: 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 4 Cast Time: 1158 Water Depth (m): 16.00

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-4-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431025.83 Sampler Penetration (inches): 4

Northing: 5407423.45 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: m-c SAND and f-GRAVEL Redox Boundary: none

Presence of debris: none

Color: 10yr 2/1 Biological Structures: pine needles

Stratification: homogeneous Shells: none

Density: Medium Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #'s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: On Pg 3

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____ Time: _____ On Pg 3

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

Cross off containers NOT filled

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JLE Date: 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CBØ47

Attempt # 5 Cast Time: 1213 Water Depth (m): 16.1

GPS Target Parameters Sheave Counter Depth (m): na

Name: CBØ47-5-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431021.79 Sampler Penetration (inches): 4

Northing: 5407422.93 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 600 lbs total

Sediment Characteristics

Sediment Type / Texture: M-C SAND and F-GRAVEL Redox Boundary: none

Presence of debris: none

Color: 10YR 2/1 Biological Structures: Woody debris

Stratification: homogeneous Shells: none

Density: medium dense Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: on Pg 3

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

on Pg 3

SE Primary Sample ID: _____	Time: _____		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.11.19 Field Supervisor Initials mm Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 6 Cast Time: 1232 Water Depth (m): 16.0

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-6-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431028.33 Sampler Penetration (inches): 2

Northing: 5407420.99 Sample Interval (0 to X inches bss): 0-2

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 600 lbs total

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected < min. Penetration

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: On P93

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time: On P93

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JLS Date: 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 7 Cast Time: 1236 Water Depth (m): 16.1

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-7-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431025.50 Sampler Penetration (inches): 0

Northing: 5407427.14 Sample Interval (0 to X inches bss): na

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): no recovery

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris: Rejected

Color: Biological Structures: 0 recovery

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: on pg 3

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

on pg 3

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MR Date: 10.11.19 Field Supervisor Initials mm Date: 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 8 Cast Time: 1241 Water Depth (m): 16.10

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-8-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431017.48 Sampler Penetration (inches): 4

Northing: 5407414.11 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs) 600 lbs total

Sediment Characteristics

Sediment Type / Texture: M-C SAND + F-m GRAVEL Redox Boundary: none

Presence of debris: none

Color: 10YR 2/1 Biological Structures: none

Stratification: homogeneous Shells: none

Density: medium dense Sheen/Odor: none

Presence/Absence silica glass: yes Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: on pg 3

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____ Time: _____ on pg 3

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JLR Date 10.11.19 Field Supervisor Initials MM Date 10-11-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-11-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB047

Attempt # 9 Cast Time: 1325 Water Depth (m): 16.10

GPS Target Parameters Sheave Counter Depth (m): na

Name: CB047-9-BM1 Estimated Hydrowire angle (degrees): na

Easting: 431017.52 Sampler Penetration (inches): 4

Northing: 5497415.37 Sample Interval (0 to X inches bss): 0-4

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: M-C SAND and f-m GRAVEL, sr-r

Color: 10YR 2/1

Stratification: homogeneous

Density: medium dense

Presence/Absence silica glass: yes

Redox Boundary: none

Presence of debris: none

Biological Structures: Pine needles

Shells: fragments

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg) Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	1.2 gallons
			1 x 2.5 gallon white bucket	gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MF Date: 10.11.19 Field Supervisor Initials MM Date: 10-11-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___

Date 10/12/19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: Yeh **Location ID:** CB047

Vessel Crew: Renee Trudeau, Emma Rigby **Sampling Crew:** Jenny Pothare, Sarah Kunner, Joss Moore, Chris Pickeren

EPA Observer: Nicole Bacon

Arrival Time: 0900 **Departure Time:** 1141

River Stage:
Water Surface Elevation (ft): ____
Elevation Source: ____

Weather Conditions Upon Arrival:
Temp (°F): 32 F Wind (mph): 0
Clouds/Precipitation: none

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none. Sediment boat nearby

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
none

GPS Target Parameters and Water Depth

GPS Name: CB047-2-PW Water Depth (m): 15.7

Easting: 4310114.55

Northing: 5407414.53 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: ____ Observations:

Easting: ____

Northing: ____

GPS Name: ____ Observations:

Easting: ____

Northing: ____

Sample Identification Information

X Primary Sample ID: CB047-PW-1-101219 Time: 1048

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide~~ — ~~250 mL~~ Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: N/A Time: ____ Analyte and Bottle Type: ____

X EPA Split Sample ID: CB047-PW-3-101219 Time: 1048 1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JP Date: 10-12-19 Field Supervisor Initials [illegible] Date: 10/12/19

Revised 9/20/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-22-19

Project Number: 60612698 **Area of Interest:** Ching Bend

Vessel: RV Yeti **Location ID:** CB048

Vessel Crew: R. Trudeau, E. Rigsby **Sampling Crew:** B. Chadwick, J. Guerrero, S. Holmes

EPA Observer: L. Raterink

Arrival Time: 0815 **Departure Time:** 1040

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 2
Clouds/Precipitation: overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Rock outcrop on eastern bluff

GPS Target Parameters and Water Depth

GPS Name: CB048-1-PW Water Depth (m): 16.8

Easting: 431088.41

Northing: 5407499.52 Water Sample Color: _____

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: CB048-PW-1-102219 Time: 0954

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2 DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10/22/19 Field Supervisor Initials LOA Date: 10/23/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-22-19

Project Number: 60612698
Vessel: RV Yeti
Vessel Crew: R. Trudeau, E. Rigsby
EPA Observer: L. Raterink
Arrival Time: 1100

Area of Interest: CB049
Location ID: China Bend
Sampling Crew: B. Chadwick, J. Guerrero, S. Holmes
Departure Time: 1340

River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: Partly Sunny

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Light
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Home on west shore

GPS Target Parameters and Water Depth

GPS Name: CB049-1
Easting: 431245.82
Northing: ~~5407330.07~~ 5407339.68
Water Depth (m): 15.9
Water Sample Color: No sample collected, sampler refusal

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary ~~Sample~~ ID: Time:
Duplicate Sample ID: Time:
EPA Split Sample ID: Time:
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:
1B. Dissolved Metals With Same Capsule Filter 125 mL Poly with HNO3

Sample Lead Initials SH Date: 10-22-19
Field Supervisor Initials LD/H Date: 10/23/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-22-19

Project Number: 60612698
Area of Interest: China Bend
Vessel: RV Yetl
Location ID: CB049
Vessel Crew: R. Trudeau, E. Rigsby
Sampling Crew: B Chadwick, J. Guerrero, S. Holmes
EPA Observer: L. Raterink
Arrival Time: 1100
Departure Time: 1340

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50
Wind (mph): 2
Clouds/Precipitation: Partly Sunny

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction. etc.):
Home on West shore

GPS Target Parameters and Water Depth

GPS Name: CB049-2
Water Depth (m): 15.3
Easting: 431241.05
Northing: 5407330.77
Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name:
Observations:
Easting:
Northing:

GPS Name:
Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: CB049-PW-1-102719 Time: 1300

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time:
Analyte and Bottle Type:
EPA Split Sample ID: Time:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-22-19
Field Supervisor Initials LDK Date 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB050
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCrary, Shira Degroot
C.R. Observer: Michelle Stegner
EPA Observer: Robert Ian F, Marilyn Cruthis
Arrival Time: 0910
Departure Time: 0940

River Stage:
Water Surface Elev. (ft): 1296.91
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 49 Wind (mph): SSW 3 mph
Clouds/Precipitation: foggy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) dense cobbles and gravels

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Ø

Sampling Information

Sampler Used: Freeze Grab
5 video recon photos
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: CB050-SV-1
Easting: 431290.03
Northing: 5407422.81
Observations: Cobbles
GPS Target: CB050-SV-5
E=431308.23
N=5407423.98

GPS Target Name: CB050 – SV-2
Easting: 431273.47
Northing: 5407419.37
Observations: Cobbles

GPS Target Name: CB050 – SV-3
Easting: 431250.11
Northing: 5407421.36
Observations: Cobbles

GPS Target Name: CB050 · SV-4
Easting: 431265.62
Northing: 5407432.09
Observations: Cobbles

Sample Lead Initials MM Date: 10-17-19
Field Supervisor Initials AEKK Date: 10/17/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-22-19

Project Number: 60612698 **Area of Interest:** China Bend

Vessel: RV Yeti **Location ID:** CB052

Vessel Crew: R. Trudeau, E. Rigsby **Sampling Crew:** B. Chadwick, J. Guerrero, S. Holmes

EPA Observer: L. Raterink

Arrival Time: 1400 **Departure Time:** 1555

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 56 Wind (mph): 5
Clouds/Precipitation: Partly cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *(Coarse (mBs, B, C, and G))*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Grassy slope w/ house on west.

GPS Target Parameters and Water Depth

GPS Name: CB052-1 Water Depth (m): 20.8

Easting: 433594.44

Northing: 5407515.80 Water Sample Color: _____

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: CB052-PW-1-102219 Time: 1513

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10/22/19 Field Supervisor Initials CK Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: CB054
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: Robert Tan & Marilyn Gauthier
Arrival Time: 0954
Departure Time: 1025
River Stage:
Water Surface Elev. (ft): 1296.91
Water Surface Elevation Source: usgs
Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) dense cobbles and gravels

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 723
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
0

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected):
11 video recon photos,

Video Reconnaissance Information

GPS Target Name: CB054-SV-1 Easting: 431832.08 T=0954 Northing: 5407668.52 D=21.5 Observations: trace fine gravel inside cobbles intervital spaces	CB054-SV-5 431775.27 D=23.1 T=1004 5407601.71	CB054-SV-9 431738.55 D=22.4 T 1016 5407609.35
GPS Target Name: CB054-SV-2 Easting: 431817.86 T=0957 Northing: 5407656.07 D=21.7 Observations: Cobbles with increasing gravel	CB054-SV-6 431790.80 T 1008 5407607.13 D=24.5	CB-054-SV-10 431732.91 T 1019 5407626.43 D=19.8
GPS Target Name: CB054-SV-3 Easting: 431805.8 D=22.1 Northing: 5407638.47 T=0959 Observations: cobbles, little gravel	CB054-SV-7 431781.67 T=1010 5407626.79 D=22.6	CB054-SV-11 431772.78 D=18.6 TO=1023 5407623.90
GPS Target Name: CB054-SV-4 Easting: 431793.63 D=22.3 Northing: 5407626.28 T=1002 Observations: gravel, little cobbles	CB054-SV-8 431754.37 T=1013 5407599.91 D=22.6	

Sample Lead Initials 10-17-19 Date: MM
Field Supervisor Initials [illegible] Date: 10/17/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/18/19

Project Number: 60612698
Vessel: Yeh
Vessel Crew: R. Trudeau, E. Rigby
EPA Observer: L Ratcliff, R. Tan
Arrival Time: 1300

Area of Interest: China Bend
Location ID: ~~CB054~~ CB055
Sampling Crew: S. Kintner, B. Chadwick, C. Pickerell
Departure Time: 1615

River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 6 W
Clouds/Precipitation: overcast

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
N/A

GPS Target Parameters and Water Depth

GPS Name: CB055-1-PW
Easting: 431789.59
Northing: 5407692.90
Water Depth (m): 17.7 m
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: ~~CB054~~-PW-1-101819 (101819 SEKK) CB055 Time: 1407

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: —
EPA Split Sample ID: — Time: —
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Analyte and Bottle Type:
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials SEKK Date: 10/18/19
Field Supervisor Initials SHD Date: 10-18-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698 | **Area of Interest:** Clina Bend

Vessel: Ingalls | **Location ID:** CB056

Vessel Crew: Pete Jenkins, Charlie Kellogg | **Sampling Crew:** Michelle Stegner, Michaela McCoog, Shira DeGroot

C.R. Observer: Michelle Stegner | **EPA Observer:** Robert Tan & Marilyn Gauthier

Arrival Time: 1025 | **Departure Time:** 1540

River Stage:
Water Surface Elev. (ft): 1296.91
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 2
Clouds/Precipitation: Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) | Mixed Coarse (mCs) | Mud (M) | Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 723

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: Ø

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on east shoreline

Sampling Information

Sampler Used: Freeze Grab 4 video recon photos

# of Sampling Attempts (Accepted vs. Rejected):
6 attempts, 5 accepted (#2-6) Chem from attempts 2-4, BMI 5+6

Video Reconnaissance Information

GPS Target Name: CB056-SV-1
Easting: 432088.04
Northing: 5407731.55
Observations: Cobbles, trace fines

GPS Target Name: CB056-SV-2
Easting: 432097.61
Northing: 5407742.09
Observations: Cobbles, few gravels, dusting of fines

GPS Target Name: CB056-SV-3
Easting: 432111.48
Northing: 5407750.26
Observations: Cobbles, a few gravel, dusting of fines

GPS Target Name: CB056-SV-4
Easting: 432108.13
Northing: 5407737.35
Observations: Cobbles, little fines and gravels

Sample Lead Initials: MS Date: 10.17.19

Field Supervisor Initials: MM Date: 10-17-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB056

Attempt # 1 Cast Time: 1115 Water Depth (m): 18.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB056-1 Estimated Hydrowire angle (degrees): NA

Easting: 432107.44 Sampler Penetration (average) (inches): 0

Northing: 5407735.18

Sample Type: Physical/Chemical BMI Alt for CB032 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)?	YES	NO NA
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
3. Sample contains ≥ 20 percent fines (i.e ≤ 2 mm)?	YES	NO NA
4. Sample is:	Accepted	Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: no recovery

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (nc headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:		NA	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MV Date 10.17.19 Field Supervisor Initials MM Date: 10-17-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 6
Date 10-17-2019

Project Number: 60612698 **Area of Interest:** China bend

Anchored? (NO) YES **Location ID:** CBOSG

Attempt # 2 Cast Time: 1146 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CBOSG-2-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 432089.28 Sampler Penetration (average) (inches): 4

Northing: 5407670.22

Sample Type: (Physical/Chemical) BMI AH for ~~CBOSG~~ SHD CB032 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: fine to coarse GRAVEL with some subrounded and angular gravel mixed Little cobble, little sand fine to med few silt

Color: 10YR 2/1

Stratification: homogenous

Density: medium-dense

Presence/Absence silica glass: trace

Redox Boundary: NA

Presence of debris: trace pine needles

Biological Structures: one larve, scattered organisms

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3, 4 SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 6.4 Total Mass of Sediment (kg): 15.9

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 7.2

Mass of Sediment > 3 inches (cobble) (kg): 2.3 ~~to~~ rounded to subangular

Sample Identification Information

SE Primary Sample ID: CBOSG-SE-1-101719 Time: 1146

SE Duplicate Sample ID: _____ Time: _____

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: CBOSG-BMI-1-101719 Time: _____ 8 oz WMGJ

BMI Primary Sample ID: ~~CBOSG-SE~~ SHD Time: 1404 Yellow 5-gallon bucket *Sediment Volume* 2.9 *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LL Date: 10.17.19 Field Supervisor Initials MM Date: 10-17-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** Ching Bend

Anchored? (NO) YES **Location ID:** CB056

Attempt # 3 Cast Time: 1231 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB056-3-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 432089.79 Sampler Penetration (average) (inches): 5

Northing: 5407671.54

Sample Type: Physical/Chemical BMI Alt for CB032 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)?	YES	(NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
4. Sample is:	(Accepted)	Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as Attempt 2 except few cobble

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See Attempt 2 SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment ~~> 3 inches~~ (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: See Attempt 2	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.17.19 Field Supervisor Initials MM Date: 10-17-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** CB056

Attempt # 4 Cast Time: 1328 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB056-4-Chem Estimated Hydrowire angle (degrees): NA

Easting: 432088.21 Sampler Penetration (average) (inches): 6

Northing: 5407672.50

Sample Type: Physical/Chemical BMI Alt. for CB032 Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: ~~Accepted~~ Rejected

Sample Collection Method: Freeze Grab w/ Hammer w/o Hammer Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as Attempt 3

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: See attempt 2 ~~SEM-AVS Container~~ Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? ~~Yes~~ No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of ~~Sediment~~ (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (~~cobble~~) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: See Attempt 2 Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials JLC Date: 10.17.19 Field Supervisor Initials MM Date: 10-17-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB056

Attempt # 5 Cast Time: 1404 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB056-5-BMI Estimated Hydrowire angle (degrees): NA

Easting: 432087.68 Sampler Penetration (average) (inches): 4

Northing: 5407672.40

Sample Type: Physical/Chemical (BMI) Alt. for CB032 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as attempt 3 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 5, 6 SEM-AVS Container Collected from Attempt #: NA

Sieving Information:

Sieved with 5 mm Sieve? NA Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: See Attempt 2	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.17.19 Field Supervisor Initials mm Date: 10-17-19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** CB056

Attempt # 6 Cast Time: 1450 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: CB056-6-BMI Estimated Hydrowire angle (degrees): NA

Easting: 432087.97 Sampler Penetration (average) (inches): 6

Northing: 5407673.98

Sample Type: Physical/Chemical BMI Alt. for CB032 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: Freeze Grab w/ Hammer (w/o Hammer) Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Same as attempt 3 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: see attempt 5 SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	see attempt 2	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10.17.19 Field Supervisor Initials: mm Date: 10-17-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/18/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Yeh
Location ID: CBDS10
Vessel Crew: R. Trudeau, C. Rigby
Sampling Crew: S. Kintner, B. Chadwick, C. Pickerell
EPA Observer: L. Raterink, R. Tan
Arrival Time: 1120
Departure Time: 1245
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole Vibraframe (Driveframe)
Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): 7
Clouds/Precipitation: partly sunny, dry

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NO

GPS Target Parameters and Water Depth

GPS Name: CBDS10-1-PW
Water Depth (m): 10.9 m
Easting: 432089.30
Northing: 5407072.09
Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: CBDS10-PW-1-101819 Time: 1201
Duplicate Sample ID: — Time: —
EPA Split Sample ID: — Time: —
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc~~ (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: Sulfate
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: SKK Date: 10/18/19
Field Supervisor Initials: SHO Date: 10-18-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: S 3-R7-2019
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoog, Shira DeGood
C.R. Observer: Michelle Stegner
EPA Observer: Marilyn Gauthier
Arrival Time: 1418
Departure Time: 1534

River Stage:
Water Surface Elev. (ft): 1297
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 53 Wind (mph): NNW 2 mph
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) MS Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep erosional slope on west shoreline

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected):
4 attempts, 2 accepted (#2 (SE), #4 (BMI)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations

Sample Lead Initials MS Date: 10-15-19
Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** 3-R7-2019

Attempt # 1 Cast Time: 1428 Water Depth (m): ~~NA~~ 20.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-R7-2019-1 Estimated Hydrowire angle (degrees): NA

Easting: 430298.27 Sampler Penetration (inches): NA

Northing: 5407154.63 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES ~~NO~~ NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Van Veen sample jaws didn't close

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: not assessed Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: Not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
Not applicable		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials LC Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 4
Date 10-15-2019

Project Number: 60612698 — **Area of Interest:** China Bend

Anchored? (NO) YES — **Location ID:** 3-RT-2019

Attempt # 2 — Cast Time: 1431 — Water Depth (m): 20.1

GPS Target Parameters

Name: 3-RT-2019-2-CHEM — Sheave Counter Depth (m): NA

Easting: 430298.70 — Estimated Hydrowire angle (degrees): NA

Northing: 3407151.21 — Sampler Penetration (inches): 4

Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI — Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool — Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: med to coarse SAND little cobble, rounded

Color: Colors of grains range from 10YR 6/3 to 10YR 2/1

Stratification: homogeneous

Density: loose

Presence/Absence silica glass: Present

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 — SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) — Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 26 - 8 = 23.2 — Total Mass of Sediment (kg): 31.7

Mass of Sediment 5 mm to 3 inches (gravel) (kg): none

Mass of Sediment > 3 inches (cobble) (kg): 8.5

Sample Identification Information

SE Primary Sample ID: 3-RT-2019-SE-1-101519 — Time: 1431

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	3.2 gallons
	1 x 2.5 gallon white bucket	1.1 gallons

SE Duplicate Sample ID: _____ — Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ — Time: _____ — 8 oz WMGJ

EPA TX Split Sample ID: _____ — Time: _____ — 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: 3-RT-2019-BMI-1-101519 — Time: 1515 — Yellow 5-gallon bucket 2.5 gallons

BMI Duplicate Sample ID: _____ — Time: _____ — Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS — Date: 10.15.19 — Field Supervisor Initials MM — Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** 3-RT-2019

Attempt # 3 Cast Time: 1509 Water Depth (m): 20.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RT-2019-3 Estimated Hydrowire angle (degrees): NA

Easting: 430298.07 Sampler Penetration (inches): NA

Northing: 5467149.94 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES ~~NO~~

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	~~NO~~
3. Overlying water excessively turbid?	YES	~~NO~~ NA
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	~~NO~~
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	~~NO~~
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	~~YES~~	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	~~NO~~
8. Sample is:	~~Accepted~~	~~Rejected~~

Sample Collection Method: ~~Van Veen~~ Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

~~Sediment Type / Texture:~~ Redox Boundary: Gravel caught in jaws of sampler

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: not applicable

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

~~Mass of Sediment~~ > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

not Sampled

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MS Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 4 of 4

Date 10/15/2019

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** 3-A7-2019

Attempt # 4 Cast Time: 1515 Water Depth (m): 19.8

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-A7-2019-4-BMI Estimated Hydrowire angle (degrees): NA

Easting: ~~430298.87~~ 430299.20 Sampler Penetration (inches): 5

Northing: ~~5407148.10~~ 5407148.73 Sample Interval (0 to X inches bss): 0-5

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Color: Same as Attempt 2 Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: See attempt 2	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10.15.19 Field Supervisor Initials MM Date: 10-15-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Trudeau, E. Rigby
EPA Observer: L. Ratcliff
Arrival Time: 0840
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Trident Sampler Type: Push Pole Vibraframe Driveframe

Area of Interest: China Bend
Location ID: 3-R7-2019
Sampling Crew: S. Kinmer, B. Chadwick, C. Pickerell
Departure Time: 1113
Weather Conditions Upon Arrival:
Temp (°F): 46 Wind (mph): 0
Clouds/Precipitation: partly cloudy, dry

Site Information

101719 SEKK

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)* (NA)

Verified sediment bed composition is consistent with target strata? YES (NO) NO target strata. Repeat from previous year

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: 3-R7-2019-1-PW
Easting: 430298.28
Northing: 5407149.84
Water Depth (m): 20.2 m
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: 3R7-2019-PW-1-101719 Time: 1235

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: —
EPA Split Sample ID: — Time: —
Analyte and Bottle Type: —
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SKK Date: 10/17/19
Field Supervisor Initials AY Date: 10-17-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: 3-RS-2019
Vessel Crew: Pete Jenkins, Charlie Kellogg
Sampling Crew: Michelle Stegner, Michaela McCoy, Shira DeGroot
C.R. Observer: Michelle Stegner
EPA Observer: Lisa
Arrival Time: 830
Departure Time: 1142

River Stage:
Water Surface Elev. (ft): 1898.
Water Surface Elevation Source: Usgs

Weather Conditions Upon Arrival:
Temp (°F): 43 Wind (mph): NE 2 mph
Clouds/Precipitation: Overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)
Revisit
Verified sediment bed composition is consistent with target strata? YES NO N/A

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep riprapped shoreline on East shoreline

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
10 attempts, 2 accepted (#6 and #10)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-16-19
Field Supervisor Initials JCS Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** ~~SHO~~ 3-RB-2019

Attempt # 1 Cast Time: 0843 Water Depth (m): 40.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019-1 Estimated Hydrowire angle (degrees): NA

Easting: 429443.52 Sampler Penetration (inches): ~~SHO~~ 1

Northing: 5407276.85 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO less than
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO 1 cup sediment
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? Too deep, can't see facies	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: NA Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Plywood caught in jaws

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
NA		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5-gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials JLC Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** 3-RB-2019

Attempt # 2 Cast Time: 0901 Water Depth (m): 40.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019-2 Estimated Hydrowire angle (degrees): NA

Easting: 429444.03 Sampler Penetration (inches): 0

Northing: 5407278.45 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO) NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO) NA
8. Sample is: Too deep, can't see glacier	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: NA Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: no material in sampler

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes NA No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

NA

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials JC Date: 10.18.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698

Area of Interest: China Bend

Anchored? (NO) YES

Location ID: 3-RB-2019

Attempt # 3

Cast Time: 0908

Water Depth (m): 41.5

GPS Target Parameters

Sheave Counter Depth (m): NA

Name: 3-RB-2019-3

Estimated Hydrowire angle (degrees): NA

Easting: 429447.83

Sampler Penetration (inches): 0

Northing: 5407275.86

Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO) NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO NA
8. Sample is: Too deep, can't see facies	Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color: NA

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes: No recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: No Sample Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials mm Date: 10-16-19

Field Supervisor Initials MV Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** 3-RB-2019

Attempt # 4 Cast Time: 0924 Water Depth (m): 42.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019-4 Estimated Hydrowire angle (degrees): NA

Easting: 429423.97 Sampler Penetration (inches): 0

Northing: 5407278.24 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO) NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? Too deep, can't see facies	YES	NO NA
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: NA Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? NA Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials MAS Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** 3-AB-2019

Attempt # 5 Cast Time: 0934 Water Depth (m): 43.3

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-AB-2019-5 Estimated Hydrowire angle (degrees): NA

Easting: 429449.83 Sampler Penetration (inches): 5

Northing: 5407286.59 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	(NO)
8. Sample is: Too deep, can't see facies	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine to coarse gravel rounded to subrounded

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
NA		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials MS Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** 3-RB-2019

Attempt # 6 Cast Time: 0954 Water Depth (m): 42.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019-6-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 429439.45 Sampler Penetration (inches): 5

Northing: 5407286.60 Sample Interval (0 to X inches bss): 0-5

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: Too deep, can't see facies	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: med to coarse ~~Sand~~ SAND

Color: Black 10YR2/1

Stratification: none

Density: loose

Presence/Absence silica glass: Present

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 6 SEM-AVS Container Collected from Attempt #: 6

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): NA Total Mass of Sediment (kg): NA

Mass of Sediment 5 mm to 3 inches (gravel) (kg): NA

Mass of Sediment > 3 inches (cobble) (kg): NA

Sample Identification Information

SE Primary Sample ID: 3-RB-2019-SE-1-101619 Time: 0954

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: 3-RB-2019-BMI-1-101619 Time: _____

BMI Primary Sample ID: ~~3-RB-2019-SE-1-101619~~ BMI Time: 1116

BMI Duplicate Sample ID: _____ Time: _____

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	1.0 gallons
	1 x 2.5 gallon white bucket	0.92 gallons

sediment bucket volumes

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	____ gallons
	Yellow 5-gallon bucket	1.0 gallons
	Yellow 5-gallon bucket	____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials LC Date: 10.16.19

Date 10-16-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** 3-RB-2019

Attempt # 7 Cast Time: 1023 Water Depth (m): 42.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019-7 Estimated Hydrowire angle (degrees): NA

Easting: 424438.10 Sampler Penetration (inches): 0

Northing: 5407285.06 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO No recovery
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? Too deep, can't see facies	YES	NO NA
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No Recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
NA		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials MS Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** 3-RB-2019

Attempt # 8 Cast Time: 1033 Water Depth (m): 42.0

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019-8 Estimated Hydrowire angle (degrees): NA

Easting: 429438.50 Sampler Penetration (inches): 0

Northing: 5407286.66 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is: Too deep, can't see facies	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No Recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
NA		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials MC Date: 10-16-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** 3-RB-2019

Attempt # 9 Cast Time: 1100 Water Depth (m): 42.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019 Estimated Hydrowire angle (degrees): NA

Easting: 429440.59 Sampler Penetration (inches): 0

Northing: 5407286.64 Sample Interval (0 to X inches bss): NA

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? Too deep, can't see facies	**YES**	NO NA
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: no recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NA

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
NA		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials MR Date: 10.16.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** 3-RB-2019

Attempt # 10 Cast Time: 1116 Water Depth (m): 42.1

GPS Target Parameters Sheave Counter Depth (m): NA

Name: 3-RB-2019-10-BMI Estimated Hydrowire angle (degrees): NA

Easting: 429439.67 Sampler Penetration (inches): 4

Northing: 5407286.72 Sample Interval (0 to X inches bss): 0-4

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is: Too deep, can't see facies	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: medium to coarse SAND wi trace gravel (R-SR)

Color: Black 10YR2/1 little cobble (R-SR)

Stratification: Homogenious

Density: medium dense

Presence/Absence silica glass: Present

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 8 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: see attempt 6	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MM Date: 10-16-19 Field Supervisor Initials MS Date: 10.16.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/19/19

Project Number: 60612698 **Area of Interest:** China bend

Vessel: yeti **Location ID:** 3-R8-2019

Vessel Crew: R. Trudeau, E. Rigby **Sampling Crew:** S. Kintner, B. Chadwick, C. Pickerell

EPA Observer: L. Ratcrink

Arrival Time: 1350 **Departure Time:** 1625

River Stage:
Water Surface Elevation (ft): ____

Elevation Source: ____

Weather Conditions Upon Arrival: - insufficient signal
Temp (°F): ____ Wind (mph): ____

Clouds/Precipitation: overcast, dry

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ____

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
highway

GPS Target Parameters and Water Depth

GPS Name: 3R8-2019-1-PW

Water Depth (m): 41.5 m

Easting: 429441.44

Northing: 5407286.30

Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: ~~3R8-2019-1-PW~~ SEKK 10919 Observations:

Easting: ____

Northing: ____

GPS Name: ____ Observations:

Easting: ____

Northing: ____

Sample Identification Information

Primary Sample ID: 3-R8-2019-~~PW~~ PW-1-101919 Time: 1456
10/19/19 SEKK

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc~~ (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: — Time: —

Analyte and Bottle Type: —

EPA Split Sample ID: — Time: —

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials SEKK Date: 10/19/19

Field Supervisor Initials DM Date: 10/19/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/2019

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: JS001
Vessel Crew: Pete Jenkins, Jeff Schut
Sampling Crew: Michelle Stegner, Linda Howard, Michaela McCoog
C.R. Observer: Michelle Stegner
EPA Observer: Elle Atzinger
Arrival Time: 0946
Departure Time: 1224

River Stage:
Water Surface Elev. (ft): ~1281
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 34 Wind (mph): WSW 1
Clouds/Precipitation: clear, dry, cold

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare on 11-21-19

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 0

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gently sloping shoreline along north and east of river

Sampling Information

Sampler Used: Hamon
7 attempts, 4 accepted (3, 4, 6 in SE; 7 = BMI)
# of Sampling Attempts (Accepted vs. Rejected): #1 @ 957 rejected overopen. 2 @ 1013 #3 @ 1022 (accepted) #4 @ 1044 accepted, #5 @ 1102 #6 accepted #7 accepted (BMI)

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations: AVS from attempt #3

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-10-19
Field Supervisor Initials JJS Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 7

Date Oct 10, 2019

Project Number: 60612698 **Area of Interest:** Chaw Bend

Anchored? (NO) YES **Location ID:** JS001

Attempt # 1 Cast Time: 0957 Water Depth (m): 14.9

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: JS001-1-CHEM Estimated Hydrowire angle (degrees): na

Easting: 430956.96 Sampler Penetration (inches): 7

Northing: 5402511.92 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	(YES)	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected) - overfilled

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): no

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Attempt Rejected - Sampler Overfilled

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: N/A

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

* on Pg 3 - 1st accepted grab attempt.

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: attempt Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** Chana Bend

Anchored? (NO) YES **Location ID:** JS001

Attempt # 2 Cast Time: 1013 Water Depth (m): 14.7

GPS Target Parameters Sheave Counter Depth (m): NA

Name: JS001-2-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 430965.41 Sampler Penetration (inches): 0

Northing: 540550.19 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	Rejected - Empty

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): removed 300 lbs

Sediment Characteristics

Sediment Type / Texture: Rejected due to empty Grab

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: N/A

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID. _____	Time. _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID. _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AH Date: 10-10-19 Field Supervisor Initials: MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** Chiwawa Bend

Anchored? (NO) YES **Location ID:** JS001

Attempt # 3 Cast Time: 1022 Water Depth (m): 14.9

GPS Target Parameters Sheave Counter Depth (m): na

Name: JS001-3-CHF:ra Estimated Hydrowire angle (degrees): na

Easting: 423965.03 Sampler Penetration (inches): ~~5~~ 4 (JH 10/10/19)

Northing: 5402513.11 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Removed 300 lbs

Sediment Characteristics

Sediment Type / Texture: f-m SAND, top 1mm is silty, trace c-sand below 1mm

Color: 10 yr 2/1

Stratification: homogeneous

Density: very loose

Presence/Absence silica glass: yes throughout

Redox Boundary: 1mm 10yr 3/2

Presence of debris: one stick

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: ~~none~~ matches target facies - Sand

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3, 4, (6(SE); 7(BMI)) SEM-AVS Container Collected from Attempt #: 3

Attempts 1, 2, 5 rejected

Sieving Information: all SAND

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: JS001-SE-1-101019 Time: 1022

		Cross off containers NOT filled	
SEM-AVS		3 oz WMGJ (no headspace)	
Total Metals & TOC		8 oz WMGJ	
Grain Size		8 oz WMGJ	
BEM		16 oz Amber WMGJ	
Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	Archived	~~1 x 5 gallon white bucket~~	~~2.9~~ gallons
		1 x 2.5 gallon white bucket	2.09 gallons

2.9 gal (JH 10.10.19)

SE Duplicate Sample ID: n/a Time:

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

(JH 10-10-19)

~~EPA SE Split Sample ID: JS001-SE-2-101019~~ ~~Time: 1149~~ ~~8 oz WMGJ~~

EPA TX Split Sample ID: JS001-SE-2-101019 Time: 1149 2.5 gallon white bucket 1.84 gallons

BMI Primary Sample ID: JS001-BMI-1-101019 Time: 1022 Yellow 5-gallon bucket 2.7 gallons

BMI Duplicate Sample ID: n/a Time: Yellow 5-gallon bucket gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: ZH Date: 10-10-19 Field Supervisor Initials: MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** JS001

Attempt # 4 Cast Time: 1044 Water Depth (m): 14.9

GPS Target Parameters Sheave Counter Depth (m): NA

Name: JS001-4-CHEM Estimated Hydrowire angle (degrees): NA

Easting: 430962.50 Sampler Penetration (inches): 4 (mm 10 10-19)

Northing: 5407511.04 Sample Interval (0 to X inches bss): ~~0-4~~ 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): Removed 200 lbs

Sediment Characteristics

Sediment Type / Texture: f-m SAND with some c-sand Redox Boundary: 1mm 10yr 3/2

top 1mm is silty

Presence of debris: pine needs, leaf stems

Color: 10yr 2/1 Biological Structures: none

Stratification: homogeneous Shells: none

Density: very loose Sheen/Odor: none

Presence/Absence silica glass: yes, throughout Other Notes: matches target facies - SAND

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): ON PG.3

Sample Identification Information

SE Primary Sample ID: _____ Time: _____

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: _____ Time: _____

BMI Duplicate Sample ID: _____ Time: _____

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	8 oz WMGJ
EPA TX Split Sample ID:	2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID:	Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID:	Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials YH Date: 10-10-19 Field Supervisor Initials 10-10-19 Date: MM

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** J5001

Attempt # 5 Cast Time: 1102 Water Depth (m): 74.9

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: J5001-S-CHEM Estimated Hydrowire angle (degrees): na

Easting: 430962.760 Sampler Penetration (inches): >6 mm 10 10

Northing: 5407513.77 Sample Interval (0 to X inches bss): ~~0-6~~ NA

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected) overfilled

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): added 150 lbs back on

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: 24 Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Attempt rejected - Sampler overfilled

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AH Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? NO YES **Location ID:** JS001

Attempt # 6 Cast Time: 1123 **Water Depth (m):** 14.9

GPS Target Parameters **Sheave Counter Depth (m):** NA

Name: JS001-6-alt-a **Estimated Hydrowire angle (degrees):** NA

Easting: 430964.216 **Sampler Penetration (inches):** 5 (MM 10 10 16)

Northing: 5407512.116 **Sample Interval (0 to X inches bss):** ~~0-3~~ 0-5

Sample Type: Physical/Chemical/Bioassay BMI **Cultural Resource Check Completed?** YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool **Added Weights on Sampler (lbs):** Added 100 lbs back on

Sediment Characteristics

Sediment Type / Texture: f-m SAND w/ some c-sand Top 1mm is Silty. **Redox Boundary:** 1 mm 10yr 3/2

Presence of debris: pine needles, leaves, sticks

Color: 10yr 2/1 **Biological Structures:** none

Stratification: homogeneous **Shells:** none

Density: very loose **Sheen/Odor:** none

Presence/Absence silica glass: yes, throughout **Other Notes:** scratches target faces - SAND

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: On p 93

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: _____ Time: _____

SE Duplicate Sample ID: _____ Time: _____

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

sediment bucket volumes

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials ZH Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** JS001

Attempt # 7 Cast Time: 1158 Water Depth (m): 14.9

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: JS001-7-BMI Estimated Hydrowire angle (degrees): n/a

Easting: 430962.42 Sampler Penetration (inches): 5 (10-19)

Northing: 5402515.17 Sample Interval (0 to X inches bss): ~~0-10~~ 0-5

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): no additional

Sediment Characteristics

Sediment Type / Texture: f-m SAND w/ trace c-sand top 1 mm is silty

Redox Boundary: 1 mm 10 yr 3/2

Presence of debris: fishing line

Color: 10 yr 2/1

Biological Structures: small piece of burrowed

Stratification: homogeneous

Shells: 1 shell fragment

Density: very loose

Sheen/Odor: none

Presence/Absence silica glass: yes, throughout

Other Notes: Matches target facies - SAND

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 7-BMI SEM-AVS Container Collected from Attempt #: _____

Sieving Information: A

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): 0.0 Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time. _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-10-19 Field Supervisor Initials: MM Date: 10-10-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10-11-19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Trudeau, E. Ridberg
EPA Observer: N. Badon
Arrival Time: 0905
Area of Interest: China Bend
Location ID: JSRR1
Sampling Crew: J. Preture, J. Moore, C. Pickerell
Departure Time: 1115

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 32 Wind (mph): 0
Clouds/Precipitation: clear

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ___
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NONE

GPS Target Parameters and Water Depth

GPS Name: JSRR1-1-PW
Easting: 430961.74
Northing: 5487514.30
Water Depth (m): 14.1
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: ___
Easting: ___
Northing: ___
Observations:

GPS Name: ___
Easting: ___
Northing: ___
Observations:

Sample Identification Information

Primary Sample ID: JSRR1-PW-1-101119 Time: 1014

Cross off bottles NOT filled
1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: JSRR1-PW-2-101119 Time: 1014
Analyte and Bottle Type: Metals 125 mL HDPE

EPA Split Sample ID: — Time: ___
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials JP Date: 10-11-19
Field Supervisor Initials aos Date: 10/12/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698
Area of Interest: China Bend
Vessel: Ingalls
Location ID: ~~CBG~~ JS002
Vessel Crew: Pete Jenkins, Jeb Schut
Sampling Crew: Michelle Stegner, Michaela McCoog, Linda Howard
C.R. Observer: Michelle Stegner
EPA Observer: Elle Atzinger
Arrival Time: 1232
Departure Time: 1426

River Stage:
Water Surface Elev. (ft): 1283
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival:
Temp (°F): 49 Wind (mph): 1
Clouds/Precipitation: Clear, dry,

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 722
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Ø

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gentle slope on west shoreline

Sampling Information

Sampler Used: Hamon
6 attempts, 3 accepted
# of Sampling Attempts (Accepted vs. Rejected): #1 accepted #2 rejected, #3 #4 rejected, #5 accepted #6 accepted

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations: AVS from #1
SE from #1, 5
BMI from #6

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MM Date: 10-10-19
Field Supervisor Initials MR Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** JS002

Attempt # 1 Cast Time: 1234 Water Depth (m): 11.2

GPS Target Parameters Sheave Counter Depth (m): na

Name: JS002-1-CHEM Estimated Hydrowire angle (degrees): na

Easting: 420169.07 Sampler Penetration (inches): 4

Northing: 5407571.25 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): no additional

Sediment Characteristics

Sediment Type / Texture: ~~fine SAND~~ (2+1:2:1:0.5:1:9) m-c SAND Redox Boundary: 0.5 mm w/silt

Presence of debris: some woody debris

Color: 10yr 5/3 Biological Structures: none

Stratification: homogeneous Shells: none

Density: loose Sheen/Odor: none

Presence/Absence silica glass: yes, scattered Other Notes: matches target facies-SAND

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 5 SEM-AVS Container Collected from Attempt #: 1

Sieving Information: all SAND

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: JS002-SE-1-101019 Time: 1234

SE Duplicate Sample ID: n/a Time:

EPA SE Split Sample ID: n/a Time:

EPA TX Split Sample ID: n/a Time:

BMI Primary Sample ID: JS002-BMI-1-101019 Time: 1234

BMI Duplicate Sample ID: n/a Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	2.9 gallons
	1 x 2.5 gallon white bucket	1.63 gallons
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	____ gallons
	Yellow 5-gallon bucket	2.25 gallons
	Yellow 5-gallon bucket	____ gallons

Sample Lead Initials: ~~AL~~ Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** JS002

Attempt # 2 Cast Time: 12:48 Water Depth (m): 11.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: JS002-2-CHEM Estimated Hydrowire angle (degrees): na

Easting: 4310660.40 Sampler Penetration (inches): 5"

Northing: 5107530.41 Sample Interval (0 to X inches bss): 2"

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler? (Rubber boot in sampler)	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Rejected FH

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials FH Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** Chem. Bend

Anchored? (NO) YES **Location ID:** JS002

Attempt # 3 Cast Time: 1257 Water Depth (m): 11.2

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: JS002-3-CHEM Estimated Hydrowire angle (degrees): n/a

Easting: 4310655.71 Sampler Penetration (inches): <4

Northing: 540757G.30 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) *
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

* Does not meet min. penetration depth.

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: M-C SAND Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Rejected AH.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

SE Duplicate Sample ID: Time:

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

sediment bucket volumes

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials AH. Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** JS002-

Attempt # 4 Cast Time: 1313 Water Depth (m): 11.2

GPS Target Parameters Sheave Counter Depth (m): na

Name: JS002-4-CHEM Estimated Hydrowire angle (degrees): na

Easting: 431049.58 Sampler Penetration (inches): >6

Northing: 5140715.74.01 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected) overfilled Sampler

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures: Rejected

Stratification: Shells:

Density: Sheen/Odor: LH

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-10-19 Field Supervisor Initials MW Date: 10-10-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698 **Area of Interest:** Chinn Bend

Anchored? NO YES **Location ID:** JS002

Attempt # 5 Cast Time: 1338 Water Depth (m): 11.2

GPS Target Parameters Sheave Counter Depth (m): NA

Name: JS002-5-CHEM Estimated Hydrowire angle (degrees): NA

Easting: ~~431072.5~~ 431072.33 Sampler Penetration (inches): 5

Northing: 5407577.56 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): no additional

Sediment Characteristics

Sediment Type / Texture: m-c SAND Redox Boundary: <0.5 mm

Presence of debris: none

Color: 10 yr 3/3 Biological Structures: film of organic matter

Stratification: homogeneous Shells: none

Density: loose Sheen/Odor: none

Presence/Absence silica glass: yes, scattered Other Notes: Matches target focus - SAND

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): one

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID:	_____ Time: _____		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	_____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____ Time: _____		8 oz WMGJ	
EPA TX Split Sample ID:	_____ Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____ Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____ Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials NM Date: 10-10-19 Field Supervisor Initials _____ Date: 10.10.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** China Bend

Anchored? (NO) YES **Location ID:** JS002

Attempt # 6 Cast Time: 1407 Water Depth (m): 11.2

GPS Target Parameters Sheave Counter Depth (m): n/a

Name: JS002-6-BMI Estimated Hydrowire angle (degrees): n/a

Easting: 431062.04 Sampler Penetration (inches): 4

Northing: 540575 11.36 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): no additional

Sediment Characteristics

Sediment Type / Texture: (PH 10-10-19) ~~fine~~ SAND, trace silt on surface f-m.

Color: 10YR3/3

Stratification: homogeneous

Density: loose

Presence/Absence silica glass: yes, scattered

Redox Boundary: < 0.25mm

Presence of debris: twigs

Biological Structures: green goop, bio film

Shells: none

Sheen/Odor: none

Other Notes: matches target facies - SAND

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): DH Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: On Pg 1 DH Time: _____

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DH Date: 10-10-19 Field Supervisor Initials MM Date: 10-10-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___
Date 10-11-19

Project Number: 60612698
Vessel: Yeti
Vessel Crew: R. Trudeau, E. Rigbey
EPA Observer: N. Badon
Arrival Time: 1135

Area of Interest: China Bend
Location ID: JSPP2-
Sampling Crew: J. Pretare, J. Mare, C. Pickerell
Departure Time: 1405

River Stage:
Water Surface Elevation (ft): ___
Elevation Source: ___

Weather Conditions Upon Arrival:
Temp (°F): 38 Wind (mph): 0
Clouds/Precipitation: sunny

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: ___
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none - sediment boat nearby

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
None

GPS Target Parameters and Water Depth

GPS Name: JSPP2-1-PW
Easting: 431068.35
Northing: 5407577.35

Water Depth (m): 11.3
Water Sample Color: clear to light yellow

Additional Video Reconnaissance Information

GPS Name: ___
Easting: ___
Northing: ___
Observations:

GPS Name: ___
Easting: ___
Northing: ___
Observations:

Sample Identification Information

Primary Sample ID: JSPP2-PW-1-101119 Time: 1311

Duplicate Sample ID: — Time: ___
EPA Split Sample ID: — Time: ___
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: ___
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: JP Date: 10-11-19
Field Supervisor Initials: aes. Date: 10/12/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 09/21/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV Tieton **Location ID:** DM0002

Vessel Crew: J. Schaefer, C. Furulie **Sampling Crew:** J. Moore, B. Chadwick, L. Howard

EPA Observer: R. Zajac-Fay

Arrival Time: 0859 **Departure Time:** 0936

River Stage:
Water Surface Elevation (ft): not collected
Elevation Source: \

Weather Conditions Upon Arrival:
Temp (°F): 43 Wind (mph): 0 mph
Clouds/Precipitation: foggy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO) is Coarse

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic 1 fishing boat anchored nearby

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Tieton Water Depth (m): 11.5 (LH092119)

~~Easting:~~ 445969.69 Northing

~~Northing:~~ 5421210.57 Easting

Water Sample Color: DID NOT ~~SAMPLE~~ SAMPLE

Additional Video Reconnaissance Information

GPS Name: Observations: LH

Easting:

Northing:

GPS Name: Observations: LH

Easting:

Northing:

Sample Identification Information

Primary Sample ID: Time:

Duplicate Sample ID: Time:

EPA Split Sample ID: Time:

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. ~~Sulfide~~	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/~~Alkalinity~~/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials LH Date: 09-21-19 Field Supervisor Initials NM Date: 9/21/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 02

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Shawn Roark

Arrival Time: 1044 **Departure Time:** 1400

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 40 Wind (mph): 0
Clouds/Precipitation: Mostly cloudy, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: ~~(Powered)~~ (Anchored) River Current: (Swift) ~~(Eddie)~~ (Calm) (Ripple)

River Mile: 738 Water Surface: ~~(Calm)~~ (Small Waves) (Choppy)

Boat Traffic: No

Surface Vegetation Present: Yes ~~No~~ Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Mostly consolidated river cobbles to highwater mark, then grasses to terrace

Sampling Information

Sampler Used: Harmon grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 - accepted Attempt 3 - accepted Attempt 5
Attempt 2 - rejected Attempt 4 - accepted

Video Reconnaissance Information

GPS Target Name: DM002-01
Easting: 445978.54
Northing: 5421227.35
Observations: 50/50 sand gravel

GPS Target Name: DM002-02
Easting: 445971.77
Northing: 5421227.75
Observations: Too much gravel

GPS Target Name: DM002-03
Easting: 445979.83
Northing: 5421227.99
Observations: 50/50 sand gravel

GPS Target Name: DM002-04
Easting: 445979.19
Northing: 5421229.07
Observations: Nearly all sand

Sample Lead Initials RD Date: 10/9/19 Field Supervisor Initials [illegible] Date: 10/9/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/19 ~~10/8~~ - MGS 1/15/2020

Project Number:	60612698	**Area of Interest:**	DM
Vessel:	RV Cayuse	**Location ID:**	002
Vessel Crew:	Mike Duffield Ed Sloan	**Sampling Crew:**	Dave Hose, Fagan Driver, Glen Mejia
C.R. Observer:	N/A	**EPA Observer:**	Shawn Roark
Arrival Time:	1044	**Departure Time:**	1400
River Stage:		**Weather Conditions Upon Arrival:**	
Water Surface Elev. (ft):	1287.4	Temp (°F): 51	Wind (mph): 4
Water Surface Elevation Source:	Northport Dock	Clouds/Precipitation:	Mostly cloudy / dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: no

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Mostly consolidated river cobbles to high water mark, then grasses to terrace

Sampling Information

Sampler Used: Ekman grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 5 - accepted

Video Reconnaissance Information

GPS Target Name: DM002-05
Easting: 445978.70
Northing: 5421228.72
Observations: sampled for BMI

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/9/19 Field Supervisor Initials DA Date: 10/9/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? NO YES **Location ID:** DM002

Attempt # 1 Cast Time: 1055 Water Depth (m): 9.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM002-1-CHEM Estimated Hydrowire angle (degrees): —

Easting: 445978.54 Sampler Penetration (inches): 7.

Northing: 5421227.35 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: —	Time: —	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/9/19 Field Supervisor Initials: JOA Date: 10/9/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698

Area of Interest: Dead man Eddy

Anchored? NO YES

Location ID: DM002

Attempt # 2

Cast Time: 1139

Water Depth (m): 9.3

GPS Target Parameters

Sheave Counter Depth (m):

Name: DM002-2

Estimated Hydrowire angle (degrees):

Easting: 445974.77

Sampler Penetration (inches):

Northing: 5421227.75

Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: too much gravel	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool

Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/9/19

Field Supervisor Initials LO PA Date: 10/9/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-9-2019

Project Number: 60612698
Area of Interest: Dead Man Eddy
Anchored? NO YES
Location ID: DM002
Attempt # 3 Cast Time: 1150
Water Depth (m): 9.2
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM002-3-CHEM
Estimated Hydrowire angle (degrees): —
Easting: 445979.83
Sampler Penetration (inches): 6"
Northing: 5421227.99
Sample Interval (0 to X inches bss): —
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/9/19
Field Supervisor Initials LOA Date: 10/9/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-9-19

Project Number: 60612698
Anchored? ~~NO~~ YES
Attempt # 4 Cast Time: 1249
GPS Target Parameters
Name: DM002-4-CHEM
Easting: 445979.14
Northing: 542229.07
Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: Deadman Eddy
Location ID: DM002
Water Depth (m): 9.20
Sheave Counter Depth (m): —
Estimated Hydrowire angle (degrees): —
Sampler Penetration (inches): 6
Sample Interval (0 to X inches bss): —
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: poorly graded medium grain sand with gravel sand grain subround - round material
Color: 5YR 3/1 very gray
Stratification: none - massive
Density: moderate
Presence/Absence silica glass: ~~NO~~ or Yes, 50%
Redox Boundary: none
Presence of debris: none
Biological Structures: none observed
Shells: trace
Sheen/Odor: no sheen / odor
Other Notes: 36% gravel 64% sand

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 3, 4
SEM-AVS Container Collected from Attempt #: 4
Sieving Information:
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): 55.1
Total Mass of Sediment (kg): 85.5
Mass of Sediment 5 mm to 3 inches (gravel) (kg): 30.4
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM002-SE-1-100919 Time: 1255

Cross off containers NOT filled

SEM-AVS		8 oz WMGJ (no headspace)
Total Metals & TOC		8 oz WMGJ
Grain Size		8 oz WMGJ
BEM		16 oz Amber WMGJ
Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	79.4	1 x 5 gallon white bucket 5.6 gallons
	28.3	1 x 2.5 gallon white bucket 2.1 gallons

SE Duplicate Sample ID: _____ Time: _____

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: — Time: — Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DM Date: 10/9/19
Field Supervisor Initials: DA Date: 10/9/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 100919

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM002
Attempt # 5 Cast Time: 1352
Water Depth (m): 9.2
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM002-5-BM1
Estimated Hydrowire angle (degrees): —
Easting: 445978.70
Sampler Penetration (inches): 6
Northing: 5421228.72
Sample Interval (0 to X inches bss): —
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: poorly graded medium grain sand with gravel sand grain subrounded to rounded
Redox Boundary: none
Presence of debris: none
Color: 5YR3/1 very gray
Biological Structures: none
Stratification: massive
Shells: trace
Density: moderate
Sheen/Odor: none
Presence/Absence silica glass: Yes 5%
Other Notes: grab is 1 sq ft

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: DM002-BM1-1-100919 Time: 1255 Yellow 5-gallon bucket 63.6 lbs 2.4 gallons
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/9/19 Field Supervisor Initials DR Date: 10/9/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV Tieton **Location ID:** DMC02

Vessel Crew: C. Smith, A. Sims, J. Schaefer, L. LeSueur **Sampling Crew:** Anders Utter

EPA Observer: Sara Rearle

Arrival Time: 1123 **Departure Time:** 1242

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 40° Wind (mph): 0 mph
Clouds/Precipitation: Clear skies

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 10.3 m

Easting: 445983.40

Northing: 5421235.60 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DMC02-PW-1-101019 Time: 1155

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 10/10/19 Field Supervisor Initials LOA Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 004

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 0952 **Departure Time:** 1002

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 2
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) ~~Mixed Coarse (mCs)~~ Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) ~~(Small Waves)~~ (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gravels & cobbles to high water mark then grasses & trees to terrace

Sampling Information

Sampler Used: Freeze grab # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM004 SV01 0955
Easting: 44 5176.42 8.2m
Northing: 5421188.69
Observations: fine to coarse gravels, small cobbles

GPS Target Name: DM004 SV02 0958
Easting: 446003.06 8.4m
Northing: 5421195.26
Observations: fine to coarse gravels, small cobbles

GPS Target Name: DM004 SV03 1001
Easting: 446007.03 9.1m
Northing: 5421170.93
Observations: fine to coarse gravels, small cobbles

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DM Date: 10/17/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 005

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamera Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1002 **Departure Time:** 1008

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 2
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gravels & cobbles to high water mark, then grasses & trees to terrace

Sampling Information

Sampler Used: Freezegrab # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM005 SV1 1003
Easting: 446030.56 9m
Northing: 5421174.65
Observations: fine to coarse gravels, small cobbles

GPS Target Name: DM005 SV2 1005
Easting: 446033.68 8.7m
Northing: 5421194.29
Observations: fine to coarse gravels, small cobbles

GPS Target Name: DM005 SV3 1007
Easting: 446042.14 8.8m
Northing: 5421183.27
Observations: fine to coarse gravels, small cobbles

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DM Date: 10/17/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698
Area of Interest: DM
Vessel: RV Cayuse
Location ID: Changed MEB 11/5/19 ~~DM006~~
Vessel Crew: Mike Duffield, Ed Sloan
Sampling Crew: Stu Holmes, Ragan Driver, Glen Mejia
C.R. Observer: Tamara Knudson - Spokane Tribe
EPA Observer: N/A
Arrival Time: 1020
Departure Time: 1130

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 2
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare 11-26-19 (JAP)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: some private fishing boats

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gravels & cobbles to high water mark.. then grasses & trees to terrace

Sampling Information

Sampler Used: Freeze grab
# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 rejected - insufficient recovery
Attempt 2 rejected - no recovery

Video Reconnaissance Information

GPS Target Name: DM006 SV01 1023
Easting: 446037.92 9.5m
Northing: 5421153.63
Observations: fine to coarse gravels, small cobbles, some sand

GPS Target Name: DM006 SV02 1024
Easting: 446052.08 9.2m
Northing: 5421168.82
Observations: fine to coarse gravels, small cobbles

GPS Target Name: DM006 SV03 1025
Easting: 446067.02 9.1m
Northing: 5421175.74
Observations: fine to coarse gravels, small cobbles

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/17/19
Field Supervisor Initials DJF Date: 10/17/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612696 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM006 (alt for DM13)

Attempt # 1 Cast Time: 1051 Water Depth (m): 9.4

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM006-1 Estimated Hydrowire angle (degrees): —

Easting: 446040.04 Sampler Penetration (average) (inches): 5

Northing: 5421155.78

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: no recovery on grab / lost or none adhere to grab Accepted (Rejected)

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DRY Date: 10/17/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** DM006

Attempt # 2 Cast Time: 1121 Water Depth (m): 9.4

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM006-2 Estimated Hydrowire angle (degrees): —

Easting: 446037.36 Sampler Penetration (average) (inches): 5

Northing: 5421154.42

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: no material recovered Accepted (Rejected)

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DM Date: 10/17/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 007 (alt for DM066)

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1245 **Departure Time:** 1407

River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 56 Wind (mph): 2
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
cobbles to high water then grasses & trees to terrace

Sampling Information

Sampler Used: Van Veen (small)

# of Sampling Attempts (Accepted vs. Rejected):
3 accepted (1 and 2 for chem/phys discussion, #3 BMI)

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SM Date: 10-15-19 Field Supervisor Initials DM Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.15.19

Project Number: 60612698
Area of Interest: Peatmans Eddy
Anchored? (NO) YES
Location ID: DM007 (alt DM066)
Attempt # 1 Cast Time: 1247
Water Depth (m): 7.7
GPS Target Parameters
Sheave Counter Depth (m): =
Name: DM007-1-CHEM
Estimated Hydrowire angle (degrees):
Easting: 446092.14
Sampler Penetration (inches): 8
Northing: 5421124.89
Sample Interval (0 to X inches bss): 0-6
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~	(~~NO~~)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(~~YES~~)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #: 1
Sieving Information: Added grain to lexan tub
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes (No)
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM007-SE-1-101519 Time: 1252

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	16 oz Amber WMGJ	
~~Organics~~	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: DM007-BMI-1-101519 Time: 1343 Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19
Field Supervisor Initials DRY Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698

Area of Interest: Deadman Eddy

Anchored? (NO) YES

Location ID: DM007 (alt DM066)

Attempt # 2

Cast Time: 1314

Water Depth (m): 7.7

GPS Target Parameters

Sheave Counter Depth (m): ~

Name: DM007-2-CHEM

Estimated Hydrowire angle (degrees): —

Easting: 4460831.9

Sampler Penetration (inches): 8

Northing: 5421188.65

Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: fine - medium sand

Redox Boundary: none

Presence of debris: none

Color: 10 YR 2/1 black

Biological Structures: none

Stratification: massive

Shells: none

Density: loose

Sheen/Odor: none

Presence/Absence silica glass: YES, 667.

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2

SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)

Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: DM007-SG-1-101519 Time: 1252

Cross off containers NOT filled

~~SEM-AVS~~	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.2 gallons
	1 x 2.5 gallon white bucket	2.14 gallons

lbs
67.2
27.0

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DW Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.15.19

Project Number: 60612698
Area of Interest: Deadman Eddy
Anchored? (NO) YES
Location ID: DM007 (alt. DM066)
Attempt # 3
Cast Time: 1338
Water Depth (m): 7.7
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM007-3-BM1
Estimated Hydrowire angle (degrees): —
Easting: 446080.01
Sampler Penetration (inches): 9
Northing: 5421189.76
Sample Interval (0 to X inches bss): 0–6
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: small van veen (medium power grab)	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: see description for attempt #2
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: DM007-BM1-1-101519 Time: 1343 Yellow 5-gallon bucket 2.9 gallons
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket 2.9 gallons

lbs
54.6
55.8

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19
Field Supervisor Initials DM Date: 10/15/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tieton **Location ID:** DM007

Vessel Crew: John Schaefer, Ryan MCElieca **Sampling Crew:** Alan Sims, Mark Biser (CMA)
Linda Howard (AECOM)

EPA Observer: Marilyn Gauthier

Arrival Time: 1022 **Departure Time:** 1230

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 41 Wind (mph): 2
Clouds/Precipitation: Overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFS)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sample location on a little bit of a slope.

GPS Target Parameters and Water Depth

GPS Name: DM007-1-PW Water Depth (m): 8.8

Easting: 4460285.39

Northing: 542191.98 Water Sample Color: slight yellow

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM007-PW-1-101619 Time: 1057

Duplicate Sample ID: DM007-PW-2-101619 Time: 1057

EPA Split Sample ID: \ Time: \

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
~~5. Sulfate/Alkalinity/Chloride~~	125 mL Poly Unpreserved
Analyte and Bottle Type:	Sulfate 125 mL Poly unpreserved
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: [illegible] Date: 10-16-19

Field Supervisor Initials: AM Date: 10/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09-19-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: RV Tieton **Location ID:** DM0084

Vessel Crew: J. Schaefer, Chad Furulie **Sampling Crew:** L. Howard, J. Moore, ~~C. Bode~~ (LH 09/19/19)
B. Chadwick

C.R. Observer: ~~Rachel Zaraj-Fay~~ (LH 09/19/19) **EPA Observer:** Rachel Zaraj-Fay

Arrival Time: 1135 **Departure Time:** 1457

River Stage:
Water Surface Elev. (ft):

Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): 0

Water Surface Elevation Source: aft mounted depth finder Clouds/Precipitation: Sunny

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: milfoil (Yes) No Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Trident Driveframe # 1 # of Sampling Attempts (Accepted vs. Rejected): 1

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: LH Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials LH Date: 09-19-19 Field Supervisor Initials PM Date: 9-20-19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date:	09-19-19		
Person completing form:	Linda Howard		

Sampling date:	09-19-19	Sampling time:	0945
Weather:	partly cloudy	Sample collector:	L. Howard
Location ID:	DM023	Field duplicate collected?	yes
Media type (circle one):	(PW) EB FB	Sample ID:	DM023-PW-2-091919 DM023-PW-1-091919
Container Size:	125mL - 250mL	Chemical Analysis:	Metals, DOC, TOC, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Oxygen detected so no sulfide ~~detected~~ collected Trident drive frame #1 Sampleable sand		

See Location DM023

J.A.P.

Sampling date:	09-19-19	Sampling time	1302
Weather:	sunny	Sample collector:	L. Howard
Location ID:	DM008	Field duplicate collected?	yes
Media type (circle one):	(PW) EB FB	Sample ID	DM008-PW-2-091919 DM008-PW-1-091919
Container Size:	125mL-250mL	Chemical Analysis	metals, DOC, TOC, sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Oxygen present, so no sulfide analysis Trident driveframe #1 in sampleable sand		

Sampling date:		Sampling time	
Weather		Sample collector	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

LH 091919

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 008

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Joe Wichmann - CCC

Arrival Time: 1215 **Departure Time:** 1532

River Stage:
Water Surface Elev. (ft): 1287.0
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 3
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: no

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
consolidated cobbles up to high water mark then grasses & trees to terrace

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
8 accepted, 3 rejected

Video Reconnaissance Information

GPS Target Name: DM008-05
Easting: 446070.76
Northing: 5421204.11
Observations: accepted

GPS Target Name: DM008-06
Easting: 446072.75
Northing: 5421204.80
Observations: rejected - insufficient material

GPS Target Name: DM008-07
Easting: 446069.63
Northing: 5421203.96
Observations: accepted

GPS Target Name: DM008-08
Easting: 446074.57
Northing: 5421203.64
Observations: accepted

Sample Lead Initials RD Date: 10/11/19 Field Supervisor Initials DA Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 008

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Joe Wichmann - CCC

Arrival Time: 1215 **Departure Time:** 1532

River Stage:
Water Surface Elev. (ft): 1287.0
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 3
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mEs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: NO

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Consolidated cobbles to high water mark Then grasses + trees to terrace

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
8 accepted ; 3 rejected

Video Reconnaissance Information

GPS Target Name: DM008-01
Easting: 446071.50
Northing: 5421204.16
Observations: rejected- insufficient material

GPS Target Name: DM008-02
Easting: 446067.57
Northing: 5421202.86
Observations: rejected -insufficient material

GPS Target Name: DM008-03
Easting: 446070.90
Northing: 5421203.42
Observations: accepted

GPS Target Name: DM008-04
Easting: 446071.31
Northing: 5421203.61
Observations: accepted

Sample Lead Initials RD Date: 10/11/19 Field Supervisor Initials DA Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 008

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Joe Wichmann-CCC

Arrival Time: 1215 **Departure Time:** 1532

River Stage:
Water Surface Elev. (ft): 1287.0
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 3
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mEs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) ~~(Eddie)~~ (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NO

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Consolidated river cobbles to high watermark then grasses & trees to terrace

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
8 accepted, 3 rejected

Video Reconnaissance Information

GPS Target Name: DM008-09
Easting: 446075.02
Northing: 5421203.28
Observations: accepted

GPS Target Name: DM008-10
Easting: 446075.50
Northing: 5421201.83
Observations: accepted

GPS Target Name: DM008-11
Easting: 446077.33
Northing: 5421203.36
Observations: accepted BMI

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/11/19 Field Supervisor Initials DA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/11/19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** DM008

Attempt # 1 Cast Time: 1221 Water Depth (m): 6.8

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM008-1 Estimated Hydrowire angle (degrees): _____

Easting: 446071.50 Sampler Penetration (inches): _____

Northing: 542124.16 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient material	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): _____

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials: GM Date: 10/11/19 Field Supervisor Initials: DA Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/11/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM008
Attempt # 2 Cast Time: 1230
Water Depth (m): 7.6
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM008-2
Estimated Hydrowire angle (degrees):
Easting: 446067.59
Sampler Penetration (inches):
Northing: 5421202.86
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	**NO**
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ		
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/11/19
Field Supervisor Initials: [illegible] Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 101119

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? NO YES
Location ID: DM008
Attempt # 3 Cast Time: 1306
Water Depth (m): 7.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM008-3-CHEM
Estimated Hydrowire angle (degrees): —
Easting: 446070.90
Sampler Penetration (inches): 3 1/4 - 4
Northing: 5421203.42
Sample Interval (0 to X inches bss): —
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

J.A.P 1-17-20

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #: 3
Sieving Information: composite sample
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM008-SE-1-101119 Time: 1320

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	16 oz Amber WMGJ	
~~Organics~~	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	~~1 x 5 gallon white bucket~~	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date 10/11/19 Field Supervisor Initials KH Date: 10/11/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10 11 19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM008

Attempt # 4 Cast Time: 1332 Water Depth (m): 7.1

GPS Target Parameters Sheave Counter Depth (m):

Name: DM008-4 Estimated Hydrowire angle (degrees):

Easting: 446071.31 Sampler Penetration (inches): 6

Northing: 5421203.61 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

J.A.P 1-17-20

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: Composite Sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/11/19 Field Supervisor Initials: JAP Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/11/19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** DM00-8

Attempt # 5 Cast Time: 1344 Water Depth (m): 7.1

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM008-5-CHEM Estimated Hydrowire angle (degrees): _____

Easting: 446070.76 Sampler Penetration (inches): 4

Northing: 5421204.11 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	Rejected

J.A.P 1-17-20

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: Composite Sample

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/11/19 Field Supervisor Initials JAH Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/11/19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 6 Cast Time: 1356
GPS Target Parameters
Name: DM009-6
Easting: 446072.75
Northing: 5421204.80
Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: Deadmans Eddy
Location ID: DM009
Water Depth (m): 6.7
Sheave Counter Depth (m): —
Estimated Hydrowire angle (degrees): —
Sampler Penetration (inches): 3
Sample Interval (0 to X inches bss): —
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: Insufficient material	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CMR Date 10/11/19 Field Supervisor Initials CH Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10·11·19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** DM008

Attempt # 7 Cast Time: 1403 Water Depth (m): 7.

GPS Target Parameters Sheave Counter Depth (m):

Name: DM008-7-CHEM Estimated Hydrowire angle (degrees):

Easting: 446069.63 Sampler Penetration (inches): 4

Northing: 5421203.96 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7 Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

JA.P 1-17-20

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: Composite Sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/11/19 Field Supervisor Initials: DA Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/11/19

Project Number: 60612698
Area of Interest: Deadman Eddy
Anchored? NO YES
Location ID: DM008
Attempt # 2 Cast Time: 1415
Water Depth (m): 6.8
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM008-8-CHEM
Estimated Hydrowire angle (degrees):
Easting: 446074.57
Sampler Penetration (inches):
Northing: 5421203.64
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

J.A.P. 1-17-20

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:
Sieving Information: added sample to composite
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	SEM-AVS	8 oz WMGJ (no headspace)	
Time:	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Time:	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GW Date 10/11/19
Field Supervisor Initials PA Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/11/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM008

Attempt # 9 Cast Time: 1426 Water Depth (m): 6.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM008-9-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446075.02 Sampler Penetration (inches): 4

Northing: 5421203.29 Sample Interval (0 to X inches bss): —

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

JAP 1-17-20

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: Composite Sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/11/19 Field Supervisor Initials: DA Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10 11 19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? NO YES
Location ID: DM008
Attempt # 10 Cast Time: 1437
Water Depth (m): 6.8
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM008-10-CHEM
Estimated Hydrowire angle (degrees):
Easting: 446075.50
Sampler Penetration (inches): 6
Northing: 5421201.83
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

1-17-20 JAP

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: poorly graded sand medium grain rounded to well-round
Redox Boundary: none
Presence of debris: none
Color: 5Y 2.5/1 black
Biological Structures: none
Stratification: Hard crust on surface
Shells: none
Density: very dense
Sheen/Odor: no sheen no odor
Presence/Absence silica glass: YES, 80%
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3,4,5,7,8,9,10 SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM008-SE-1-101119 Time: 1320

	Cross off containers NOT filled		
~~SEM-AVS~~	~~8 oz WMGJ~~ (no headspace)		
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
Bioassays	1 x 5 gallon white bucket	5.6	gallons
	1 x 2.5 gallon white bucket	2.14	gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)		*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: DM008-SE-3-101119 Time: 1320 2.5 gallon white bucket 2.14 gallons
BMI Primary Sample ID: Time: Yellow 5-gallon bucket gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

5.6 + 2.14 = 7.74 → 1.0
2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 = 32.1 → 32.0
2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 + 2.14 = 33.6

Sample Lead Initials: [illegible] Date: 10/11/19
Field Supervisor Initials: [illegible] Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10 11 19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? NO YES
Location ID: DM008
Attempt # 11 Cast Time: 1513
Water Depth (m): 6.9
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM008-11-BM1
Estimated Hydrowire angle (degrees): —
Easting: 446077.33
Sampler Penetration (inches): 6
Northing: 5421203.36
Sample Interval (0 to X inches bss): —
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

J.A.P. 1-17-20

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Same as #10 see description for Attempt #10
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time. _____ 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: DM008-BM1-1-101119 Time: 1520 Yellow 5-gallon bucket 2 gallons 39.2 lbs
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date 10/11/19 Field Supervisor Initials DH Date 10/11/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 09-21-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV Tieton **Location ID:** DM010

Vessel Crew: J. Schaefer, C. Furwie **Sampling Crew:** J. Moore, B. Chadwick

L. Howard

EPA Observer: R. Zajac-Fay

Arrival Time: 0943 **Departure Time:** 1205

River Stage:

Water Surface Elevation (ft): no collected

Elevation Source: \

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:

Temp (°F): 43 Wind (mph): 0 mph

Clouds/Precipitation: Sunny, clear

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 732 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic 1 fishing boat nearby

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Tieton Water Depth (m): 0.80m

~~Easting:~~ 446113.59 Northing

~~Northing:~~ 5421212.44 Easting Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations: LH

Easting:

Northing:

GPS Name: Observations: LH

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM010-PW1-092119 Time: 1050

Duplicate Sample ID: none Time:

EPA Split Sample ID: DM010-PW-3-092119 Time: 1030

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~ LH.	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: none

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials LH Date: 092119 Field Supervisor Initials NM Date: 9/21/19

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 010

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Joe Wichmann - CCC

Arrival Time: 1015 **Departure Time:** 1135

River Stage:
Water Surface Elev. (ft): 1287.0
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 35 Wind (mph): 5
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) ~~(Eddie)~~ (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NO

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
consolidated river cobbles to high water mark, then grasses/trees to top of terrace

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
3 accepted attempts

Video Reconnaissance Information

GPS Target Name: DM010-01
Easting: 446114.94
Northing: 5421212.86
Observations: accepted

GPS Target Name: DM010-02
Easting: 446114.06
Northing: 5421213.25
Observations: accepted

GPS Target Name: DM010-03
Easting: 446113.60
Northing: 5421212.47
Observations: accepted - BMI

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/11/19 Field Supervisor Initials DA Date: 10/11/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10·11·19

Project Number: 60612698
Area of Interest: Peatmans Eddy
Anchored? (NO) YES
Location ID: DM010
Attempt # 1 Cast Time: 1023
Water Depth (m): 1.6
GPS Target Parameters
Sheave Counter Depth (m): –
Name: DM010-1-CHECK
Estimated Hydrowire angle (degrees): –
Easting: 446114.94
Sampler Penetration (inches): 8
Northing: 5421212.86
Sample Interval (0 to X inches bss): –
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

J.A.P 1-17-20

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #: 1
Sieving Information: Added grabs to large fines for Management
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM010-SE-1-101119 Time: 1028

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	~~16 oz Amber WMGJ~~	
~~Organics~~	~~2 x 8 oz~~ WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	~~1 x 5~~ gallon white bucket	_____ *gallons*
	~~1 x 2.5~~ gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/11/19
Field Supervisor Initials: [illegible] Date: 10/11/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.11.19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM010
Attempt # 2 Cast Time: 1038
Water Depth (m): 1.6
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM010-2-CHEM
Estimated Hydrowire angle (degrees): —
Easting: 446114.06
Sampler Penetration (inches): 8"
Northing: 5421213.25
Sample Interval (0 to X inches bss): —
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

J.A.P 1-17-2

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: poorly graded medium gran sand well rounded
Redox Boundary: none
Presence of debris: none
Color: 5YR 3/1 very dark gray
Biological Structures: none observed
Stratification: none observed
Shells: none observed
Density: medium
Sheen/Odor: no sheen no odor
Presence/Absence silica glass: YES 20%.
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM010-SE-1-101119 Time: 1029

	Cross off containers NOT filled		
~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~		
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
Bioassays	1 x 5 gallon white bucket	5.6	gallons
	1 x 2.5 gallon white bucket	2.4	gallons

78.2
29.2

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: DM010-SE-3-101119 Time: 1029 — 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ — 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: _____ Time: _____ — Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID: _____ Time: _____ — Yellow 5-gallon bucket _____ gallons
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials CW Date: 10/11/19
Field Supervisor Initials DH Date 10/11/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10 11 19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM010
Attempt # 3
Cast Time: 1117
Water Depth (m): 1.6
GPS Target Parameters
Sheave Counter Depth (m): –
Name: DM010-3
Estimated Hydrowire angle (degrees): –
Easting: 446113.60
Sampler Penetration (inches): 8
Northing: 542142.47
Sample Interval (0 to X inches bss): –
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4 Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

J.A.P 1-17-20

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): –

Sediment Characteristics

Sediment Type / Texture: same description as attempt #2 see notes for attempt #2
Redox Boundary:
Color:
Presence of debris:
Stratification:
Biological Structures:
Density:
Shells:
Presence/Absence silica glass:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: – Time: –

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: DM010-BMI-1-101119 Time: 1125 Yellow 5-gallon bucket 2.75 *gallons* 54.2
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: JM Date: 10 11 19
Field Supervisor Initials: DA Date: 10/11/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: R.V. Teton **Location ID:** DM012

Vessel Crew: R. McElveen, J. Schaefer **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G. Sethern

Arrival Time: 1300 **Departure Time:** 1307

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes ~~No~~ Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM012-SV-1 Observations: Cobbles w/ coarse gravel
Easting: 446087.86 D: 10.2 m
Northing: 542141.41 @1302

GPS Target Name: DM012-SV-2 Observations: Same as above
Easting: 446079.43 D: 9.9 m
Northing: 542154.79 @1303

GPS Target Name: DM012-SV-3 Observations: Same as above
Easting: 446047.60 D: 9.3 m
Northing: 542171.99 @1305

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials DA Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/19

Project Number:	60612698	**Area of Interest:**	DM
Vessel:	CAYUSE	**Location ID:**	013
Vessel Crew:	~~Dave Hose, Glen Meija, Ragan Driver~~ RD 10/8/19 Mike Duffield, Ed Sloan	**Sampling Crew:**	Dave Hose, Ragan Driver, Glen Meija
C.R. Observer:	Tamara Knudson, Spokane Tribe	**EPA Observer:**	N/A
Arrival Time:	0943	**Departure Time:**	1235
River Stage: Water Surface Elev. (ft):	1287.5	**Weather Conditions Upon Arrival:** Temp (°F):	45°F Wind (mph): 7mph
Water Surface Elevation Source:	Northport Dock	Clouds/Precipitation:	Partly Cloudy

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737-738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: 2 small fishing vessels

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Shoreline mostly cobbles to high water mark, then grasses

Sampling Information

Sampler Used: Freeze Grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 - failed Attempt 3 - rejected
Attempt 2 - failed

Video Reconnaissance Information

GPS Target Name: DM013-1
Easting: 446891.18
Northing: 5421132.59
Observations: swift current

GPS Target Name: DM013-2
Easting: 446086.30
Northing: 5421142.47
Observations: swift current knocks freeze/grab sampler over

GPS Target Name: DM013-3
Easting: 446093.27
Northing: 5421136.61
Observations: swift current knocks sampler over one 7cm x 4cm cobble collected

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/8/19 Field Supervisor Initials LOA Date: 10/8/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/8/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM013
Attempt # 1
Cast Time: 1106
Water Depth (m): 10.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM013-1
Estimated Hydrowire angle (degrees): —
Easting: 446891.18
Sampler Penetration (average) (inches): _____
Northing: 5421132.59
Sample Type: (Physical/Chemical) BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? (YES) NO no recovery
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: Time on Bottom 7 minutes **Accepted** Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) (w/o Hammer) Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 10/8/19 Field Supervisor Initials LOA Date: 10/8/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 100819

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? NO YES **Location ID:** DM013

Attempt # 2 Cast Time: 1140 Water Depth (m): 10.2

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM013 - 2 Estimated Hydrowire angle (degrees): _____

Easting: 446086.30 Sampler Penetration (average) (inches): _____

Northing: 542,142.47

Sample Type: Physical/Chemical BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? (YES) NO — no recovery
2. Minimum sampler penetration depth (4 to 6 inches) acheived? YES NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: Accepted (Rejected)

Sample Collection Method: (Freeze Grab w/ Hammer) (w/o Hammer) Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MN Date: 100919 Field Supervisor Initials DH Date: 10/8/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10 08 19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? NO YES **Location ID:** DM013

Attempt # 3 Cast Time: 1220 Water Depth (m): 10.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM013-3 Estimated Hydrowire angle (degrees): —

Easting: 446093.27 Sampler Penetration (average) (inches): —

Northing: 5421136.61

Sample Type: Physical/Chemical BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? incomplete recovery	YES	**NO**
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
4. Sample is:	**Accepted**	Rejected

Sample Collection Method: Freeze Grab w/ Hammer w/o Hammer Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CN Date: 10 08 19 Field Supervisor Initials DA Date: 10/8/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 014

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson-Spokane Tribe **EPA Observer:** N/A

Arrival Time: 0928 **Departure Time:** 0945

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 47 Wind (mph): 2
Clouds/Precipitation: overcast / fog, trace rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: some private fishing boats

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gravel & cobbles to high water mark then grasses & trees to terrace

Sampling Information

Sampler Used: Freeze grab # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM014 Video Recon 01 (SV)
Easting: 446107.36
Northing: 5421138.71
Observations: All cobbles, no visible sand, large gravel 10.2m 0928

GPS Target Name: DM014 SV02
Easting: 446074.87
Northing: 5421171.56
Observations: fine to coarse gravel 9.8m 0938

GPS Target Name: DM014 SV03
Easting: 446074.87
Northing: 5421148.77
Observations: fine to coarse gravel 9.8m 0940

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DM Date: 10/17/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09-20-19

Project Number:	60612698	**Area of Interest:**	DMF
Vessel:	RV Tieton	**Location ID:**	DM014
Vessel Crew:	J. Schaefer C. Furulie	**Sampling Crew:**	Bart Chadwick, Joss Moore, Linda Howard
C.R. Observer:		**EPA Observer:**	Rachel Zajac-Fay
Arrival Time:	1207	**Departure Time:**	12:59
River Stage: depth (m) NOT COLLECTED Water ~~Surface Elev. (ft)~~: ~~737~~ 9/19/2019		**Weather Conditions Upon Arrival:** Temp (°F): 60°F Wind (mph): 0	
Water Surface Elevation Source: not collected		Clouds/Precipitation: Sunny	

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO * was not able to anchor

Boat Position: (Powered) ~~(Anchored)~~ NM 9/20

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Trident driveframe

# of Sampling Attempts (Accepted vs. Rejected):
* Not able to anchor – will discuss w/ EPA.

Video Reconnaissance Information

GPS Target Name: Easting: Northing:	Observations:
GPS Target Name: Easting: Northing:	Observations:
GPS Target Name: Easting: Northing:	Observations:
GPS Target Name: Easting: Northing:	Observations:

Sample Lead Initials: [illegible] Date: 09-20-19 Field Supervisor Initials: NM Date: 9/20/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09 20 19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: RV Tiecton **Location ID:** DM015

Vessel Crew: J. Schaefer, C. Furulie **Sampling Crew:** B. Chadwick, Joss Moore, Linda Howard

C.R. Observer: none **EPA Observer:** Rachel Fujiwara-Fay

Arrival Time: 0951 **Departure Time:** 1140

River Stage: Depth

Water ~~Surface Elev. (ft):~~ NA 1.5m

~~Water Surface Elevation Source~~: aft mounted depth finder

Weather Conditions Upon Arrival:

Temp (°F): 57°F Wind (mph): 0

Clouds/Precipitation: party cloudy

Site Information

Target Sediment Facies: Sampleable Sand (Sand mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: (Yes) No Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

- milfoil

Sampling Information

Sampler Used: Trident driveframe # of Sampling Attempts (Accepted vs. Rejected): no rejections

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations: MEP year added
Easting:
Northing:

Sample Lead Initials LHb Date: 9/20/19 Field Supervisor Initials MM Date: 9/20/19

Revised 9/18/2019

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date:	09-20-19		
Person completing form:	L Howard		

Sampling date:	09-20-19	Sampling time:	0944
Weather:	partly cloudy	Sample collector:	L. Howard
Location ID:	DM015	Field duplicate collected?	Yes (Sulfate)
Media type (circle one):	(PW) EB FB	Sample ID:	DM015-PW-1-092019 DM05-PW-2-092019
Container Size:	125mL ~~250mL~~ NM	Chemical Analysis:	Metals, DOC, TOC, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Used Trident driveframe #1 in Sampleable sand. Purged porewater slightly light yellow in color.		

~~Sampling~~ date:	09-20-19	Sampling time:	1338
Weather:	Sunny/rainy	Sample collector:	L. Howard
Location ID:	~~DM018-PW-1-092019~~ (DM018-092019)	Field duplicate collected?	No
Media type (circle one):	(PW) EB FB	Sample ID:	DM018-PW-1-092019
Container Size:	125mL ~~250mL~~ NM	Chemical Analysis:	Metals, DOC, TOC, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Driveframe #1 in sampleable sand		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	LH.
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

NM : Field Supervisor

LH 9/20/19 : Sample Log

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number:	60612698	**Area of Interest:**	DM
Vessel:	RV Cayuse	**Location ID:**	015
Vessel Crew:	Mike Duffield, Ed Sloan	**Sampling Crew:**	Dave Hose, Ragan Driver, Glen Mejia
C.R. Observer:	N/A	**EPA Observer:**	Kaila Savage
Arrival Time:	1430	**Departure Time:**	1620
River Stage: Water Surface Elev. (ft):	1287.8	**Weather Conditions Upon Arrival:** Temp (°F):	54 Wind (mph): 3
Water Surface Elevation Source:	Northport Dock	Clouds/Precipitation:	clear, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) ~~(Eddie)~~ (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NO

Surface Vegetation Present: (Yes) No MEB 11/25/19 Was Vegetation Removed: Yes No

weeds observed ~1.8m

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Mostly consolidated river cobbles to high water mark, then grasses to terrace

Sampling Information

Sampler Used: Harmon # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM015-01 Easting: 446161.65 Northing: 5421231.95	Observations: insufficient material, rejected
GPS Target Name: DM015-02 Easting: 446151.73 Northing: 5421231.67	Observations: organics present accepted
GPS Target Name: DM015-03 Easting: 446161.46 Northing: 5421226.89	Observations: accepted all sand
GPS Target Name: DM015-04 Easting: 446163.88 Northing: 5421229.55	Observations: rejected- insuffient material collected

Sample Lead Initials RD Date: 10/10/19 Field Supervisor Initials DA Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number:	60612698	**Area of Interest:**	DM
Vessel:	RV Cayuse	**Location ID:**	015
Vessel Crew:	Mike Duffield Ed Sloan	**Sampling Crew:**	Dave Hose, Ragan Driver, Glen Mejia
C.R. Observer:	N/A	**EPA Observer:**	Kaila Savage
Arrival Time:	1430	**Departure Time:**	1620

River Stage:
Water Surface Elev. (ft): 1287.8
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph): 3
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Mile: 738
Boat Traffic: No

River Current: (Swift) (Eddie) (Calm) (Ripple)
Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Mostly consolidated river cobbles to high water mark, then grasses to terrace

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): 5accepted, 3rejected

Video Reconnaissance Information

GPS Target Name: DM015-05
Easting: 446163.79
Northing: 5421227.97
Observations: accepted

GPS Target Name: DM015-06
Easting: 446165.68
Northing: 5421227.20
Observations: 4" recovery minimum acceptable

GPS Target Name: DM015-07
Easting: 446168.46
Northing: 5421226.46
Observations: over penetration; rejected

GPS Target Name: DM015-08
Easting: 446163.87
Northing: 5421227.48
Observations: accepted

Sample Lead Initials RD Date: 10/10/19
Field Supervisor Initials: DA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698 **Area of Interest:** Dearmas Eddy

Anchored? (NO) YES **Location ID:** DM015

Attempt # 1 Cast Time: 1432 Water Depth (m): 2.4

GPS Target Parameters Sheave Counter Depth (m):

Name: DM015-1 Estimated Hydrowire angle (degrees):

Easting: 446161.65 Sampler Penetration (inches):

Northing: 5421231.95 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is Insufficient recovery pentrate 3"	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time. _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date 10/10/19 Field Supervisor Initials: DA Date 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10·10·19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM015

Attempt # 2 Cast Time: 1441 Water Depth (m): 2.4

GPS Target Parameters Sheave Counter Depth (m):

Name: DM015-2-CHEM Estimated Hydrowire angle (degrees):

Easting: 446159.73 Sampler Penetration (inches): ~~6~~ 8

Northing: 5421231.67 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures: organics present

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: organic present

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM015-SE-1-101019 Time: 1445

Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/10/19 Field Supervisor Initials AH Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date _____

Project Number: 60612698 **Area of Interest:** Roadman Eddy

Anchored? (NO) YES **Location ID:** DM015

Attempt # 3 Cast Time: 1454 Water Depth (m): 2

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM015-3-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446161.46 Sampler Penetration (inches): 8

Northing: 542226.89 Sample Interval (0 to X inches bss): —

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: GM Date: 10/11 Field Supervisor Initials: DA Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.10.19

Project Number: 60612698 **Area of Interest:** Deatmans Eddy

Anchored? (NO) YES **Location ID:** DM015

Attempt # 4 Cast Time: 1505 Water Depth (m): 2.1

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM015-4 Estimated Hydrowire angle (degrees): _____

Easting: 446163.88 Sampler Penetration (inches): _____

Northing: 54212.29.55 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient material	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass. Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date 10/10/19 Field Supervisor Initials DA Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698 — **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES — 1511 — **Location ID:** DM015

Attempt # 5 — Cast Time: ~~1511~~ — Water Depth (m): 2.1

GPS Target Parameters — Sheave Counter Depth (m): —

Name: DM015-5-CHEM — Estimated Hydrowire angle (degrees): —

Easting: 446163.79 — Sampler Penetration (inches): 8

Northing: 5421227.97 — Sample Interval (0 to X inches bss): —

Sample Type: (Physical/Chemical/Bioassay) BMI — Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool — Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: medium gran sand poorly graded sand rounded — Redox Boundary: none

Color: 5YR 2.5/1 black — Presence of debris: none

Stratification: massive — Biological Structures: shells · tran

Density: medium — Shells: trace - broken shell

Presence/Absence silica glass: yes, 50% — Sheen/Odor: no sheen / odor

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3, 5 — SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) — Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ — Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: DM015-SE-1-101019 Time: 1445

	Cross off containers NOT filled	
~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5 gallons
	1 x 2.5 gallon white bucket	2.14 gallons

75 lb
30.8

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/10/19 — Field Supervisor Initials: DA Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10 10 19

Project Number: 60612698 — **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES — **Location ID:** DM015-

Attempt # 6 — Cast Time: 1543 — Water Depth (m): 2.1

GPS Target Parameters — Sheave Counter Depth (m): -

Name: DM015-6-BM1 — Estimated Hydrowire angle (degrees): -

Easting: 446165.68 — Sampler Penetration (inches): 4

Northing: 5421227.20 — Sample Interval (0 to X inches bss): -

Sample Type: Physical/Chemical/Bioassay (BMI) — Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: 4" of [illegible]	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool — Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: — Redox Boundary:

Color: Same description as Attempt 5 — Presence of debris:

Stratification: — Biological Structures: more than trace organics

Density: — Shells:

Presence/Absence silica glass: — Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: — SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No — Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): — Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled
SE Primary Sample ID: -	Time: -	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	____ gallons
			1 x 2.5 gallon white bucket	____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	____ gallons
BMI Primary Sample ID: DM015-BM1-1-101019	Time: 1545		Yellow 5-gallon bucket	2.5 gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	____ gallons

47.41

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/10/19 — Field Supervisor Initials: DH Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? NO YES **Location ID:** DM015

Attempt # 7 Cast Time: 1600 Water Depth (m): 2.1

GPS Target Parameters Sheave Counter Depth (m):

Name: DM015-7 Estimated Hydrowire angle (degrees):

Easting: 446168.46 Sampler Penetration (inches):

Northing: 5421226.46 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: over penetrated	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/10/19 Field Supervisor Initials LDA Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698 **Area of Interest:** Dealmans Eddy

Anchored? NO YES **Location ID:** DM015

Attempt # 8 Cast Time. 1605 Water Depth (m): 2.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM015-8-BM1 Estimated Hydrowire angle (degrees): —

Easting: 446163.80 Sampler Penetration (inches): 5

Northing: 5421227.48 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Color: same description as Attempt 5 Presence of debris:

Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ		
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID: DM015-BM1-2-101019	Time: 1611	Yellow 5-gallon bucket	2.5	*gallons*

49.61

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CR Date: 10/10/19 Field Supervisor Initials: DA Date: 10/10/19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09-21-19

Project Number: 60612698 **Area of Interest:** DME
Vessel: RV Tieton **Location ID:** DMØ16
Vessel Crew: J. Schaefer, C. Furulie **Sampling Crew:** B. Chadwick, J. Moore, L. Howard
EPA Observer: B. Zajac-Fay
Arrival Time: 1226 **Departure Time:** 1424
River Stage:
Water Surface Elevation (ft): not collected
Elevation Source: \
Weather Conditions Upon Arrival:
Temp (°F): 46° Wind (mph): Ø
Clouds/Precipitation: clear, sunny
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple),
River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic 11 2 boats
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Tieton Water Depth (m): 4.3 m
~~Easting~~: 446171.01 E Northing
~~Northing~~: 5421158.45 Easting Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations: LH.

GPS Name:
Easting:
Northing:
Observations: LH.

Sample Identification Information

Primary Sample ID: DMØ16-PW-1-092119 Time: 1308

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: none Time: — Analyte and Bottle Type: —
EPA Split Sample ID: none Time: — 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials LH. Date 09-21-19 Field Supervisor Initials NM Date: 9/21/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 016

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Kaila Savage

Arrival Time: 1025 **Departure Time:** 1400

River Stage:
Water Surface Elev. (ft): 1287.8
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 37 Wind (mph): 2
Clouds/Precipitation: Clear, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (~~Powered~~) (Anchored) River Current: (Swift) (~~Eddie~~) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: No

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Mostly consolidated river-cobbles on W bank to high water mark

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
5 accepted, 10 rejected

Video Reconnaissance Information

GPS Target Name: DM016-01
Easting: 446174.36
Northing: 5421156.07
Observations: accepted - all sand

GPS Target Name: DM016-02
Easting: 446173.46
Northing: 5421156.59
Observations: rejected-over penetrated

GPS Target Name: DM016-03
Easting: 446175.26
Northing: 5421156.33
(rejected) ~~accepted~~ Observations: top 4" - large piece of cemented sand retained

GPS Target Name: DM016-04
Easting: 446175.37
Northing: 5421155.90
Observations: no material collected/rejected

Sample Lead Initials RD Date: 10/10/19 Field Supervisor Initials DA Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number:	60612698	**Area of Interest:**	DM
Vessel:	RV Cayuse	**Location ID:**	016
Vessel Crew:	Mike Duffield, Ed Sloan	**Sampling Crew:**	Dave Hose, Ragan Driver, Glen Mejia
C.R. Observer:	N/A	**EPA Observer:**	Kaila Savage
Arrival Time:	1025	**Departure Time:**	1400
River Stage: Water Surface Elev. (ft):	1287.8	**Weather Conditions Upon Arrival:** Temp (°F):	37 Wind (mph): 2
Water Surface Elevation Source:	Northport Dock	Clouds/Precipitation:	Clear, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: ~~(Powered)~~ (Anchored) River Current: (Swift) ~~(Eddie)~~ (Calm) (Ripple)

River Mile: 738 Water Surface: ~~(Calm)~~ (Small Waves) (Choppy)

Boat Traffic: NO

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
mostly consolidated river cobbles on W bank to high water mark

Sampling Information

Sampler Used: Ekmon # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM016-05 Easting: 446176.68 Northing: 5421156.86	Observations: minimum recovery not achieved
GPS Target Name: DM016-06 Easting: 446174.79 Northing: 5421157.20	Observations: accepted - all sand
GPS Target Name: DM016-07 Easting: 446175.05 Northing: 5421154.79	Observations: insufficient recovery
GPS Target Name: DM016-08 Easting: 446174.56 Northing: 5421156.25	Observations: accepted - all sand

Sample Lead Initials RD Date: 10/10/19 Field Supervisor Initials DA Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698
Area of Interest: DM
Vessel: RV Cayuse
Location ID: 016
Vessel Crew: Mike Duffield, Ed Sloan
Sampling Crew: Dave Hose, Ragan Driver, Glen Mejia
C.R. Observer: N/A
EPA Observer: Kaila Savage
Arrival Time: 1025
Departure Time: 1400
River Stage:
Water Surface Elev. (ft): 1287.8
Water Surface Elevation Source: Northport Dock
Weather Conditions Upon Arrival:
Temp (°F): 37 Wind (mph): 2
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Mostly consolidated river cobbles on W bank to high water mark

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM016-09
Easting: 446173.53
Northing: 5421156.01
Observations: over penetrated; rejected

GPS Target Name: DM016-10
Easting: 446175.82
Northing: 5421157.45
Observations: insufficient material; rejected

GPS Target Name: DM016-11
Easting: 446175.76
Northing: 5421159.46
Observations: no material; rejected

GPS Target Name: DM016-12
Easting: 446173.92
Northing: 5421156.50
Observations: accepted

Sample Lead Initials RD Date: 10/10/19
Field Supervisor Initials OA Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 016

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Kaila Savage

Arrival Time: 1025 **Departure Time:** 1400

River Stage:
Water Surface Elev. (ft): 1287.8
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 37 Wind (mph): 2
Clouds/Precipitation: clear / dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: NO

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Mostly consolidated river cobbles on W bank to high water mark

Sampling Information

Sampler Used: Hamon # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM016-13
Easting: 446173.20
Northing: 5421156.14
Observations: over-penetration - rejected

GPS Target Name: DM016-14
Easting: 446176.92
Northing: 5421156.09
Observations: insufficient material - rejected

GPS Target Name: DM016-15
Easting: 446173.37
Northing: 5421154.48
Observations: accepted; sampled BMI

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/10/19 Field Supervisor Initials DA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-10-19

Project Number: 60612698
Area of Interest: Dendrites Eddy
Anchored? (NO) YES
Location ID: DM016
Attempt # 1
Cast Time: 1030
Water Depth (m): 4.9
GPS Target Parameters
Sheave Counter Depth (m): -
Name: DM016-1-CHEM
Estimated Hydrowire angle (degrees): -
Easting: 446174.36
Sampler Penetration (inches): 6
Northing: 5921156.07
Sample Interval (0 to X inches bss): -
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM016-SE-1-101019 Time: 1035

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	~~16 oz Amber WMGJ~~	
~~Organics~~	~~2 x 8 oz WMGJ~~ (3/4 full except in Reference Area)	
~~Bioassays~~	~~1 x 5 gallon white bucket~~	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID. _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: — Time: — Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/10/19
Field Supervisor Initials DA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-10-19

Project Number: 60612698 **Area of Interest:** Reference Area

Anchored? NO YES **Location ID:** DM016

Attempt # 2 Cast Time: 1048 Water Depth (m): 3.9

GPS Target Parameters Sheave Counter Depth (m):

Name: DM016-2 Estimated Hydrowire angle (degrees):

Easting: 446173.76 Sampler Penetration (inches):

Northing: 542156.59 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: over penetrated	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 8

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts. SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ gallons
		1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials [illegible] Date: 10/10/19 Field Supervisor Initials [illegible] Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698

Area of Interest: Deadman's Eddy

Anchored? (NO) YES

Location ID: DM016

Attempt # 3 Cast Time: 1055

Water Depth (m): 3.8

GPS Target Parameters

Sheave Counter Depth (m): —

Name: DM016-3

Estimated Hydrowire angle (degrees): —

Easting: 446175.76

Sampler Penetration (inches): 6

Northing: 5421156.33

Sample Interval (0 to X inches bss): —

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?*	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	(Accepted)	(Rejected)

*crust on surface partially broke & retained remain in sample

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): (Hanging)

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass: ESZ.

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials AM Date: 10/10/19

Field Supervisor Initials LOA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.10.19

Project Number: 60612698 **Area of Interest:** Dearborn Eddy

Anchored? NO YES **Location ID:** DM016

Attempt # 4 Cast Time: 1118 Water Depth (m): 3.8

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM016-4 Estimated Hydrowire angle (degrees): _____

Easting: 446175.39 Sampler Penetration (inches): _____

Northing: 542 1155.90 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient material	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CN Date: 10/10/19 Field Supervisor Initials CA Date 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-10-19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 5 Cast Time: 1123

GPS Target Parameters
Name: DM016-5
Easting: 446176.68
Northing: 542156.86

Sample Type: (Physical/Chemical/Bioassay) BMI

Area of Interest: Deadmans Eddy
Location ID: DM016
Water Depth (m): 3.8
Sheave Counter Depth (m): —
Estimated Hydrowire angle (degrees): —
Sampler Penetration (inches):
Sample Interval (0 to X inches bss): —
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? insufficient material	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket ____ *gallons*
	1 x 2.5 gallon white bucket ____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CM Date: 10/10/19
Field Supervisor Initials: DA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.10.19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 6 Cast Time: 1131

GPS Target Parameters
Name: DM016-6-CHEM
Easting: 446174.79
Northing: 542157.20

Sample Type: (Physical/Chemical/Bioassay) BMI

Area of Interest: Deadmans Eddy
Location ID: DM016
Water Depth (m): 3.8
Sheave Counter Depth (m): —
Estimated Hydrowire angle (degrees): —
Sampler Penetration (inches): 9
Sample Interval (0 to X inches bss): —
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: collected to 6"	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CM Date: 10/10/19
Field Supervisor Initials: DA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-10-19

Project Number: 60612698
Anchored? NO YES
Attempt # 7 Cast Time: 1143

GPS Target Parameters
Name: DM016-7
Easting: 446175.05
Northing: 5421154.79

Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: Deadmans Eddy
Location ID: DM016
Water Depth (m): 3.9
Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket ____ *gallons*
	1 x 2.5 gallon white bucket ____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket ____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: Date: 10/10/19
Field Supervisor Initials: Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.10.19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? ~~NO~~ YES **Location ID:** DM016

Attempt # 8 Cast Time: 1151 Water Depth (m): 3.7

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM016-8-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446174.56 Sampler Penetration (inches): 6

Northing: 542 1156.25 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Poorly graded sand medium gravel - well rounded

Color: 5Y 2.5/1 very gray

Stratification: massive

Density: ~~Soft~~/ loose

Presence/Absence silica glass: Yes · 25%

Redox Boundary: none observed

Presence of debris: none

Biological Structures: none observed

Shells: none

Sheen/Odor: none.

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 6, 8 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: DM016-SE-1-101019 Time: 1035

Cross off containers NOT filled

~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays 29.6	1 x 5 gallon white bucket	5.2 gallons
19.4	1 x 2.5 gallon white bucket	2.14 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	—	Time: —	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CW 10/10/19 Date: CW Field Supervisor Initials: DH Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? NO YES
Location ID: DM016
Attempt # 9
Cast Time: 1237
Water Depth (m): 3.7
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM016-9
Estimated Hydrowire angle (degrees):
Easting: 446173.53
Sampler Penetration (inches):
Northing: 5421156.01
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤2 mm)?	**YES**	NO
8. Sample is: Overpenetration	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date 10/10/19
Field Supervisor Initials DA Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698
Anchored? NO YES
Attempt # 10 Cast Time: 1243
GPS Target Parameters
Name: DM016-10
Easting: 446175.82
Northing: 5421157.45
Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: Deadmans Eddy
Location ID: DM016
Water Depth (m): 3.7
Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: incomplete – sediment loss	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Insufficient material Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AM Date: 10/10/19 Field Supervisor Initials: KH Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10·10·19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 11 Cast Time: 1249

GPS Target Parameters
Name: DM016-11
Easting: 446175.76
Northing: 5421159.45

Sample Type: (Physical/Chemical/Bioassay) BMI

Area of Interest: Deadmans Eddy
Location ID: DM016
Water Depth (m): 3.7
Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/10/19
Field Supervisor Initials ZH Date: 10/10/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-10-19

Project Number: 60612698 **Area of Interest:** Peatman Bay

Anchored? (NO) YES **Location ID:** DM016

Attempt # 12 Cast Time: 1257 Water Depth (m): 4.1

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM016-12-CHEM Estimated Hydrowire angle (degrees): _____

Easting: 4461 73.92 Sampler Penetration (inches): 6

Northing: 54211 56.50 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: poor graded Sand Medum grn - well rounded

Color: 5YR 3/1 very gray

Stratification: Massive

Density: loose

Presence/Absence silica glass: Yes 15%

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: 12

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: DM016-SE-2-101019 Time: 1300

SEM-AVS	8 oz WMGJ (nc headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date 10/10/19 Field Supervisor Initials DA Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10-10-19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM016
Attempt # 13 Cast Time: 1340
Water Depth (m): 4.4
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM016-13
Estimated Hydrowire angle (degrees):
Easting: 44617 3.20
Sampler Penetration (inches):
Northing: 54211 56.14
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: overpenetrated	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 1 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/10/19
Field Supervisor Initials: [illegible] Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698 **Area of Interest:** Portmans Eddy

Anchored? (NO) YES **Location ID:** DM016

Attempt # 14 Cast Time: 1347 Water Depth (m): 3.9

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM016-14 Estimated Hydrowire angle (degrees): _____

Easting: 496176.92 Sampler Penetration (inches): _____

Northing: 5421156.09 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient material	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CM Date: 10/10/19 Field Supervisor Initials: DH Date: 10/10/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/10/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddys

Anchored? (NO) YES **Location ID:** DM016

Attempt # 15 Cast Time: 1353 Water Depth (m): 4.2

GPS Target Parameters Sheave Counter Depth (m): -

Name: DM016-15-BM1 Estimated Hydrowire angle (degrees): 6

Easting: 446173.37 Sampler Penetration (inches): -

Northing: 5421154.48 Sample Interval (0 to X inches bss): -

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs)

Sediment Characteristics

Sediment Type / Texture: poorly graded sand medium grain - well rounded
Color: 5YR 3/1 very gray
Stratification: massive
Density: loose
Presence/Absence silica glass: Yes 20%.

Redox Boundary: none
Presence of debris: none
Biological Structures: none
Shells: none
Sheen/Odor: none
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: DM016-BM1-1-101019 Time: 1400 Yellow 5-gallon bucket 3 *gallons* 59.4 lbs

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date 10/10/19 Field Supervisor Initials DA Date 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09-20-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: RV Tieton **Location ID:** DM018

Vessel Crew: J. Schaefer, C. Furulie **Sampling Crew:** B. Chadwick, J. Moore, L. Howard

C.R. Observer: none **EPA Observer:** Rachel Zagrac-Fay

Arrival Time: 1257 **Departure Time:** 1527

River Stage: Depth (m) Water ~~Surface Elev.~~ (ft): 1.8 **Weather Conditions Upon Arrival:** Temp (°F): 67 Wind (mph): 0

Water Surface Elevation Source: aft mounted depth finder Clouds/Precipitation: sunny

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): none

Sampling Information

Sampler Used: Trident Drive frame #1 # of Sampling Attempts (Accepted vs. Rejected): no rejections

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

MEB 1/15/2020 Added year

Sample Lead Initials: LH Date: 09-20-19 Field Supervisor Initials: NM Date: 9/20/19

Revised 9/18/2019

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date:	09-20-19		
Person completing form:	L Howard		

Sampling date:	09-20-19	Sampling time:	0944
Weather:	partly cloudy	Sample collector:	L. Howard
Location ID:	DM015	Field duplicate collected?	Yes (Sulfate)
Media type (circle one):	(PW) EB FB	Sample ID:	DM015-PW-1-092019 DM05-PW-2-092019
Container Size:	125mL ~~250mL~~ NM	Chemical Analysis:	Metals, DOC, TOC, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Used Trident driveframe #1 in sampleable sand. Purged porewater slightly light yellow in color.		

Sampling date:	09-20-19	Sampling time:	1338
Weather:	sunny/rainy	Sample collector:	L. Howard
Location ID:	~~DM018-PW-1-092019~~ (LH 092019)	Field duplicate collected?	no
Media type (circle one):	(PW) EB FB	Sample ID:	DM018-PW-1-092019
Container Size:	125mL ~~250mL~~ NM	Chemical Analysis:	metals, DOC, TOC, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Driveframe #1 in sampleable sand		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	LH.
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

NM : Field Supervisor

LH. 9/20/19 : Sample Lea

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 018

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Shawn Roark

Arrival Time: 1445 **Departure Time:**

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 4
Clouds/Precipitation: Mostly cloudy, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: No

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Mostly consolidated river cobbles up to high water mark, then grasses to terrace

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1-rejected Attempt 3-accepted
Attempt 2-accepted Attempt 4-accepted

Video Reconnaissance Information

GPS Target Name: DM018-01
Easting: 446197.98
Northing: 5421141.94
Observations: rejected due to over penetration

GPS Target Name: DM018-02
Easting: 446200.18
Northing: 5421140.51
Observations: All sand, accepted

GPS Target Name: DM018-03
Easting: 446202.69
Northing: 5421142.00
Observations: All sand, accepted

GPS Target Name: DM018-04
Easting: 446207.96
Northing: 5421128.50
Observations:

Sample Lead Initials RD Date: 10/9/19 Field Supervisor Initials DH Date: 10/9/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.9.19

Project Number: 60612698
Area of Interest: Northern Eddy
Anchored? NO YES
Location ID: DM018
Attempt # 1 Cast Time: 1447
Water Depth (m): 3.7
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM018-1
Estimated Hydrowire angle (degrees): —
Easting: 446197 adj
Sampler Penetration (inches): over penetration
Northing: 5421141 94
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: Overpenetrated	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CM Date: 10/9/19
Field Supervisor Initials: DA Date: 10/9/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10.9.19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? NO YES **Location ID:** DM01S

Attempt # 2 Cast Time: 1523 Water Depth (m): 3.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM01S-2-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446200.18 Sampler Penetration (inches): 6

Northing: 5421140.51 Sample Interval (0 to X inches bss): —

Sample Type: (Physical/Chemical/Bioassay) BMI 10/9/19 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: See description for attempt #3

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM01S-SE-1-100919 Time: 1530

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)
~~Total Metals & TOC~~	~~8 oz WMGJ~~
~~Grain Size~~	~~8 oz WMGJ~~
~~BEM~~	~~16 oz Amber~~ WMGJ
~~Organics~~	~~2 x 8 oz~~ WMGJ (3/4 full except in Reference Area)
~~Bioassays~~	~~1 x 5 gallon~~ white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: 10/9/19 Date: Field Supervisor Initials: DH Date: 10/9/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.09.19

Project Number: 60612698 **Area of Interest:** Dearman's Eddy

Anchored? NO YES **Location ID:** DM018

Attempt # 3 Cast Time: 1540 Water Depth (m): 3.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM018-3-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446202.69 Sampler Penetration (inches): ~~6~~ 8"

Northing: 5427142.00 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Poorly graded Sand medium grain well rounded

Color: 5YR 3/1 Very dark gray

Stratification: none

Density: loose

Presence/Absence silica glass: 20%

Redox Boundary: none

Presence of debris: none

Biological Structures: none observed

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3 SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: DM018-SE-1-100919 Time: 1530

Cross off containers NOT filled

~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	2.14 gallons
~~(31.6 lbs)~~	x 2.5 gallon white bucket	5.6 gallons

31.61
7.74

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: JN Date: 10/9/19 Field Supervisor Initials: DA Date: 10/9/19

1

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.9.19

Project Number: 60612698 **Area of Interest:** Dearborn Eddy

Anchored? (NO) YES **Location ID:** DM018

Attempt # 4 Cast Time: 1614 Water Depth (m): 3.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM018-4-BM1 Estimated Hydrowire angle (degrees): —

Easting: 446207.96 Sampler Penetration (inches): 6

Northing: 5421128.50 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: See description for attempt #3 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID: —	Time: —	SEM-AVS	8 oz WMGJ (no headspace)		
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
		Bioassays	1 x 5 gallon white bucket	_____	*gallons*
			1 x 2.5 gallon white bucket	_____	*gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*	
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
EPA SE Split Sample ID:	Time:		8 oz WMGJ		
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID: DM018-BM1-1-100919	Time: 1530		Yellow 5-gallon bucket	3	*gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____	*gallons*

60.4

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AM Date: 10/9/19 Field Supervisor Initials: JA Date: 10/9/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV-Tretop **Location ID:** DM019

Vessel Crew: C. Smith A. Sims J. Schaefer L. LeSueur **Sampling Crew:** Anders Utter

EPA Observer: N/A

Arrival Time: 1528 **Departure Time:** 1700

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50° Wind (mph): 0 mph
Clouds/Precipitation: Partly Cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: (Yes) No Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 1.80m

Easting: 446907.40

Northing: 5421190.86 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM019-PW-1-101219 Time: 1600

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 10/12/19 Field Supervisor Initials CH Date: 10/12/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 019 (alt for DM033)

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Marilyn Guthier

Arrival Time: 1305 **Departure Time:** 1410

River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 3
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NO

Surface Vegetation Present: (Yes) (No) RD Was Vegetation Removed: (Yes) (No) RD

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sand to high water mark then grasses to terrace

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
3 accepted 3 rejected

~~Video Reconnaissance Information~~ SH Grab Attempts

GPS Target Name: DM019-01
Easting: 446204.53
Northing: 5421191.05
Observations: rejected - overpenetration lots of vegetation

GPS Target Name: DM019-02
Easting: 446206.25
Northing: 5421193.90
Observations: rejected - overpenetrated lots of vegetation

GPS Target Name: DM019-03
Easting: 446208.65
Northing: 5421184.42
Observations: accepted

GPS Target Name: DM019-04
Easting: 446211.12
Northing: 5421181.90
Observations: rejected - overpenetration

Sample Lead Initials RD SH Date: 10/14/19 Field Supervisor Initials DW Date: 10/14/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698
Area of Interest: DM
Vessel: RV Cayuse
Location ID: 019 (DM033 alt)
Vessel Crew: Mike Duffield, Ed Sloan
Sampling Crew: Stu Holmes, Ragan Driver, Glen Mejia
C.R. Observer: N/A
EPA Observer: Marilyn Guthrier
Arrival Time: 1305
Departure Time: 1410

River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 3
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 738
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: no

Surface Vegetation Present: (Yes) No
Was Vegetation Removed: (Yes) No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
sand to high water mark, then grasses to terrace

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
3 rejected 3 accepted

~~**Video Reconnaissance Information**~~ SH **Grab Attempts**

GPS Target Name: DM019-05
Easting: 446210.29
Northing: 5421183.15
Observations: accepted

GPS Target Name: DM019-06
Easting: 446211.67
Northing: 5421183.09
Observations: accepted-BMI

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD SH Date: 10/14/19
Field Supervisor Initials DW Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** Peoples Ferry

Anchored? (NO) YES **Location ID:** DM019 (alt DM033)

Attempt # 1 Cast Time: 1303 ~~Alt for DM005~~ Water Depth (m): 2.0

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM019-1 Estimated Hydrowire angle (degrees): —

Easting: 446204.53 Sampler Penetration (inches): 7

Northing: 5421191.05 Sample Interval (0 to X inches bss): —

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: over penetrated, aquatic vegetation observed in grab	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2 5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM SH Date 10/14/19 Field Supervisor Initials DM Date 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 6
Date 10/14/19

Project Number: 60612698
Area of Interest: Peaches Eddy
Location ID: DM019 (alt DM033)
Anchored? NO YES
Attempt # 2
Cast Time: 1314
Water Depth (m): 2.1
GPS Target Parameters
Name: DM019-2
Easting: 446206.25
Northing: 5421193.98
Sheave Counter Depth (m): —
Estimated Hydrowire angle (degrees): —
Sampler Penetration (inches): 7
Sample Interval (0 to X inches bss): —
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: GM SH Date: 10/14/19
Field Supervisor Initials: DR Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10 14 19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM019 (alt DM033)

Attempt # 3 Cast Time: 1324 Water Depth (m): 21

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM019-3-CHEM Estimated Hydrowire angle (degrees): —

Easting: 496208.65 Sampler Penetration (inches): 6

Northing: 542184.42 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: See description for Attempt 5

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information: added material to lexan tub

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM019-SE-1-101419 Time: 1324

SE Duplicate Sample ID: Time:

EPA SE Split Sample ID: Time:

EPA TX Split Sample ID: Time:

BMI Primary Sample ID: — Time: —

BMI Duplicate Sample ID: Time:

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	8 oz WMGJ	
EPA TX Split Sample ID:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Yellow 5-gallon bucket	_____ *gallons*

Sample Lead Initials GM SH Date 10/14/19 Field Supervisor Initials DM Date 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? NO YES **Location ID:** DM019 (alt DM033)

Attempt # 4 Cast Time: 1336 Water Depth (m): 2.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM019-4 Estimated Hydrowire angle (degrees): —

Easting: 446211.12 Sampler Penetration (inches): —

Northing: 5424981.90 Sample Interval (0 to X inches bss): —

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is: sediment only	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM SH Date: 10/14/19 Field Supervisor Initials DAY Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 5 of 6
Date 10/14/19

Project Number: 60612698
Area of Interest: Deadman Eddy.
Anchored? (NO) YES
Location ID: DM019 (alt DM023)
Attempt # 5
Cast Time: 1342
Water Depth (m) 2.1
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM019-5-CHEM
Estimated Hydrowire angle (degrees):
Easting: 44620.29
Sampler Penetration (inches): 6
Northing: 542183.15
Sample Interval (0 to X inches bss): 0 to 6
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine sand
Redox Boundary: none
Presence of debris: trace woody debris
Color: 10YR3/2 Very dark grayish brown
Biological Structures: trace ~~small~~ rootlets
Stratification: massive
Shells: trace
Density: loose
Sheen/Odor: none
Presence/Absence silica glass: YES, scattered 20%
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 3, 5
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM019-SE-1-101419 Time: 1328

Cross off containers NOT filled

~~SEM-AVS~~	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket 5.2 gallons
	1 x 2.5 gallon white bucket 2.2 gallons

74.
29.2
lbs

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons
BMI Primary Sample ID: Time: Yellow 5-gallon bucket ____ gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CR SH Date: 10/14/19
Field Supervisor Initials: DMY Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10 14 19

Project Number: 60612698 **Area of Interest:** Dealmars Eddy

Anchored? (NO) YES **Location ID:** DM019 (alt DM033)

Attempt # 6 Cast Time: 1460 Water Depth (m): 2.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM019-6-BMI Estimated Hydrowire angle (degrees): —

Easting: 448211.67 Sampler Penetration (inches): 6

Northing: 5421183.09 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: See description for attempt #5

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: DM019-BMI-1-101419 Time: 1414 2x Yellow 5-gallon bucket 1.6 *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket 2.0 *gallons*

33. 41.6 lbs

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM SH Date 10/14/19 Field Supervisor Initials DW Date: 10/14/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tieton **Location ID:** DM020

Vessel Crew: John Schaefer, Ryan McElroy **Sampling Crew:** Alan Sims, Mark Bisar (CMA)
Linda Howard (AECOM)

EPA Observer: Elle Ambinger

Arrival Time: 1129 **Departure Time:**

River Stage:
Water Surface Elevation (ft): 737
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 37 Wind (mph): 0 mph
Clouds/Precipitation: Sunny, some clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mPS)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile:

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic 1 small craft

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM020 - 1 - PW

Water Depth (m): 4.8

Easting: 446226.87

Northing: 5421209.74

Water Sample Color: slightly yellow

Additional Video Reconnaissance Information

GPS Name:

Easting:

Northing:

Observations:

GPS Name:

Easting:

Northing:

Observations:

Sample Identification Information

Primary Sample ID: DM020-PW-1-101419 Time: 1507

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: na Time: Analyte and Bottle Type: na

EPA Split Sample ID: DM020-PW-3-101419 Time: 1507 1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10-14-19 Field Supervisor Initials: [illegible] Date: 10/14/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 020 (alt for DM051)

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Marilyn Guthrie

Arrival Time: 1110 **Departure Time:** 1240

River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 2
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: ~~Sampleable~~ Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: no

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sand to grasses at high water mark, then trees at terrace

Sampling Information

Sampler Used: Hamon # of Sampling Attempts (Accepted vs. Rejected): 4 accepted 1 rejected

~~Video Reconnaissance Information~~ SR Grab Attempts

GPS Target Name: DM020-01
Easting: 446223.51
Northing: 5421212.75
Observations: Accepted

GPS Target Name: DM020-02
Easting: 446225.85
Northing: 5421210.20
Observations: Accepted

GPS Target Name: DM020-03
Easting: 446228.36
Northing: 5421208.76
Observations: accepted

GPS Target Name: DM020-04
Easting: 446226.32
Northing: 5421211.47
Observations: rejected - insufficient volume

Sample Lead Initials RD SH Date: 10/14/19 Field Supervisor Initials DM Date: 10/14/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 020 (alt for DM051)

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** Marilyn Guthier

Arrival Time: 1110 **Departure Time:** 1240

River Stage:
Water Surface Elev. (ft): ~1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 2
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: no

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sand to high water mark then grasses to terrace then trees

Sampling Information

Sampler Used: Hamon # of Sampling Attempts (Accepted vs. Rejected): 4 accepted 1 rejected

~~Video Reconnaissance Information~~ SH Grab Attempts

GPS Target Name: DM020-05
Easting: 446229.39
Northing: 5421211.40
Observations: accepted - BMI

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD SH Date: 10/14/19 Field Supervisor Initials DW Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.14.19

Project Number: 60612698

Area of Interest: Deadmans Eddy

Anchored? (NO) YES

Location ID: DM020 Alt 5A

Attempt # 1

Cast Time: 1120

Water Depth (m): ~~4.8~~ 4.8

GPS Target Parameters

Sheave Counter Depth (m): – Alt DM051

Name: DM020-1-CHEM

Estimated Hydrowire angle (degrees): –

Easting: 446223.51

Sampler Penetration (inches): 6

Northing: 5121212.28

Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: See description for attempt #3

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1,2,3

SEM-AVS Container Collected from Attempt #: 1

Sieving Information: added sample to tub

Sieved with 5 mm Sieve? Yes (No)

Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM020-SE-1-101419 Time: 1125

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz~~ WMGJ	
~~BEM~~	16 oz Amber WMGJ	
~~Organics~~	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials GM SR Date: 10/14/19

Field Supervisor Initials DR Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** DFAD and Eddy

Anchored? (NO) YES **Location ID:** DM020 (alt DM051)

Attempt # 2 Cast Time: 1137 Water Depth (m): 4.7

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM020-2-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446225.95 Sampler Penetration (inches): 5

Northing: 5421210.20 Sample Interval (0 to X inches bss): 0 to 5

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: See description for Attempt #3 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1,2,3 SEM-AVS Container Collected from Attempt #: _____

Sieving Information: added to separate tubs for compositing

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SR Date 10/14/19 Field Supervisor Initials _____ Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 3 of 6
Date 10/14/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM020 (alt DM051)
Attempt # 3 Cast Time: 1146
Water Depth (m): 4.9
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM020-3-CH EM
Estimated Hydrowire angle (degrees): —
Easting: 446229.36
Sampler Penetration (inches): 6
Northing: 5421208.76
Sample Interval (0 to X inches bss): 0 to 6
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine to medium sand trace silt
Redox Boundary: none
Presence of debris: trace small woody debris
Color: 10YR2/1 black
Biological Structures: worm amelid - trace
Stratification: massive
Shells: trace
Density: loose
Sheen/Odor: none
Presence/Absence silica glass: YES, scattered 30%
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2, 3
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes (No)
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM020-SE-1-101419 Time: 1125

Cross off containers NOT filled

~~SEM-AVS~~	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5 gallons
	1 x 2.5 gallon white bucket	2.14 gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

30.7
68.4

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons
BMI Primary Sample ID: — Time: — Yellow 5-gallon bucket ____ gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: GM SH Date: 10/14/19
Field Supervisor Initials: DAS Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698

Area of Interest: Deadmans Eddy

Anchored? (NO) YES

Location ID: DM020 (alt DM051)

Attempt # 4

Cast Time: 1218

Water Depth (m): 4.7

GPS Target Parameters

Sheave Counter Depth (m): —

Name: DM020-4

Estimated Hydrowire angle (degrees): —

Easting: 446226.32

Sampler Penetration (inches): —

Northing: 5421211.47

Sample Interval (0 to X inches bss): —

Sample Type: ~~Physical/Chemical/Bioassay~~ BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	~~NO~~
8. Sample is: Insufficient Volume	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris.

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GW SH Date: 10/14/19

Field Supervisor Initials DM Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698 **Area of Interest:** Peninsula Bay

Anchored? (NO) YES **Location ID:** DM020 (alt DM051)

Attempt # 5 Cast Time: 1224 Water Depth (m): 4.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM020-5-BMI Estimated Hydrowire angle (degrees): —

Easting: 446229.39 Sampler Penetration (inches): 6

Northing: 5421211.40 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: see description for Attempt 3

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: DM020-BMI-1-101419 Time: 1227 Yellow 5-gallon bucket 2.25 *gallons* 45.6/45

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10/14/19 Field Supervisor Initials DF Date: 10/14/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Location ID: DM022

Date: 9-18-19 **Vessel:** Tieton

Sampling Crew: B. Crawford, J. Moore, Lindsay Rosenberg **Vessel Crew:** J. Schaefer, Chad Furwie

EPA Observer: Rachel Zaragoza-Fay **C.R. Observer:** None

Arrival Time: 1023 **Departure Time:** 1534

River Stage:
Water Surface Elev. (ft): 0.9 meters

Water Surface Elevation Source: aft mounted depth finder

Weather Conditions Upon Arrival
Temp (°F): 57°

Wind (mph): 2-3 mph

Clouds/Precipitation: rain

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Boat Traffic: light

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

N 542115 7.90
E 446232.50

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): none

General Notes:

Collected duplicate & equipment rinsate blank at this sample location.

C.R. - cultural resources

Field Supervisor Initials DM Date: 9-19-19

Sample Lead Initials ZH Date: 9-18-19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date:	09-18-19		
Person completing form:	Linda Howard		

Sampling date:	09-18-19	Sampling time:	1246
Weather:	raining	Sample collector:	Linda Howard
Location ID:	DM022-~~PW~~ (LH 091819)	Field duplicate collected?	Yes, metals
Media type (circle one):	(PW) EB FB	Sample ID:	DM022-PW-1-091819 ~~DM022-PW-2-091819~~ (LH 09-18-19)
Container Size:	125 mL → 250 mL	Chemical Analysis:	metals, DOC, Toc, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	No Sulfide Sample collected		

Sampling date:	09-18-19	Sampling time:	1246
Weather:	raining	Sample collector:	Linda Howard
Location ID:	DM022	Field duplicate collected?	This is duplicate JAP.
Media type (circle one):	(PW) EB FB	Sample ID:	2 (LH 09-20-19) DM022-PW4-091819
Container Size:	125 mL	Chemical Analysis:	metals
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

Sampling date:	09-18-19	Sampling time:	1450
Weather:	raining.	Sample collector:	L. Howard
Location ID:	DM022	Field duplicate collected?	NO
Media type (circle one):	PW (EB) FB	Sample ID:	DM022-PW-4-091819
Container Size	125 mL	Chemical Analysis	metals, Toc, sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Hold - new guidance sent 9/20/19		

09-18-19 Linda Howard

Tieton

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Vessel: Cayuse
Location ID: DM022
Vessel Crew: P. Jenkins M. McKeon
Sampling Crew: K. Mitchell P. Hamidi S. Holmes
C.R. Observer: —
EPA Observer: ~~P. Hamidi~~ J. Gondek
Arrival Time: 1233
Departure Time: 1510

River Stage:
Water Surface Elev (ft): ~~VU~~
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 67 Wind (mph): 4 W/SW
Clouds/Precipitation: Sunny / Water was higher & faster today.

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737.
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: small fishing vessels

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sandbar w/tailings at west bank. (3/1)

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): ~~3/0~~ KU ~~2/1~~ KU
1 - accepted - Sediment homogenized together
2 - accepted - Sediment
3 - rejected - stick got stuck in VV jaws & never came on-board - NO PHOTO
4 - accepted for BMI

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-21-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM022

Attempt # 1 Cast Time: 1234 Water Depth (m): 1.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM022-1-chem Estimated Hydrowire angle (degrees): —

Easting: 446236.68 Sampler Penetration (inches): 9

Northing: 5421154.33 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine to Medium Sand Redox Boundary: NONE

Presence of debris: YES 3-4" layer is debris

Color:

Biological Structures: NONE

Stratification: 0-3 Sand 3-4 mixed debris 4-6 Sand Shells: TRACE

Density: Loose Sheen/Odor: NONE

Presence/Absence silica glass: Present Other Notes: Picked out debris from Sample

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): ~~55.0~~ NM N/A Total Mass of Sediment (kg): ~~55.0~~ NM N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: DM022-SE-1-092119 Time: 1234 # and type of Containers: 1 16oz + 5 x 8oz Jars; 2 1/2 + 5 gal. buckets

Duplicate Sample ID: ✓ Time: _____ # and type of Containers: _____

EPA Split Sample ID: ✓ Time: _____ # and type of Containers: _____

Sample Lead Initials SH Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Year added

MED 1/15/2020

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM022

Attempt # 2 Cast Time: 1307 Water Depth (m): 1.6

GPS Target Parameters Sheave Counter Depth (m): –

Name: DM022-2-chem Estimated Hydrowire angle (degrees): –

Easting: 446236.93 Sampler Penetration (inches): 9

Northing: 5421157.69 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~ pH	(NO)
2. Overlying water present?	(YES)	~~NO~~ pH
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine to medium Sand w/ few silt + debris

Color: 5Y 3/2 + 3/1

Stratification: NO

Density: Loose

Presence/Absence silica glass: Present

Redox Boundary: NO

Presence of debris: YES

Biological Structures: NO

Shells: YES

Sheen/Odor: NO

Other Notes: removed wood debris by hand

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? ~~pH~~ Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): ~~55.0 45.2~~ wm Total Mass of Sediment (kg): ~~55.0 45.2~~ wm

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information See DM022 Attempt #1

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

EPA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM022

Attempt # 3 Cast Time: 1349 **Water Depth (m):** 1.6

GPS Target Parameters **Sheave Counter Depth (m):**

Name: DM022-3 **Estimated Hydrowire angle (degrees):**

Easting: 446239.37 **Sampler Penetration (inches):**

Northing: 542457.07 **Sample Interval (0 to X inches bss):**

Sample Type: Physical/Chemical/Bioassay (BMI) MEB 11/15/19 **Cultural Resource Check Completed?** YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	~~YES~~ (YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	~~Rejected~~ (Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool **Added Weights on Sampler (lbs):** 250

Sediment Characteristics

Sediment Type / Texture: **Redox Boundary:**

Presence of debris:

Color: **Biological Structures:**

Stratification: **Shells:**

Density: **Sheen/Odor:** Large

Presence/Absence silica glass: **Other Notes:** Stick in jaws, rejected

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: **SEM-AVS Container Collected from Attempt #:**

Sieving Information:

Sieved with 5 mm Sieve? Yes No **Removed by Hand > 5mm?** Yes No

Mass of Sediment < 5 mm (kg): **Total Mass of Sediment (kg):**

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-21-19 Field Supervisor Initials NM Date: 9/22/19

MEB - added year 1/15/2020

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Dead man's Eddy

Anchored? (NO) YES **Location ID:** DM022

Attempt # 4 Cast Time: 1353 Water Depth (m): 1.6

GPS Target Parameters Sheave Counter Depth (m): -

Name: DM022-4-BMI Estimated Hydrowire angle (degrees): -

Easting: 446235.77 Sampler Penetration (inches): 9

Northing: 5421152.14 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Same as attempt #2 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information: BMI sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: DM022-BMI-1-092119 Time: 1353 # and type of Containers: 1 5gal yellow bucket

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-21-19 Field Supervisor Initials MM Date: 9/21/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09-19-19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: RV Tieton
Location ID: DM023
Vessel Crew: J Schaefer
Chad Furulie
Sampling Crew: B. Chadwick, J. Moore, L. Howard
C.R. Observer: none
EPA Observer: Rachel Zajac-Fay
Arrival Time: 0825
Departure Time: 1128
River Stage:
Water Surface Elev. (ft): 0.9 meters
Water Surface Elevation Source: aft mounted depth finder
Weather Conditions Upon Arrival:
Temp (°F): 54°F Wind (mph): 2-3 mph
Clouds/Precipitation: partly cloudy

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): None

Sampling Information

Sampler Used: Trident Driveframe #1
# of Sampling Attempts (Accepted vs. Rejected): 1

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:
LH

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials LH Date: 09-19-19
Field Supervisor Initials DM Date: 09-20-19

UCR 2019 Phase 3 Sediment Study
Porewater Chemistry Sample Collection Form

Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date:	09-19-19		
Person completing form:	Linda Howard		

Sampling date:	09-19-19	Sampling time:	0945
Weather:	partly cloudy	Sample collector:	L. Howard
Location ID:	DM023	Field duplicate collected?	yes
Media type (circle one):	(PW) EB FB	Sample ID:	DM023-PW-2-091919 DM023-PW-1-091919
Container Size:	125mL - 250mL	Chemical Analysis:	Metals, DOC, TOC, Sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Oxygen detected so no sulfide ~~detected~~ collected Trident drive frame #1 Sampleable sand		

Sampling date:	09-19-19	Sampling time:	1302
Weather:	sunny	Sample collector:	L. Howard
Location ID:	DM008	Field duplicate collected?	yes
Media type (circle one):	(PW) EB FB	Sample ID:	DM008-PW-2-091919 DM008-PW-1-091919
Container Size:	125mL-250mL	Chemical Analysis:	metals, DOC, TOC, sulfate
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Oxygen present, so no sulfide analysis Trident driveframe #1 in sampleable sand		

see Location DM008

J.A.P.

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

LH. 092019

9-21-19 JP

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date ~~9/20/19~~ KH

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DM023
Vessel Crew: P. Jenkins, M. McKeon
Sampling Crew: K. Mitchell, P. Hamidi, S. Holmes
C.R. Observer: —
EPA Observer: J. Gondek
Arrival Time: 0813
Departure Time: 0958
River Stage:
Water Surface Elev. (ft): KH
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 3 ENE
Clouds/Precipitation: cloudy, cooler this morning.

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Small fishing boat

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Creek coming in on west shore s. of sandbar/tailings

Sampling Information

Sampler Used: VanVeen
# of Sampling Attempts (Accepted vs. Rejected): 2 # KH / Ø

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials KH Date: 9-21-19
Field Supervisor Initials _____ Date: _____

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Dead Man's Eddy

Anchored? (NO) YES **Location ID:** DM023

Attempt # 1 Cast Time: 0815 Water Depth (m): 1.7

GPS Target Parameters Sheave Counter Depth (m): -

Name: DM023-chem-1 Estimated Hydrowire angle (degrees): -

Easting: 446260.75 Sampler Penetration (inches): 11

Northing: 5421165.05 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: well sorted fine to medium sand

Color: 5Y 3/2

Stratification: NO

Density: Loose

Presence/Absence silica glass: Scattered

Redox Boundary: NONE

Presence of debris: NONE

Biological Structures: NONE

Shells: TRACE

Sheen/Odor: NO

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: Not Composite SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 34.3 Total Mass of Sediment (kg): 34.3

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: DM023-SF-1-092119 Time: 0815 # and type of Containers: 1 16oz + 5 x 8oz Jars

Duplicate Sample ID: ~~DM023-SF-2-092119~~ Time: ~~0815~~ # and type of Containers: 2 1/2 gal + 5 gal Bioassay buckets

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SM Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Dead Man's Eddy

Anchored? (NO) YES **Location ID:** DM023

Attempt # 2 Cast Time: 0908 Water Depth (m): 1,7

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM023-BMI Estimated Hydrowire angle (degrees): —

Easting: 446260,13 Sampler Penetration (inches): ~~4.5~~ 10,5

Northing: 5421163,67 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Well Sorted fine to medium sand

Color: 5Y 3/2

Stratification: NONE

Density: Loose

Presence/Absence silica glass: Present, scattered

Redox Boundary: No

Presence of debris: Present

Biological Structures: Present

Shells: Present

Sheen/Odor: NO

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 1

Sieving Information: BMI Sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: DM023-BMI-1-092119 Time: 0908 # and type of Containers: 1 5-gal. yellow bucket

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 024 (alt for DM048)

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** NA

Arrival Time: 0944 **Departure Time:** 1159

River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 39 Wind (mph): 4
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: no

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
sand & cobbles to high water mark then grasses & trees to terrace

Sampling Information

Sampler Used: Van Veen (small)

# of Sampling Attempts (Accepted vs. Rejected):
4 accepted; 1 rejected (1, 2, ~~3~~ SH phys/chem/biomass, #3 BMI, #5 BMI). #4 reject Dup.

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DM Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM024 (alt DM048)
Attempt # 1
Cast Time: 0946
Water Depth (m): 2.5
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM024-1-CHEM
Estimated Hydrowire angle (degrees): —
Easting: 446256.17
Sampler Penetration (inches): 10
Northing: 5421108.54
Sample Interval (0 to X inches bss): 0-6
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: See description for attempt #2
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #: 1 or
Sieving Information: added sample to layer tub
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes (No)
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: ~~DM024-SE-1-101519~~ Time: ~~0950~~ 0946 or

Cross off containers NOT filled		
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: ~~DM024-SE-2-101519~~ Time: ~~0950~~ or

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19
Field Supervisor Initials MY Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.15.19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM024 (alt DM048)

Attempt # 2 Cast Time: 1003 Water Depth (m): 2.5

GPS Target Parameters Sheave Counter Depth (m): -

Name: DM024-2-CHBM Estimated Hydrowire angle (degrees): -

Easting: 446256.76 Sampler Penetration (inches): 9

Northing: 5421103.17 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: fine to medium Sand Redox Boundary: none

Presence of debris: trace rootlets, trace woody debris

Color: 10YR3/2 very dark grayish brown Biological Structures: none

Stratification: massively bedded Shells: trace

Density: loose Sheen/Odor: none

Presence/Absence silica glass: YES, 30%. Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1,2 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM024-SE-1-101519 Time: 0950

SE Duplicate Sample ID: DM024-SE-2-101519 Time: 1005

EPA SE Split Sample ID: Time: 950

EPA TX Split Sample ID: DM024-SE-3-101519 Time: ~~1030~~

BMI Primary Sample ID: DM024-BMI-1-101519 Time: 1105

BMI Duplicate Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

		Cross off containers NOT filled	
SE Primary	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket 5.2 gallons	165
		1 x 2.5 gallon white bucket 2.14 gallons	67.8
			29.6
SE Duplicate	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	165
EPA SE Split		8 oz WMGJ	
EPA TX Split		2.5 gallon white bucket 2.14 gallons	~~29.24~~
			29.2
BMI Primary		Yellow 5-gallon bucket gallons	
BMI Duplicate		Yellow 5-gallon bucket gallons	

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DAY 10/15/19 Date:

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM024 (alt DM04B)

Attempt # 3 Cast Time: 1058 Water Depth (m): 2.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM024-3-BM1 Estimated Hydrowire angle (degrees): —

Easting: 446253.65 Sampler Penetration (inches): 9

Northing: 5421104.71 Sample Interval (0 to X inches bss): 0–6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: see description for attempt #2 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket ____ *gallons*	
			1 x 2.5 gallon white bucket ____ *gallons*	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket ____ *gallons*	
BMI Primary Sample ID: DM024-BM1-1-101519	Time: 1105		Yellow 5-gallon bucket 2.9 *gallons*	lbs. 56.0
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket 2.9 *gallons*	56.4

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials BY Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10·15·19

Project Number: 60612698
Area of Interest: Peaches Eddy
Anchored? NO YES
Location ID: DM024 (aka DM048)
Attempt # 4 Cast Time: 1131
Water Depth (m): 2.5
GPS Target Parameters DM024-4
Sheave Counter Depth (m): –
Name: 446251.27
Estimated Hydrowire angle (degrees): –
Easting: 542106.00
Sampler Penetration (inches): 0
Northing:
Sample Interval (0 to X inches bss): –
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	~~YES~~	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: Incomplete closure, wood in jaws	**Accepted**	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: SH Date: 10-15-19
Field Supervisor Initials: DM Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698

Area of Interest: Deadmans Eddy

Anchored? ~~NO~~ YES

Location ID: DM024 (alt DM048)

Attempt # 5 Cast Time: 1136

Water Depth (m): 2.5

GPS Target Parameters

Sheave Counter Depth (m): –

Name: DM024-5-BMI dup

Estimated Hydrowire angle (degrees): –

Easting: 446253.69

Sampler Penetration (inches): 7

Northing: 542106.69

Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: see description for attempt #2

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells: snail, limpits

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket 2.7 *gallons*	52.6 lbs
BMI Duplicate Sample ID: ~~BMI~~ DM024-BMI-2-101519	Time: 1140		Yellow 5-gallon bucket 2.6 *gallons*	48.6

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials brg Date: 10/15/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tiekton **Location ID:** DM024

Vessel Crew: John Schaefer, Ryan McElhaney **Sampling Crew:** Alan Sims, Mark Bser (CMA)

EPA Observer: Elle Andinger Linda Howard (AECOM)

Arrival Time: 1431 **Departure Time:**

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph): 0
Clouds/Precipitation: overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic 0

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM024-1-FW Water Depth (m): 2.00

Easting: 4462528.98

Northing: 542105.07 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM024-PW-1-101519 Time: 1525

Duplicate Sample ID: DM024-PW-2-101519 Time: 1525

EPA Split Sample ID: \ Time:

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: DOC & TOC

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: AH Date: 10-15-19 Field Supervisor Initials: AH Date: 10-15-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 025 alternate

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** N/A

Arrival Time: 1350 **Departure Time:** 1530

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 58 Wind (mph): 4
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) ~~(Eddie)~~ (Calm) (Ripple)

River Mile: 738 Water Surface: ~~(Calm)~~ (Small Waves) (Choppy)

Boat Traffic some private fishing vessel

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
sand & cobbles to high water mark, then grasses to trees on terrace

Sampling Information

Sampler Used: Ekman # of Sampling Attempts (Accepted vs. Rejected):
1 rejected; 3 accepted

Video Reconnaissance Information

GPS Target Name: DM025-01
Easting: 446315.62
Northing: 5421098.73
Observations: rejected - over penetrated

GPS Target Name: DM025-02
Easting: 446316.75
Northing: 5421097.42
Observations: accepted

GPS Target Name: DM025-03
Easting: 446318.25
Northing: 5421096.45
Observations: accepted

GPS Target Name: DM025-04
Easting: 446315.25
Northing: 5421096.74
Observations: accepted - BMI

Sample Lead Initials RD Date: 10/12/19 Field Supervisor Initials DH Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/2/19

Project Number: 60612698 **Area of Interest:** Dead Horse Bay

Anchored? ~~NO~~ YES **Location ID:** DM025

Attempt # 1 Cast Time: 1353 Water Depth (m): 3.4

GPS Target Parameters Sheave Counter Depth (m):

Name: DM025-1 Estimated Hydrowire angle (degrees):

Easting: 446315.62 Sampler Penetration (inches):

Northing: 5421098.73 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: overpenetrated	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2 5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/12/19 Field Supervisor Initials KH Date: 10/12/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/2/19

Project Number: 60612698 **Area of Interest:** Dead Man's Eddy

Anchored? NO YES **Location ID:** DM025

Attempt # 2 Cast Time: 1427 Water Depth (m): 3.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM025-2-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446316.75 Sampler Penetration (inches): 8

Northing: 5421097.42 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information: added to Lexan for compositing

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CV Date: 10/12/19 Field Supervisor Initials DA Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10·12·19

Project Number: 60612698
Area of Interest: Deadman Early
Anchored? NO YES
Location ID: DM025
Attempt # 3 Cast Time: 1444
Water Depth (m): 3.4
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM025-3-CHEM
Estimated Hydrowire angle (degrees): —
Easting: 446318.25
Sampler Penetration (inches): 8
Northing: 5421096.45
Sample Interval (0 to X inches bss): —
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Poor graded sand - medium grained subround - round
Redox Boundary: none
Presence of debris: none
Color: 5Y2.5/1 very dark gray
Biological Structures: none
Stratification: none
Shells: present, occasional - some
Density: loose
Sheen/Odor: none
Presence/Absence silica glass: Yes, 607.
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 3
SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM025-SE-1-101219 Time: 1448

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)		
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
Bioassays	1 x 5 gallon white bucket	2 gallons	28.8 lbs
	1 x 2.5 gallon white bucket	5 gallons	72.2 lbs

D.K.Y 1-21-20

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: DM025-SE-3-101219 Time: 1448 2.5 gallon white bucket 2 gallons 28.8 lbs
BMI Primary Sample ID: Time: Yellow 5-gallon bucket gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AM Date: 10/12/19
Field Supervisor Initials: DK Date: 10/12/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 101219

Project Number: 60612698
Area of Interest: Peckinpaugh Eddy
Anchored? (NO) YES
Location ID: DM025
Attempt # 4
Cast Time: 1515
Water Depth (m): 3.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM025-4-BM1
Estimated Hydrowire angle (degrees): —
Easting: 446315.25
Sampler Penetration (inches): 8
Northing: 5421096.75
Sample Interval (0 to X inches bss): —
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: DM025-BM1-1-101219 Time: 1520 Yellow 5-gallon bucket 3 *gallons* 61.8 lbs
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/12/19
Field Supervisor Initials [illegible] Date: 10/12/19

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: DM025-SE-4-101219 **Sampling Vessel:** Cayuse

Date Collected: 10.12.19 **Time Collected:** 1550

Samplers: DH **# Sample Containers:** 1
(unfiltered Sample)

Equipment Evaluated: Hamon G2AR. **Requested Analyses:** [X] Total TAL Metals (EPA 6020A)

[X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
DM002, DM018, DM016, DM015, DM010, DM008
DM061, DM025

Additional Notes or Photos

Field Supervisor Initials [illegible] **Date:** 10/12/19

Sample Lead Initials GM **Date:** 10/12/19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-14-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tiecton **Location ID:** DM025

Vessel Crew: J. Schaefer, Ryan McElice **Sampling Crew:** Alan Sims, Mark Biser (CMA)
Linda Howard (AECOM)

EPA Observer: Elle Anzinger

Arrival Time: ~~1110~~ 1232 **Departure Time:**

River Stage: LH

Weather Conditions Upon Arrival:

Water Surface Elevation (ft): 737 Temp (°F): 37° Wind (mph):

Elevation Source: LH Clouds/Precipitation: mostly clear, sunny

Trident Sampler Type: Push Pole ~~Vibraframe~~ Driveframe

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic

Surface Vegetation Present: Yes No Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sandbar

GPS Target Parameters and Water Depth

GPS Name: DM025-1-PW Water Depth (m): 2.8

Easting: LH ~~1110314.78~~ 446314.19

Northing: LH ~~5421097.85~~ 5421098.91 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

None

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM025-PW-1-101419 Time: 1132

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: na Time: Analyte and Bottle Type:

EPA Split Sample ID: na Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10/14/19 Field Supervisor Initials: DM Date: 10/14/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** DME

Location ID: DM026

Date: 9-17-19 **Vessel:** Tiekon

Sampling Crew: Bart Chadwick, Joss Moore, Linda Holland **Vessel Crew:** John Schaefer, Chad Furnic

EPA Observer: Rachel Zaraj-Fay **C.R. Observer:** None

Arrival Time: 14:00 **Departure Time:** 1811

River Stage:

Water Surface Elev. (ft): 0.8 M

Water Surface Elevation Source: Aft mounted depth finder

Weather Conditions Upon Arrival

Temp (°F): 61°

Wind (mph): 2 mph

Clouds/Precipitation: Partly cloudy

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Boat Traffic: none

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): None

General Notes:

C.R. - cultural resources

Field Supervisor Initials: [illegible] Date: 9/17/19

Sample Lead Initials: [illegible] Date: 9/17/19

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9-17-19			
Person completing form: Linda Howard			

Sampling date:	9-17-19	Sampling time:	1638 – 1742
Weather:	partly cloudy	Sample collector:	CB, JM, LH
Location ID:	DM026-~~PW-1-917~~19 (LH9-17-19)	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	DM026-PW-1-917~~19~~
Container Size:	125 mL	Chemical Analysis:	Metals
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Field split collected (LH 9-17-19) Trident ~~vibrocore~~ drive frame		

Sampling date:	9-17-19	Sampling time:	1638-1742
Weather:	partly cloudy	Sample collector:	CB, JS, LH
Location ID:	DM026	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	(LH 9-17-19) ~~DOC~~
Container Size:	125 mL	Chemical Analysis:	DOC
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident drive frame		

Sampling date:	9-17-19	Sampling time:	1638-1742
Weather:	partly cloudy	Sample collector:	CB, JM, LH
Location ID:	DM026	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	DM026-PW-3-917 19
Container Size	125 mL	Chemical Analysis	Metals
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	collected 2nd. Trident drive frame		

9/17/19 JM Supervisor
09-17-19 LH. Sample

UCR 2019 Phase 3 Sediment Study Porewater Chemistry Sample Collection Form			
Project: Phase 3 Sediment Study		Client: Teck American Inc	
AECOM Project No.	60612698		
Date: 9-17-19			
Person completing form: Linda Hazard			

Sampling date:	9-17-19	Sampling time:	1638-1742
Weather:	Partly cloudy	Sample collector:	CB, JM, LH
Location ID:	DM026	Field duplicate collected?	NO
Media type (circle one):	PW EB FB	Sample ID:	DM026-PW-I-91719
Container Size:	125 mL	Chemical Analysis:	TOC
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident driveframe		

Sampling date:	9-17-19	Sampling time:	1638-1742
Weather:	Partly cloudy	Sample collector:	CB, JM, LH
Location ID:	DM026	Field duplicate collected?	NO
Media type (circle one):	(PW) EB FB	Sample ID:	DM026-PW-I-91719
Container Size:	125 mL	Chemical Analysis:	Sulfate/chloride/alkalinity
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)	Trident Driveframe		

Sampling date:		Sampling time:	
Weather:		Sample collector:	
Location ID:		Field duplicate collected?	
Media type (circle one):	PW EB FB	Sample ID:	
Container Size		Chemical Analysis	
Notes (e.g., Trident sampler type and ID, sample appearance, type of EB, etc.)			

9/17/19 JM Supervisor

09-17-19 LH. Sampler.

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/21/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DM026
Vessel Crew: P. Jenkins, M. McKeon
Sampling Crew: K. Mitchell, S. Holmes, P. Hamidi
C.R. Observer: ~~KM~~
EPA Observer: J. Gondek
Arrival Time: ~~09~~ 1000
Departure Time: ~~10~~ KM 1227

River Stage:
Water Surface Elev. (ft): KM
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 2 E/NE
Clouds/Precipitation: Sunny - very few clouds

Site Information

Target Sediment Facies: (Sampleable Sand (S and ~~mFs~~)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737.
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: a few smaller fishing boats
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Near west shore sandbar/tailings

Sampling Information

Sampler Used: Van Veen
~~Attempt 1 - accept for SE~~
~~2 - accept for SE~~
~~3 - accept for BAT~~
# of Sampling Attempts (Accepted vs. Rejected): KM 3 & 0

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing: KM
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SM Date: 9-21-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Anchored? (NO) YES
Location ID: DM026
Attempt # 1 Cast Time: 1008
Water Depth (m): 1.9
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM026-1-Chem
Estimated Hydrowire angle (degrees): —
Easting: 446292.56
Sampler Penetration (inches): 10
Northing: 5421072.33
Sample Interval (0 to X inches bss): 0-6
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine + med. Sand
Redox Boundary: None
Presence of debris: None
Color: 5Y 3/2
Biological Structures: None
Stratification: None
Shells: Present
Density: Loose
Sheen/Odor: None
Presence/Absence silica glass: Present, scattered
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+2
SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes PH (No)
Removed by Hand > 5mm? Yes (No) PH
Mass of Sediment < 5 mm (kg): ~~60.2~~ PH ~~49.3~~ PH ~~52.1~~ nm
Total Mass of Sediment (kg): ~~60.2~~ PH ~~49.3~~ PH ~~52.1~~ nm
Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0
Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: DM026-SE-1-092119 Time: 1008 # and type of Containers: 1 16oz + 5x 8oz Jars + 2 1/2 gal bucket
Duplicate Sample ID: DM026-SE-2-092119 Time: 1045 # and type of Containers: 1 16oz + 5x 8oz Jars
EPA Split Sample ID: DM026-SE-3-092119 Time: 1008 # and type of Containers: 2 1/2 gal bucket

Sample Lead Initials SH Date: 9-21-19
Field Supervisor Initials 9/21/19 Date: NM

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM026

Attempt # 2 Cast Time: 1032 Water Depth (m): 1.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM026-2-ChemDup Estimated Hydrowire angle (degrees): —

Easting: 446292.31 Sampler Penetration (inches): 10

Northing: 5421070.02 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine to Mod. Sand Redox Boundary: NONE

Presence of debris: NONE

Color: 5Y 3/2 Biological Structures: NONE

Stratification: NONE Shells: TRACE

Density: Loose Sheen/Odor: NONE

Presence/Absence silica glass: Present, scattered Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+2 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? P/K Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): ~~60.2~~ P/K 49.3 P/K ~~52.1~~ NM Total Mass of Sediment (kg): ~~60.2~~ P/K ~~49.3~~ P/K ~~52.1~~ NM

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information See DM026 ~~Attempt #1~~

Primary Sample ID: P/K ~~DM026~~ Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-21-19 Field Supervisor Initials NM Date: 9/21/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-21-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM026

Attempt # 3 Cast Time: 1139 Water Depth (m): 1.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM026-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 446290,92 Sampler Penetration (inches): 10

Northing: 5421070,87 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine to med. Sand Redox Boundary: NONE

Presence of debris: NONE

Color: 5Y 3/2 Biological Structures: NONE

Stratification: NONE Shells: NONE

Density: Loose Sheen/Odor: NO

Presence/Absence silica glass: Present, scattered Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 2

Sieving Information: BMI Sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: DM026-BMI-1-092119 Time: 1139 # and type of Containers: 1 5gal yellow bucket

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-21-19 Field Supervisor Initials 9/21/19 Date: NM

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV Tietan **Location ID:** DM027

Vessel Crew: C. Smith, A. Sims, J. Schaefer, L. LaSueur **Sampling Crew:** Anders Utter

EPA Observer: Laila Savage

Arrival Time: **Departure Time:** 1245

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 43° Wind (mph): 0 mph
Clouds/Precipitation: clear skies

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile:

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic fishing boats 300 ft away or more

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name:

Water Depth (m): 4.50m

Easting: 446314.68

Northing: 5421058.35

Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM027-PW-1-101219 Time: 1130

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 10/12/19 Field Supervisor Initials ZJM Date: 10/12/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698
Area of Interest: DM
Vessel: RV Cayuse
Location ID: 027 (alt for DM040)
Vessel Crew: Mike Duffield, Ed Sloan
Sampling Crew: Stu Holmes, Ragan Driver, Glen Mejia
C.R. Observer: N/A
EPA Observer: Marilyn Guthier
Arrival Time: 1453
Departure Time: 1552
River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock
Weather Conditions Upon Arrival:
Temp (°F): 58 Wind (mph): 3
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 738
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: no

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
sandy beach / peninsula DME bar

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected):
3 accepted attempts

~~Video Reconnaissance Information~~ SH Grab Attempts

GPS Target Name: DM027-01
Easting: 446315.12
Northing: 5421057.64
Observations: accepted

GPS Target Name: DM027-02
Easting: 446313.74
Northing: 5421056.81
Observations: accepted

GPS Target Name: DM027-03
Easting: 446313.66
Northing: 5421057.33
Observations: accepted - BMI

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD SH Date: 10/14/19
Field Supervisor Initials DW Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 3
Date 10/14/19

Project Number: 60612698 **Area of Interest:** Deadman

Anchored? ~~NO~~ YES **Location ID:** DM027 (alt DM040)

Attempt # 1 Cast Time: 1454 Water Depth (m): 5-3

GPS Target Parameters Sheave Counter Depth (m): -

Name: DM027-1-CHEM Estimated Hydrowire angle (degrees): -

Easting: 4463152.12 Sampler Penetration (inches): 5

Northing: 5421057.64 Sample Interval (0 to X inches bss): 0 to 5

Sample Type: Physical/Chemical ~~Bioassay~~ BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	~~Accepted~~	Rejected

Sample Collection Method: Van Veen ~~Hamon~~ Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: See description for attempt #2 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information: added to lexan this

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM027-SE-1-101419 Time: 1500

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals~~ & TOC	8 oz WMGJ	
~~Grain Size~~	8 oz WMGJ	
~~BEM~~	16 oz Amber WMGJ	
~~Organics~~	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: — Time: — Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes ~~No~~ See *Rinsate Sample Collection Form*

Sample Lead Initials CM SH Date: 10/14/19 Field Supervisor Initials DM Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/14/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM027 (alt DM040)
Attempt # 2 Cast Time: 1507
Water Depth (m): 5.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM027-2-CHEM
Estimated Hydrowire angle (degrees): —
Easting: 446313.74
Sampler Penetration (inches): 6
Northing: 5421056.81
Sample Interval (0 to X inches bss): 0 to 6
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 250

Sediment Characteristics
Sediment Type / Texture: fine to medium Sand
Redox Boundary: none
Presence of debris: none
Color: 10YR 2/1 black
Biological Structures: none
Stratification: massive
Shells: none
Density: loose
Sheen/Odor: none
Presence/Absence silica glass: Yes 407.
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information
Attempt #s in Sample if Composite of Multiple Attempts: 1, 2
SEM-AVS Container Collected from Attempt #: 1
Sieving Information:
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information
SE Primary Sample ID: DM027-SE-1-101419 Time: 1500

Cross off containers NOT filled

~~SEM-AVS~~	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.2 gallons (72.1lbs)
	1 x 2.5 gallon white bucket	2.14 gallons (31.6lbs)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons
BMI Primary Sample ID: — Time: — Yellow 5-gallon bucket ____ gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials GM SH Date: 10/14/19
Field Supervisor Initials DMJ Date: 10/14/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 3 of 3
Date 10 14 19

Project Number: 60642698
Area of Interest: Dealmans Eddy
Anchored? (NO) YES
Location ID: DM027 (alt DM040)
Attempt # 3
Cast Time: 1531
Water Depth (m): 5.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM027-3-BM1
Estimated Hydrowire angle (degrees): —
Easting: 446313.666
Sampler Penetration (inches): 6
Northing: 5421057.33
Sample Interval (0 to X inches bss): 0 to 6
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: See description for attempt #2
Redox Boundary:
Color:
Presence of debris:
Stratification:
Biological Structures:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: ~ Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: DM027-BM1-1-101419 Time: 1535 2x Yellow 5-gallon bucket 1.8 *gallons* 34.2 lbs
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket 2.5 *gallons* 48.0
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 10/14/19
Field Supervisor Initials DM Date: 10/14/19

54

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tiecton **Location ID:** ~~DM043~~ DM030

Vessel Crew: John Schaefer, Ryan McElieece **Sampling Crew:** Alan Sims, Mark Biser (CMA) Linda Howard (AECOM)

EPA Observer: Ellie Anzinger

Arrival Time: 1444 **Departure Time:** 1632

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 46 Wind (mph): 3
Clouds/Precipitation: overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO ← Circled by J.Pretare on 11-26-19 (JAP)

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile:

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic:

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcroos, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM-030-043-1-PW

Water Depth (m): 5

Easting: 446548.03

Northing: 5420835.41

Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:

Observations:

GPS Name:
Easting:
Northing:

Observations

Sample Identification Information

Primary Sample ID: DM030-PW-1-101819 Time: 1527

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. ~~Sulfide~~ — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Time: 1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No *See Porewater Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10/18/19 Field Supervisor Initials: DM Date: 10/18/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/18/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 031

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Anthony Palmieri, Stu Holmes, Ragan Driver

C.R. Observer: N/A **EPA Observer:** N/A

Arrival Time: 1550 **Departure Time:** 1618

River Stage:
Water Surface Elev. (ft): 1287.8
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 4
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: none

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gravels & cobbles to high water mark then grasses & shrubs to railroad tracks

Sampling Information

Sampler Used: Freeze grab

GPS Target Name: DM031-SV-S @ 1612
Easting: 446679.83
Northing: 5420547.86
Depth = 15.1m

# of Sampling Attempts (Accepted vs. Rejected):
Observations: Ledgy surfaces of armored cobble and gravel.

Video Reconnaissance Information

GPS Target Name: DM031-SV-1 @ 1601
Easting: 446632.97
Northing: 5420503.71
Depth = 10.2m
Observations: Armored cobbles w/ possible sand
No penetration when landing sampler.

GPS Target Name: DM031-SV-2 @ 1605
Easting: 446644.61
Northing: 5420523.02
Depth = 11 m
Observations: Armored cobbles
No penetration when landing sampler

GPS Target Name: DM031-SV-3 @ 1608
Easting: 446662.68
Northing: 5420527.34
Depth = 12.4m
Observations: Armored cobbles + gravel
No penetration when landing sampler.

GPS Target Name: @ 1610
Easting: 446669.72
Northing: 5420507.27
Depth = 11.6m
Observations: Same as above

Sample Lead Initials RD Date: 10/18/19 Field Supervisor Initials DM Date: 10/18/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: Cayuse **Location ID:** 032

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane **EPA Observer:** N/A

Arrival Time: 1503 **Departure Time:** 1515

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 8
Clouds/Precipitation: Partly cloudy / dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) ~~Mixed Coarse (mCs)~~ Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: ~~(Powered)~~ (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) ~~(Small Waves)~~ (Choppy)

Boat Traffic No

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Near east shore of DM, small stream / drainage

Sampling Information

Sampler Used: 1 video attempt

# of Sampling Attempts (Accepted vs. Rejected): large cobbles, no fines; no samples

Video Reconnaissance Information

GPS Target Name: DM32
Easting:
Northing:
Observations: large cobbles, no fines

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/8/19 Field Supervisor Initials LOA Date: 10/8/19

Revised 9/18/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 03Q

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1225 **Departure Time:** 1325

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 56 Wind (mph): 4
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: some fishing vessels

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
small stream near railroad

Sampling Information

Sampler Used: Freegrab

# of Sampling Attempts (Accepted vs. Rejected):
1 attempt - rejected, no recovery

Video Reconnaissance Information

GPS Target Name: DM032 SV02 1242
Easting: 441667.16 14.7m
Northing: 5412053 5.35
Observations: gravel, small cobble with apparent interstitial fines. Sampler tilts and bounces off cobbles. no dust

GPS Target Name: DM032 SV03 1244
Easting: 441670.37 13.3m
Northing: 5412052 7.06
Observations: gravel, small cobbles w/ apparent interstitial fines. Sampler tilts and is uneven on cobbles no dust

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DM Date: 10/17/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10-17-19

Project Number: 60612696 **Area of Interest:** Deadmans Ricky

Anchored? (NO) YES **Location ID:** DM032

Attempt # 1 Cast Time: 1307 **Water Depth (m):** 12.7

GPS Target Parameters **Sheave Counter Depth (m):** —

Name: DM032 -1 **Estimated Hydrowire angle (degrees):** —

Easting: 446678.41 **Sampler Penetration (average) (inches):** 0

Northing: 5420533.37

Sample Type: (Physical/Chemical) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? (YES) NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? Penetration not achieved YES (NO)
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? YES NO
4. Sample is: No volume recovered **Accepted** (Rejected)

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs) 175

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials 10/17/19 Date: RJO Field Supervisor Initials: DRJ Date: 10/17/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-19-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tieton **Location ID:** DM032

Vessel Crew: John Schaefer, Ryan McElrece **Sampling Crew:** Alan Sims, Mark Biser (CMA) Linda Howard (AECOM)

EPA Observer: None

Arrival Time: 1015 **Departure Time:** 1119

River Stage:
Water Surface Elevation (ft): \
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 3 NNE
Clouds/Precipitation: overcast, low clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? YES (NO) COARSE throughout polygon

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: 0

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM032-1 (Video recon) Water Depth (m): 11.7

Easting: 4466766.67

Northing: 5420532.41 Water Sample Color: Abandoned. No penetration. Facies = Coarse

Additional Video Reconnaissance Information

GPS Name: DM032-2 Observations: Facies = Coarse

Easting: 4466772.20 Water Depth = 11.8

Northing: 5420533.15

GPS Name: DM032-3 Observations: Facies = Coarse

Easting: 4466767.04 Water depth = 11.9

Northing: 5420533.31

Sample Identification Information

Primary Sample ID: Mismatched Facies Time:

Duplicate Sample ID: Time:

EPA Split Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: AH. Date: 10-19-19 Field Supervisor Initials: DM Date: 10/19/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-19-19

Project Number: 60612698 **Area of Interest:** DmE

Vessel: Tieton **Location ID:** DM032

Vessel Crew: John Schaefer, Ryan McElwee **Sampling Crew:** Alan Sims, Mark Biser (CMA) Linda Howard (AECOM)

EPA Observer: None

Arrival Time: 1015 **Departure Time:** 1119

River Stage:
Water Surface Elevation (ft): \
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 3 NNE
Clouds/Precipitation: Overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? YES (NO) COARSE throughout polygon

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5 Water Surface (Calm) (Small Waves) (Choppy)

Boat Traffic: 0

Surface Vegetation Present. Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Water Depth (m):

Easting:

Northing: Water Sample Color:

Additional Video Reconnaissance Information

GPS Name: DM032 -4 Observations: Facies = Coarse

Easting: 44663.44 Water depth = 11.6

Northing: 5420530.00

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: Time:

Mismatched Facies

Duplicate Sample ID: Time:

EPA Split Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: AH Date: 10/19/19 Field Supervisor Initials: DJ Date: 10/19/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/19/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DM033
Vessel Crew: P.J., M.M
Sampling Crew: K.M., S.H., P.H.
C.R. Observer: —
EPA Observer: M.G.
Arrival Time: 1508
Departure Time: 1524
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 68–70 Wind (mph): 0
Clouds/Precipitation: Sunny w/a few clouds

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad on east bank near 45ST1183; Tailings on west bank

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): 0

Video Reconnaissance Information

GPS Target Name: DM033-SV-1
Easting: 446704.90
Northing: 5420535.66
Observations: High density of coarse gravels & cobbles – no sand visible KU ~~KM~~ 9.6 m depth

GPS Target Name: DM033-SV-2
Easting: 446699.76
Northing: 5420510.12
Observations: Not as coarse as ~~SV-1~~ SV-1 – some mFS present (@ 10% of matrix) 10.3 m deep

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-19-19
Field Supervisor Initials PH Date: 9.19.19

M.G. = Marilyn Gauthier

Revised 9/18/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Vessel: RV Teton
Location ID: DM033
Vessel Crew: J. Schaefer, R. McElhece
Sampling Crew: S. Holmes (photo/video)
C.R. Observer: N/A
EPA Observer: G. Sedberry
Arrival Time: 1113
Departure Time: 1120
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 2
Clouds/Precipitation: ~~None~~ SM Light fog

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM033-SV-4 D: 13.0m
Easting: 446694.56
Northing: 5420535.94 @ 1115
Observations: Gravel and small cobbles

GPS Target Name: DM033-SV-5 D: 12.1 m
Easting: 446699.28
Northing: 5420515.03 @ 1117
Observations: same as above

GPS Target Name: DM033-SV-6
Easting: 446693.05
Northing: 5420517.04 @ 1118
Observations: same as above

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19
Field Supervisor Initials JA Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: Cayuse **Location ID:** DM033

Vessel Crew: P.J., M.M. **Sampling Crew:** K.M., P.H., S.H.

C.R. Observer: — **EPA Observer:** J.G.

Arrival Time: 1456 **Departure Time:** 1507

River Stage:
Water Surface Elev. (ft): ~~—~~
Water Surface Elevation Source: ~~VLL~~

Weather Conditions Upon Arrival:
Temp (°F): 66 Wind (mph): 2
Clouds/Precipitation: partly sunny

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J.Pretare 11-26-19 (JAP)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.1 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: Small fishing boat on stop nearby

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad tracks to east on bank - Tailings on west bank w/ deciduous trees

Sampling Information

Sampler Used: ~~Video Attempt 3~~ Van Veen # of Sampling Attempts (Accepted vs. Rejected): 0/0

Video Reconnaissance Information

GPS Target Name: DM033-SV3 Attempt #3
Easting: 446691.74
Northing: 5420514.18
Observations: Depth=11.1m, Gravel/cobbles Not suitable for VV or Hamon. SEE SAMPLE LOCATION FORM FROM 9-19-19 FOR FIRST TWO GPS TARGETS/LOCs

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-20-19 Field Supervisor Initials TOM Date: 9-20-19

No photo taken on 9/20/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/19/19

Project Number: 60612698
Area of Interest: ~~Dead~~ Deadman's Eddy
Vessel: Cayuse
Location ID: DM034
Vessel Crew: P.J., M.M.
Sampling Crew: KH., P.H., S.H.
C.R. Observer: KH
EPA Observer: M.G.
Arrival Time: ~~1430~~ 1432
Departure Time: 1504
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 68 Wind (mph): Ø
Clouds/Precipitation: Sunny, a few clouds

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO But, mixed w/ ~~CAD~~ KH coarse

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: KH ~~72~~ 737.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad to east along w/ 458T1183; west side has sandbar/tailings

Sampling Information

Sampler Used: Hamon ~~Petite Ponar~~ Van Veen
# of Sampling Attempts (Accepted vs. Rejected): Rejected 2; Accepted Ø
Attempt 1 - No Sediment
Attempt 2 - No sediment

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing: N/A
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-19-19
Field Supervisor Initials DM Date: 9.19.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Vessel: RV Tieton **Location ID:** DM034

Vessel Crew: J. Schaefer **Sampling Crew:** S. Holmes (photo/video)
R. McEliece

C.R. Observer: N/A **EPA Observer:** G. Sedberry

Arrival Time: 1121 **Departure Time:** 1130

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 2
Clouds/Precipitation: ~~None~~ SH Light fog

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM034-SV-2 D: 11.7 m Observations: Cobble w/ little sand
Easting: 446665.28 G1123
Northing: 5420466.45

GPS Target Name: DM034-SV-3 Observations: Gravel/cobble and bedrock
Easting: 446660.63 D: 11.1 m
Northing: 5420460.06 G1124

GPS Target Name: DM034-SV-4 D: 10.2 m Observations: Gravel/cobble w/ sand
Easting: 446645.91 G1127
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials [illegible] Date: 10/23/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM034

Attempt # 1 Cast Time: 1436 Water Depth (m): 10.1

GPS Target Parameters Sheave Counter Depth (m):

Name: DM034-1 Estimated Hydrowire angle (degrees):

Easting: 446664.180 Sampler Penetration (inches): 1

Northing: 5420463.50 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler? ONLY WATER IN BUCKET	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	(NO)
8. Sample is:	**Accepted**	Rejected

NO RECOVERY

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: ONLY WATER IN BUCKET Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Observed apparent sandy surface w/ ~~25~~ % f-c gravel.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DM Date: 9-~~20~~-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698

Area of Interest: Deadmans Eddy

Anchored? (NO) YES

Location ID: DM034

Attempt # 2

Cast Time: 1451

Water Depth (m): 9.6m

GPS Target Parameters

Sheave Counter Depth (m):

Name: DM034-2

Estimated Hydrowire angle (degrees):

Easting: 446657.82

Sampler Penetration (inches): 0

Northing: 5420460.50

Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**	
2. Overlying water present?	**YES**	NO	
3. Overlying water excessively turbid?	YES	**NO**	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO	RECOVERY
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**	5
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO	
8. Sample is:	**Accepted**	~~Rejected~~	

Sample Collection Method: Van Veen ~~Hamon~~ Hand Tool

Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes: No recovery, appeared to be 5 on video but sampler lifted upon closing

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19

Field Supervisor Initials DM Date: 9-19-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DM034
Vessel Crew: P.J., M.M.
Sampling Crew: K.M., P.H., S.H.
C.R. Observer: —
EPA Observer: J.G.
Arrival Time: 1433
Departure Time: 1438
River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 66 Wind (mph): 4 S
Clouds/Precipitation: Cloudy - bits of Sun w/some rain

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Ask Stu?

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Just us now
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad to east - Tailings to west along shore w/ deciduous trees

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): 0/0

Video Reconnaissance Information

GPS Target Name: DM034-SV-1
Easting: 446655.14
Northing: 5420458.21
Observations: gravel - 20% sand Ask Stu? (Not enough S or mFs) 14.33 m deep

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations: N/A

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-20-19
Field Supervisor Initials DRY Date: 09-20-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DM035
Vessel Crew: P.J., M.M.
Sampling Crew: K.M., S.H., P.H.
C.R. Observer: —
EPA Observer: J.G.
Arrival Time: 1439
Departure Time: 1453
River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source: —
Weather Conditions Upon Arrival:
Temp (°F): 66 Wind (mph): 5
Clouds/Precipitation: Partly sunny

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO (Mostly) – see VR notes below

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737.
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: ~~Fast~~ Small fishing boat
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No) deciduous
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad tracks on east shore – Tailings – trees along west bank

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): 0/0

Video Reconnaissance Information

GPS Target Name: DM035-SV-1
Easting: 446701.79
Northing: 5420458.23
depth = 10.2 m
Observations: Apparent mFs, bed of sand w/ 30% gravels/small cobbles. Not suitable for Van Veen.

GPS Target Name: DM035-SV-2
Easting: 446640.99
Northing: 5420450.42
depth = 10.2 m
Observations: Gravel & cobbles & small amts. of sand. Not suitable for Van Veen.

GPS Target Name: DM035-SV-3
Easting: 446702.42
Northing: 5420478.32
depth = 11.4 m
Observations: Gravel w/ very little amts. of sand

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-20-19
Field Supervisor Initials [illegible] Date: 9-20-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 035

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** N/A

Arrival Time: 1025 **Departure Time:** 1120

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 3
Clouds/Precipitation: clear, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mEs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: private fishing vessels

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
small stream on E bank below Railroad tracks

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
3 rejections - no sampleable sands

Video Reconnaissance Information

GPS Target Name: DM035-01
Easting: 446674.09
Northing: 5420454.13
Observations: rejected - no material collected

GPS Target Name: DM035-02
Easting: 446682.51
Northing: 5420477.81
Observations: rejected - no recovery

GPS Target Name: DM035-03
Easting: 446640.12
Northing: 5420482.03
Observations: rejected - no recovery determined mixed-coarse strata

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/12/19 Field Supervisor Initials DH Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10·12·19

Project Number: 60612698 **Area of Interest:** BEADNAS EDDY

Anchored? NO YES **Location ID:** DM035

Attempt # 1 Cast Time: 1128 Water Depth (m): 11.6

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM035-1 Estimated Hydrowire angle (degrees): _____

Easting: 446674.004 Sampler Penetration (inches): _____

Northing: 5429454.13 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient material - volume	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): _____

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/12/19 Field Supervisor Initials DH Date: 10/12/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.12.19

Project Number: 60612698
Area of Interest: PEACOCK FLATS
Anchored? NO YES
Location ID: DM035
Attempt # 2 Cast Time: 1111
Water Depth (m): 11.6
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM035-2
Estimated Hydrowire angle (degrees):
Easting: 446692.51
Sampler Penetration (inches):
Northing: 5420477.81
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient material - no volume.	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: Date: 10/12/19
Field Supervisor Initials: DA Date: 10/12/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10·12·19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 3 Cast Time: 1116

Area of Interest: Deadmans Eddy
Location ID: DM035
Water Depth (m): 10.5

GPS Target Parameters
Name: DM035-3
Easting: 446640.12
Northing: 5420482.63

Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: No volume recovered - Video shows coarse	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/12/19
Field Supervisor Initials: [illegible] Date: 10/12/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/19

Project Number: 60612698
Area of Interest: DM
Vessel: Cayuse
Location ID: 036
Vessel Crew: Mike Duffield - Gravity; Ed Sloan - Gravity
Sampling Crew: Dave Hose, Ragan Driver, Glen Mejia
C.R. Observer: Tamara Knudson - Spokane Tribe
EPA Observer: N/A
Arrival Time: 1335
Departure Time: ~~1550~~ RD 1500

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55°F Wind (mph): 8 mph
Clouds/Precipitation: Partly cloudy / dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 738
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Near east shore of DM, small stream / drainage

Sampling Information

Sampler Used: Freeze Grab
# of Sampling Attempts (Accepted vs. Rejected):
0 / video attempt
no samples large cobbles, no fines

Video Reconnaissance Information

GPS Target Name: DM036
Easting:
Northing:
Observations:
cobbles, no fines

GPS Target Name: ~~DM032~~ RD 10/8/19
Easting:
Northing:
Observations:

GPS Target Name: ~~DM038~~ RD 10/8/19
Easting:
Northing:
Observations:

GPS Target Name: ~~DM042~~ RD 10/8/19
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/8/19
Field Supervisor Initials [illegible] Date: 10/8/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/18/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 036

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Anthony Palmieri, Sta Holmes, Regan Driver

C.R. Observer: N/A **EPA Observer:** N/A

Arrival Time: 0909 **Departure Time:** 1309

River Stage:
Water Surface Elev. (ft): 1287.8
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 43 Wind (mph): 6
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
small stream under railroad tracks, gravels & cobbles to grasses & shrubs

Sampling Information

Sampler Used: Freeze grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 - accepted chem Attempt 3 - accepted chem
Attempt 2 - accepted chem Attempt 4 - BMI accepted

Video Reconnaissance Information

GPS Target Name: [redacted] RD Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SM Date: 10/18/19 Field Supervisor Initials DRY Date: 10/18/19

Revised 9/18/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM036

Attempt # 1 Cast Time: 0952 Water Depth (m): 12.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM036-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 446700.83 Sampler Penetration (average) (inches): 5

Northing: 5420445.06

Sample Type: ~~Physical/Chemical~~ BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: Fine-coarse GRAVEL w/ well-graded sand and small cobbles. Trace silt.

Color: light brown

Stratification: None

Density: Loose

Presence/Absence silica glass: Scattered

Redox Boundary: None

Presence of debris: Trace rootlets

Biological Structures. None

Shells: None

Sheen/Odor: None

Other Notes. Limited recovery / volume

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: (SEE Page 3) SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/18/19 Field Supervisor Initials DMJ Date: 10/18/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM036

Attempt # 2 Cast Time: 1036 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM036-2-Chem Estimated Hydrowire angle (degrees): —

Easting: 446708.36 Sampler Penetration (average) (inches): 5

Northing: 5420447.41

Sample Type: ~~Physical/Chemical~~ BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: (SEE PAGE 3) SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	*Sediment Volume*	
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/18/19 Field Supervisor Initials DW Date: 10/18/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** Deadmen's Eddy

Anchored? (NO) YES **Location ID:** ~~DM036-3~~ SE DM036

Attempt # 3 Cast Time: 1118 Water Depth (m): 11.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM036-3-Chem Estimated Hydrowire angle (degrees): —

Easting: 446711.28 Sampler Penetration (average) (inches): 5

Northing: 5420447.15

Sample Type: ~~Physical/Chemical~~ BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is. (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #1 Redox Boundary:

Presence of debris:

Color: Biological Structures.

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2, 3 SEM-AVS Container Collected from Attempt #: —

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): ~~14.8~~ SH 0.690 Total Mass of Sediment (kg): 16.09

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 4.8

Mass of Sediment > 3 inches (cobble) (kg): 10.6

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: DM036-SE-1-101819 Time: 0952

~~SEM-AVS~~	~~8 oz WMGJ~~ (no headspace)
Total Metals & TOC	8 oz WMGJ ✓
Grain Size	8 oz WMGJ ✓
~~BEM~~	~~16 oz Amber WMGJ~~
Organics	1 ~~2~~ x 8 oz WMGJ (3/4 full except in Reference Area) ✓

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: DM036-SE-3-101819 Time: 0952 8 oz WMGJ ✓ *Sediment Volume*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/18/19 Field Supervisor Initials DW Date: 10/18/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** Deadmen's Eddy

Anchored? (NO) YES **Location ID:** DM036

Attempt # 4 Cast Time: 1236 Water Depth (m): 12.2

GPS Target Parameters Sheave Counter Depth (m): ———

Name: DM036-4-BMI Estimated Hydrowire angle (degrees): ———

Easting: 446708.82 Sampler Penetration (average) (inches): 5

Northing: 5420450.02

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE Attempt 1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in ~~Sample if~~ Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	DM036-BMI-1-101819	Time: 1236		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials RJG Date: 10/18/19 Field Supervisor Initials DMY Date: 10/18/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.21.19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tieton **Location ID:** DME036

Vessel Crew: John & Ryan **Sampling Crew:** Palmieri-AECOM

EPA Observer: Gab Sedberry & Steve Cox (USGS) Joss & Alan, CMA

Arrival Time: 1308 **Departure Time:** 1512

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): calm
Clouds/Precipitation: RAIN

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare 11-26-19 (JAP)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes ~~No~~

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

HWY 25 to east, buoy in front

GPS Target Parameters and Water Depth

GPS Name: DM036-1-PW Water Depth (m): 11.80

Easting: 446704.95

Northing: 5420445.26 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

AP

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM036-PW-1-102119 Time: 1400

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
4. ~~Sulfide~~ — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

AP

Duplicate Sample ID: MP Time: _____

Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____

1B Dissolved ~~Metals~~ — With Same Capsule Filter - 125 mL Poly with HNO3

AP

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AP Date: 10.21.19 Field Supervisor Initials AP Date: 10.21.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/19/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DU037
Vessel Crew: P.J. & M.M.
Sampling Crew: P.H., S.H., K.M.
C.R. Observer: —
EPA Observer: Marilyn Gauthier
Arrival Time: 1345
Departure Time: 1407
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 67 Wind (mph): 0
Clouds/Precipitation: Sunny & warm

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)
Verified sediment bed composition is consistent with target strata? YES (NO) More coarse w/ cobbles & gravels
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
milkfoil closer to shore
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): Rejected Attempts: 1 - No sediment. Accepted Attempts: 1
THIS DU location may work for van Veen ~~freeze~~ grab

Video Reconnaissance Information

GPS Target Name: DU037-SV-1
Easting: 446723.54
Northing: 5420378.99 5.7m deep
Observations: Large gravels - not much sand ~~looking better as camera comes up.~~ KH

GPS Target Name: DU037-SV-2
Easting: 446735.91
Northing: 5420375.72 5.3m deep
Observations: Small cobbles w/ little amts. of sand

GPS Target Name: DU037-SV-3
Easting: 446729.72
Northing: 5420389.55 5.3 m deep
Observations: Mix of gravel & cobbles w/ small amts. of sand.

GPS Target Name: DU037-SV-4
Easting: 446677.04
Northing: 5420391.34 9 m deep
Observations: Cobbles w/ small pockets of sand.

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DRY Date: 9.19.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Vessel: RV Tieton
Location ID: DM037
Vessel Crew: J. Schaefer, R. McElviece
Sampling Crew: S. Holmes (photo/video)
C.R. Observer: N/A
EPA Observer: G. Sedberry
Arrival Time: 1129
Departure Time: 1137
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 2
Clouds/Precipitation: light fog

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM037-SV-5
Easting: 446681.27
Northing: 5420384.62
D: 8.7 m @ 1131
Observations: Gravel/cobbles w/ little sand

GPS Target Name: DM037-SV-6
Easting: 446703.83
Northing: 5420390.27
D: 7.2 m @ 1134
Observations: Gravel/cobbles

GPS Target Name: DM037-SV-7
Easting: 446709.34
Northing: 5420376.70
D: 6.2 m @ 1135
Observations: Gravel/cobbles and debris

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19
Field Supervisor Initials [illegible] Date: 10/23/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM037F

Attempt # 1 Cast Time: 1346 Water Depth (m): 6.1

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM037-1 Estimated Hydrowire angle (degrees): _____

Easting: 446728.90 Sampler Penetration (inches): 0

Northing: 542367.56 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

recovery

20

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: Video showed MFS, but no recovery in samples

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

EPA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DM Date: 9-19-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/19

Project Number: 60612698
Area of Interest: DM
Vessel: Cayuse
Location ID: 038
Vessel Crew: Mike Duffield, Ed Sloan
Sampling Crew: Dave Hose, Ragan Driver, Glen Mejia
C.R. Observer: Tamara Knudson - Spokane
EPA Observer: N/A
Arrival Time: 1516
Departure Time: 1519

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 8
Clouds/Precipitation: Partly Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 738
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: No

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Near east shore DM, small stream/drainage

Sampling Information

Sampler Used: 1 video attempt
# of Sampling Attempts (Accepted vs. Rejected): no samples; large cobbles, no fines

Video Reconnaissance Information

GPS Target Name: DM38
Easting:
Northing:
Observations: large cobbles, no fines

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/8/19
Field Supervisor Initials DH Date: 10/8/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/19/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 038

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Anthony Palmieri, Stu Holmes, Ragan Driver

C.R. Observer: N/A **EPA Observer:** Marilyn Gauthier

Arrival Time: 0910 **Departure Time:** 1125

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 43 Wind (mph): 0
Clouds/Precipitation: overcast, some rain

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gravels & cobbles to high water mark then grasses & shrubs to railroad tracks

Sampling Information

Sampler Used: Freeze grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 accepted Chem Attempt 3 accepted BMI
Attempt 2 accepted - BMI

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials RD Date: 10/19/19 Field Supervisor Initials AP Date: 10.19.19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-19-2019

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM038

Attempt # 1 Cast Time: 0930 Water Depth (m): 7.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM038-1-chem Estimated Hydrowire angle (degrees): —

Easting: 446764.03 Sampler Penetration (average) (inches): 5

Northing: 5420446.43

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: Well graded SAND and gravel w/ some cobbles w/ trace silt Redox Boundary: None

Presence of debris: None

Color: 10 YR 2/1 Biological Structures: None

Stratification: None Shells: None

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Abundant (~60% of sand fraction) Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: — SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 4.7 Total Mass of Sediment (kg): 12.3

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 1.8

Mass of Sediment > 3 inches (cobble) (kg): 5.8

Sample Identification Information

SE Primary Sample ID: DM038-SE-1-101919 Time: 0930			*Cross off containers NOT filled*	
		SEM-AVS	8 oz WMGJ (no headspace)	All collected
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: ____ Time: ____		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: ____	Time: ____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID. ____	Time: ____		Yellow 5-gallon bucket	____ *gallons*
~~BMI Duplicate Sample ID~~: SH DM038-BMI-1-101919	Time: 1111		Yellow 5-gallon bucket	1.1 *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials DN Date: 10/19/19 Field Supervisor Initials AP Date: 10/19/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10·19·19

Project Number: 60612698 **Area of Interest:** DME

Anchored? (NO) YES **Location ID:** DME038

Attempt # 2 Cast Time: 1038 Water Depth (m): 7.20

GPS Target Parameters Sheave Counter Depth (m): —

Name: DME038-2-B MSI Estimated Hydrowire angle (degrees): —

Easting: 446766.00 Sampler Penetration (average) (inches): 5

Northing: 5420446.25

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:	8 oz WMGJ	*Sediment Volume*	
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*	
BMI Duplicate Sample ID.	Time:	Yellow 5-gallon bucket	_____ *gallons*	

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/19/19 Field Supervisor Initials AP Date: 10·19·19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-19-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? ~~NO~~ YES **Location ID:** DM038

Attempt # 3 Cast Time: 1167 Water Depth (m): 7.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM038-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 446766.12 Sampler Penetration (average) (inches): 5

Northing: 5420445.99

Sample Type: Physical/Chemical ~~BMI~~ Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	DM038-BMI-4-101919	Time:	1111	Yellow 5-gallon bucket	1.1 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	*gallons*

Equipment Blank Collected? (Yes) No See *Rinsate Sample Collection Form*

Sample Lead Initials RO Date: 10/19/19 Field Supervisor Initials [signature] Date: 10.19.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.21.19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tieton **Location ID:** DME038

Vessel Crew: John & Ryan **Sampling Crew:** Palmieri - AECOM

EPA Observer: Gab Sedberry / Steve Cox (4565) CMA → Joss & Alan

Arrival Time: 1030 **Departure Time:** 1258

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): Calm
Clouds/Precipitation: Rain

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes ~~No~~

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Adjacent to Hwy 25, large submerged tree stump to SE on shore

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 8.00

Easting: 446763.25

Northing: 5420452.77 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____ AP

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM038-PW-1-102119 Time: 1145

AP ~~4. Sulfide~~

Duplicate Sample ID: AP Time: _____

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: _____

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AP Date: 10.21.19 Field Supervisor Initials DA Date: 10/22/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/17/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 039

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1330 **Departure Time:** 1525

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): 2
Clouds/Precipitation: mostly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: private fishing vessel

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
small stream to S w/ trees & shrubs to railroads

Sampling Information

Sampler Used: Freeze grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 accept - CHEM
Attempts 2&3 accepted for BMI

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DMJ Date: 10/17/19

Revised 9/18/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 3
Date 10/17/19

Project Number: 60612698 **Area of Interest:** DM-D Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM039

Attempt # 1 Cast Time: 1335 Water Depth (m): 6.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM039-1-CHEM Estimated Hydrowire angle (degrees): —

Easting: 446771.84 Sampler Penetration (average) (inches): 5

Northing: 5420447.96

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)?	YES	(NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
4. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: well graded sand w/ 2 coarse gravel and 2 small cobble adhered to freezer

Color: 10YR2/1 black

Stratification: none

Density: dense

Presence/Absence silica glass: YES, abundant

Redox Boundary: none observed

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes.

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: Not collected

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 0.944 Total Mass of Sediment (kg): 4.14

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0.3 kg

Mass of Sediment > 3 inches (cobble) (kg): 2.9 kg

Sample Identification Information

SE Primary Sample ID: DM039-SE-1-101719 Time: 1410

	Cross off containers NOT filled
~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
~~BEM~~	~~16 oz Amber WMGJ~~
Organics	1 x 8 oz WMGJ (3/4 full except in Reference Area)

1 jar organics

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/17/19 Field Supervisor Initials DY Date: 10/17/19

Revised 9/21/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 2 of 3
Date 10/17/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM039
Attempt # 2 Cast Time: 1427
Water Depth (m): 6.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: DM039-2-BM1
Estimated Hydrowire angle (degrees): —
Easting: 446779.30
Sampler Penetration (average) (inches): 5
Northing: 5420445.55
Sample Type: Physical/Chemical (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: used vibracore (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer
Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: See description for Attempt #1
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: —
SEM-AVS Container Collected from Attempt #: —

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? (Yes) No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg): 1.1
Mass of Sediment > 3 inches (cobble) (kg): 1.9

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	DM039-BM1-1-101719	Time:	1445	Yellow 5-gallon bucket	1.3 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/17/19
Field Supervisor Initials DW Date: ~~10/19/19~~ 10/17/19

lbs
28.0

Corrected 1/15/20 -ME

Revised 9/21/2019

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 3 of 3
Date 10/17/19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 3 Cast Time: 1514

GPS Target Parameters
Name: DM039-3-BMI
Easting: 496777.72
Northing: 5420445.31

Sample Type: Physical/Chemical (BMI)

Area of Interest: Deadmans Eddy
Location ID: DM039
Water Depth (m): 5.8
Sheave Counter Depth (m): —
Estimated Hydrowire angle (degrees): —
Sampler Penetration (average) (inches): 5

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer
Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: See description for Attempt #1
Color:
Stratification:
Density:
Presence/Absence silica glass:

Redox Boundary:
Presence of debris:
Biological Structures:
Shells: t anodonta sp.
Sheen/Odor:
Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: —
SEM-AVS Container Collected from Attempt #: —

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? (Yes) No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg): 1.2
Mass of Sediment > 3 inches (cobble) (kg): 3.3

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: DM039-BMI-1-101719	Time: 1445		Yellow 5-gallon bucket	____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/17/19
Field Supervisor Initials DVY Date: 10/17/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tieton **Location ID:** DM039

Vessel Crew: John Schaefer, Ryan McElrece **Sampling Crew:** Alan Sims, Mark Biser (CMA)
Linda Howard (AECOM)

EPA Observer: Elle Anzinger

Arrival Time: 1032 **Departure Time:** 1220

River Stage:
Water Surface Elevation (ft): \
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 46 Wind (mph): 3 SSW
Clouds/Precipitation: Partly cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe) DM 10/22/19

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: 0

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM039-1 Water Depth (m): 6.7

Easting: 446780.76

Northing: 5420451.47 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM039-PW-1-101819 Time: 1109

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: \ Time: Analyte and Bottle Type:

EPA Split Sample ID: \ Time: 1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10-18-19 Field Supervisor Initials: DM Date: 10/18/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Dead Man's Eddy

Location ID: DM-040

Date: ~~9/16/19~~ 9/16/19 Hamidi **Vessel:** Cayuse

Sampling Crew: N. Moody, Paul, Stu Holmes **Vessel Crew:** Pete Jenkins (Cpt); Jeff Wilson; Maggie McKeo

EPA Observer: John Gondek **C.R. Observer:** Kelly Mitchell

Arrival Time: 1702 **Departure Time:** 1754

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 57°

Wind (mph): very light

Clouds/Precipitation: cloudy, very light rain; later mist at rain; became sunny near end of sample attempts

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) ~~Mixed Coarse (mCs)~~ Mud (M) ~~Coarse (mBs, B, C, and G)~~ mfs

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.3

Boat Traffic: • one other boat
• a few floating logs

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes No

Was Vegetation Removed: Yes No

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

sand bar/tailings on west shore Burlington Northern RR on east shore, quite close.

General Notes:

- 1st attempt was ~~mixed~~ coarse & only @ 2" penetration
- 2nd attempt was one large cobble
- 3rd attempt was mainly gravel - slightly deeper than 1st attempt.

C.R. - cultural resources

Field Supervisor Initials DY Date: 9/17/19

Sample Lead Initials SH Date: 9/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: RV Tieton
Location ID: DM040
Vessel Crew: J. Schaefer, R. McElhece
Sampling Crew: S. Holmes (photo/video)
C.R. Observer: N/A
EPA Observer: G. Sedberry
Arrival Time: 1140
Departure Time: 1147

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A
# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM040-SV-1
Easting: 446783.96
Northing: 5420420.98
D: 4.0 m
@ 1142
Observations: Gravel and hardpan

GPS Target Name: DM040-SV-2
Easting: 446790.80
Northing: 5420414.52
D: 4.1 m
@ 1144
Observations: Gravel and hardpan

GPS Target Name: DM040-SV-3
Easting: 446804.79
Northing: 5420401.95
D: 3.6 m
@ 1145
Observations: Gravel and hardpan

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19
Field Supervisor Initials AA Date: 10/23/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/16/19 - (MGB 11/14/19)

Project Number: 60612698

Area of Interest: Dead Man's Eddy

Anchored? (NO) YES

Location ID: DM040 ~~BMI-101619~~ NM

Attempt # (1) 2 3 Cast Time 1717

Water Depth (feet): ~~3.5~~ PK 4.3

Sample Location:

Sheave Counter Depth (feet): 4.3

E ~~Latitude~~ 44 67 79.70

Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~ 54 20 25.46

Sampler Penetration (inches): 0.5"

Sample Type: Physical/Chemical Bioassay (BMI)

Cultural Resources Observed? YES NO

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Additional Sampling Notes:

Sediment Characteristics

Sediment Type: fine gravel w/ well graded sand

Texture: Fine SR gravel

Color: 10YR 3/3

Stratification: massive

Density: Loose

Presence/Absence silica glass: present, ~~trace~~

Redox Boundary: N/A

Presence of debris: None

Biological Structures: trace

Shells: trace

Sheen/Odor: None

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples: Rejected No Sample Collected

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): ____

Mass of material > 2mm (kg): ____

> 2mm removed by hand: YES NO

BMI Samples: No Sample

Seived (250 µm)? YES

Primary Sample ID: ~~DM040~~ PK Time: ____ # and type of Containers: ____

Duplicate Sample ID: ____ Time: ____ # and type of Containers: ____

Split Sample ID: ____ Time: ____ # and type of Containers: ____

Sample Lead Initials SH Date: 9/16/19

Field Supervisor Initials DY Date: 9/17/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date:

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM040
Attempt # 1 (2) 3 Cast Time 1732
Water Depth ~~(feet)~~ M: 3.6
Sample Location:
Sheave Counter Depth (feet): 3.6
E ~~Latitude~~: 446770.20
Estimated Hydrowire angle (degrees): 0
N ~~Longitude~~: 5420419.98
Sampler Penetration (inches): 1
Sample Type: Physical/Chemical Bioassay (BMI)
Cultural Resources Observed? ~~YES~~ NO (96)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Additional Sampling Notes:

Sediment Characteristics

Sediment Type: 1 Cobble
Redox Boundary:
Texture:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples NO Sample
Sieved (YES/NO)? 2mm 5mm
Total Sample Mass (kg):
Mass of material > 2mm (kg):
> 2mm removed by hand: YES NO

BMI Samples NO Sample
Sieved (250 µm)? YES

Primary Sample ID: Time: # and type of Containers:
Duplicate Sample ID: Time: # and type of Containers:
Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9/16/19
Field Supervisor Initials DY Date: 9/17/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date:

Project Number: 60612698 **Area of Interest:** Dradmans Eddy

Anchored? (NO) YES **Location ID:** DM040

Attempt # 1 2 (3) Cast Time 1742 Water Depth (feet): 4.2

Sample Location: Sheave Counter Depth (feet): 4.2

E ~~Latitude~~: 446779.44 Estimated Hydrowire angle (degrees): 0

N ~~Longitude~~: 5420411.41 Sampler Penetration (inches): 2"

Sample Type: Physical/Chemical Bioassay (BMI) Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Gravel See Attempt #1 Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples NO Sample

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples NO Sample

Seived (250 µm)? YES

Primary Sample ID: NO Sample Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SM Date: 9/16/19 Field Supervisor Initials DY Date: 9/17/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Location ID: DM041

Date: 9/17/19 **Vessel:** RV Cayuse

Sampling Crew: MM, SH, MS **Vessel Crew:** ~~DS, JW, MM~~ ~~SH, MM~~ PJ, JW MM

EPA Observer: JG **C.R. Observer:** Michelle Stegner

Arrival Time: 1355 **Departure Time:** ~~1442~~ 1447

River Stage:
Water Surface Elev. (ft): ~1299

Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival
Temp (°F): 59

Wind (mph): 6

Clouds/Precipitation: Overcast, dry

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO MS

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.4

Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes No

Was Vegetation Removed: Yes No

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

Three attempts, no recovery
Video recon.

C.R. - cultural resources

Field Supervisor Initials DY Date: 9-18-19

Sample Lead Initials MM Date: 9-17-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/17/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM041

Attempt # (1) 2 3 Cast Time 1416 Water Depth (~~feet~~) m: 3.5

Sample Location: Sheave Counter Depth (~~feet~~) m: 3.1

~~Latitude~~ E: 446768.78 Estimated Hydrowire angle (degrees): N/A

~~Longitude~~ N: 5420397.17 Sampler Penetration (inches): 2

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

NA No recovery

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	NO NA
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Rounded cobbles w/ trace sp gravel, little m-c sand. Redox Boundary: n/a

Texture: ↓ black Presence of debris: Not present

Color: Biological Structures: Not present

Stratification: Homogeneous Shells: Not present

Density: Loose Sheen/Odor: No

Presence/Absence silica glass: Present, trace Other Notes:

~~Field Sieving/Weighing~~ NA No recovery

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-17-19 Field Supervisor Initials DM Date: 9-18-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/17/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM041

Attempt # 1 (2) 3 Cast Time 1427 Water Depth (m): 3.5

Sample Location: Sheave Counter Depth (feet): N/A

~~Latitude~~ E: 446767.14 Estimated Hydrowire angle (degrees): N/A

~~Longitude~~ N: 5420406.81 Sampler Penetration (inches): 2

NA

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

No Recovery

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: cobble w/ trace Redox Boundary: n/a

Texture: m sand. Presence of debris: not present

Color: Biological Structures: worm present

Stratification: Homogeneous Shells: not present

Density: loose Sheen/Odor: none

Presence/Absence silica glass: not present Other Notes:

Field Sieving/Weighing NA No Recovery

Physical/Chemical Samples

Seived (YES/NO)? 2mm (5mm)

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials 9-17-19 Date: MM Field Supervisor Initials DM Date: 9.18.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/17/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM041

Attempt # 1 2 (3) Cast Time 1442 Water Depth ~~(feet)~~ (m): 40

Sample Location: ~~Latitude~~ N 446750.40 ~~Longitude~~ E 5420389.64

Sheave Counter Depth (feet): Ø N/A use

Estimated Hydrowire angle (degrees): Ø N/A use

Sampler Penetration (inches): 2

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria: NA No Recovery

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	~~Rejected~~

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Very small volume (~1 tbsp) of m. SAND.

Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass: Trace

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Field Sieving/Weighing NA No Recovery

Physical/Chemical Samples

Total Sample Mass (kg):

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg):

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-17-19 Field Supervisor Initials BY Date: 9.18.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: DV Tieton
Location ID: DM041
Vessel Crew: J. Schaefer, R. McEliece
Sampling Crew: S. Holmes (photo/video)
C.R. Observer: N/A
EPA Observer: G. Sadbelly
Arrival Time: 1151
Departure Time: 1158

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A
# of Sampling Attempts (Accepted vs. Rejected):

Vidoo Reconnaissance Information

GPS Target Name: DM041-SV-1
Easting: 446759.41
Northing: 5420384.90
D: 4.5 m @ 1153
Observations: Gravel + cobble w/ silt/sand

GPS Target Name: DM041-SV-2
Easting: 446753.46
Northing: 5420367.33
D: 6.4 m @ 1154
Observations: Gravel/Cobble w/ boulder

GPS Target Name: DM041-SV-3
Easting: 446763.68
Northing: 5420352.40
D: 5.0 m @ 1156
Observations: Cobbles on silt/sand

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19
Field Supervisor Initials LOA Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: Deadmans Eddy

Location ID: ~~DMEV042~~ DM042

Date: 091719

Vessel: Cayuse

Sampling Crew: MM, SH, MS

Vessel Crew: PJ, MM, JW

EPA Observer: JG

C.R. Observer: MS

Arrival Time: 1448

Departure Time: 1501

River Stage:

Water Surface Elev. (ft): ~1299

Water Surface Elevation Source:

usgs

Weather Conditions Upon Arrival

Temp (°F): 60

Wind (mph): 5

Clouds/Precipitation: Cloudy, Ø precip.

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.4

Boat Traffic: Ø

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes No

Was Vegetation Removed: Yes No

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

C.R. - cultural resources

Field Supervisor Initials DM Date: 9-18-19

Sample Lead Initials MM Date: 9-17-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/17/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM042

Attempt # (1) 2 3 Cast Time 1501 Water Depth ~~(feet)~~ (m): 4.2

Sample Location: Sheave Counter Depth ~~(feet)~~ (m): 4.3

Latitude (E): 446795.58 Estimated Hydrowire angle (degrees):

Longitude (W): 5420361.92 Sampler Penetration (inches): 2

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: Limited volume (~1 tbsp)
Texture: Brown med. Sand suspended in H_2O
Color:
Stratification:
Density:
Presence/Absence silica glass: Trace present

Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-17-19 Field Supervisor Initials DM Date: 9.18.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Vessel: RV Tiekon **Location ID:** DM042

Vessel Crew: J. Schaefer **Sampling Crew:** S. Holmes (photo/video)
R. McEliece

C.R. Observer: N/A **EPA Observer:** G. Sedberry

Arrival Time: 1159 **Departure Time:** 1208

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM042-SV-1 D: 5.5 m Observations: Cobbles
Easting: 446783.10 @ 1201
Northing: 5420345.85

GPS Target Name: DM042-SV-2 D: 4.2 m Observations: Gravel + Cobbles w/ silt/sand
Easting: 446800.72 @ 1203
Northing: 5420386.11

GPS Target Name: DM042-SV-3 D: 6.4 m Observations: Cobbles w/ gravel
Easting: 446811.99 @ 1205
Northing: 5420365.60

GPS Target Name: Observations.
Easting:
Northing:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials AA Date: 10/23/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: TIETON **Location ID:** DM043

Vessel Crew: John Schaefer, Ryan McElrea **Sampling Crew:** Alan Sims, Mark Biser (CMA)
Linda Howard (AECOM)

EPA Observer: Elk Anzinger

Arrival Time: 1237 **Departure Time:** 1440

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 40 Wind (mph): 3
Clouds/Precipitation: Partly cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *(Coarse (mBs, B, C, and G))*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Ø

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM043-1-PW Water Depth (m): 6.2

Easting: 446767.87

Northing: 5420318.93 Water Sample Color: Yellow

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM043-PW-1-101819 Time: 1320

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2 DOC	Disc Filter - 125 mL Amber with H2SO4
3 TOC	125 mL Amber with H2SO4
~~4 Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: \ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: \ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-18-19 Field Supervisor Initials: DM Date: 10/18/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Deadmans

Location ID: DM044

Date: 9-17-19 **Vessel:** Carson

Sampling Crew: mm, SH, MS **Vessel Crew:** mm, EJ, JW

EPA Observer: jcg **C.R. Observer:** MS

Arrival Time: 1610 **Departure Time:** 1614

River Stage:
Water Surface Elev. (ft): ~1299
Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival
Temp (°F): 63
Wind (mph): 0-3
Clouds/Precipitation: cloudy; overcast Ø precip dm

Site Information:

Target Sediment Facies: Sampleable Sand (S and (mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Boat Traffic: N/A

Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No) NA
Was Vegetation Removed: Yes No

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

large cobble noted throughout all video catches. Little to no sand, some boulders. Looked at @ least 3 locations.

C.R. - cultural resources

Field Supervisor Initials DY Date: 9-18-19

Sample Lead Initials MM Date: 9-17-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV-Tieton **Location ID:** DM044

Vessel Crew: C. Smith A. Sims J. Schaefer L. LeSueur **Sampling Crew:** Anders Utter

EPA Observer: Kaila Savage

Arrival Time: 1053 **Departure Time:** 1300

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45° Wind (mph): 0 mph
Clouds/Precipitation: clear skies

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Water Depth (m): 4.2

Easting: 446811.01

Northing: 5420321.36 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

025 10/12/19

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM044-PW-1-101119 Time: 1132

Duplicate Sample ID: DM044-PW-2-101119 Time: 1232

EPA Split Sample ID: NA Time:

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: Diss. Metals 125mL Poly with HNO3

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AU Date: 10/11/19 Field Supervisor Initials AU Date: 10/11/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 044

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1425 **Departure Time:** 1459

River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 60 Wind (mph): 3
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (~~Powered~~) (Anchored) River Current: (Swift) (~~Eddie~~) (Calm) (Ripple)

River Mile: 739 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (~~No~~) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sand & cobbles to high water mark, then grasses, shrubs to railroad tracks

Sampling Information

Sampler Used: Van Veen (small)

# of Sampling Attempts (Accepted vs. Rejected):
3 rejected attempts - insufficient material
will need to try freeze grab

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DM Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM044
Attempt # 1 Cast Time: 1427
Water Depth (m): 5.4
GPS Target Parameters
Sheave Counter Depth (m): -
Name: DM044-1
Estimated Hydrowire angle (degrees): -
Easting: 446809.59
Sampler Penetration (inches): < 1
Northing: 5420323.15
Sample Interval (0 to X inches bss): -
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient volume, insufficient penetration	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: silts with slag and fine sand
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DM Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM044

Attempt # 2 Cast Time: 1436 Water Depth (m): 5.4

GPS Target Parameters Sheave Counter Depth (m): -

Name: DM044-2 Estimated Hydrowire angle (degrees): -

Easting: 446809.47 Sampler Penetration (inches): < 1

Northing: 5420321.19 Sample Interval (0 to X inches bss): -

Sample Type: ~~Physical/Chemical/Bioassay~~ BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient penetration, low volume	**Accepted**	~~Rejected~~

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: dense crust of slag on slope?

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DM Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** Dealmans Eddy

Anchored? NO YES **Location ID:** DM044

Attempt # 3 Cast Time: 1453 Water Depth (m): 5.1

GPS Target Parameters Sheave Counter Depth (m): –

Name: DM044-3 Estimated Hydrowire angle (degrees): –

Easting: 446809.68 Sampler Penetration (inches): < 1

Northing: 5420322.25 Sample Interval (0 to X inches bss): –

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: insufficient penetration,	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: thick crust, slope Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DM Date: 10/15/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 044

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamera Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1255 **Departure Time:** 1621

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 59 Wind (mph): 3
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: ~~(Powered)~~ (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: some private fishing boats

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
sand & cobbles to high water mark then grasses & shrubs to railroad tracks

Sampling Information

Sampler Used: Freeze grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 4 - accepted for Chem Attempt 6 accepted BMI, low volume
Attempt 5 - accepted for BMI Attempt 7 - accepted BMI low volume. Attempt 8 - accepted BMI

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10-16-19 Field Supervisor Initials DRY Date: 10/16/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 4 of 8
Date 10/16/19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** DM044

Attempt # 4 Cast Time: 1326 Water Depth (m): 5.1

GPS Target Parameters CHEM Sheave Counter Depth (m): —

Name: DM044-4 - ~~CHEM~~ ~~BMI~~ Estimated Hydrowire angle (degrees): —

Easting: 446810.69 Sampler Penetration (average) (inches): 5

Northing: 5420321.27

Sample Type: Physical/Chemical ~~BMI~~ (CHEM) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) ~~w/o Hammer~~ Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: Silty fine-med SAND. Thin silt layer on top. Very hard crust of oxidized silica glass underneath, w/ firm sand underneath

Redox Boundary: None observed

Presence of debris: None

Color: 7.5 YR 3/1

Biological Structures: None

Stratification: 0-½ inch silt, ½-2" Hard oxidized silica glass, 2-5" fine-med sand.

Shells: None

Density: Very stiff

Sheen/Odor: None

Presence/Absence silica glass: Abundant, ~ 50%

Other Notes: —

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 4 only SEM-AVS Container Collected from Attempt #: 4

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: DM044-SE-1-101619 Time: 1625

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ

BMI Primary Sample ID: DM044-BMI-1-101619 Time: 1615 Yellow 5-gallon bucket — *Sediment Volume* NEO 10/24/19 2.5 gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket 2.5 gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-16-19 Field Supervisor Initials RD Date: 10/16/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/6/19

Project Number: 60612698

Area of Interest: Deadmans Eddy

Anchored? (NO) YES

Location ID: DM044

Attempt # 5 Cast Time: 1420

Water Depth (m): 5.2

GPS Target Parameters

Sheave Counter Depth (m): —

Name: DM044-5-·

Estimated Hydrowire angle (degrees): —

Easting: 446809.55

Sampler Penetration (average) (inches): 5

Northing: 5420321.7

Sample Type: Physical/Chemical (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer

Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE Attempt #4

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes: low volume

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt ~~#s in Sample~~ if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes ~~No~~ Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SM Date: 10-16-19 Field Supervisor Initials RD Date: 10/16/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 6 of 6
Date 10 16 19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Anchored? (NO) YES
Location ID: DM044
Attempt # 6
Cast Time: 1439
Water Depth (m): 5.2
GPS Target Parameters
Sheave Counter Depth (m): _____
Name: DM044-6
Estimated Hydrowire angle (degrees): _____
Easting: 446809.80
Sampler Penetration (average) (inches): 4
Northing: 5420 323.00
Sample Type: Physical/Chemical (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer
Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #4
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes: low volume

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ *Sediment Volume*
BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-16-19
Field Supervisor Initials RD Date: 10/16/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10 16 19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** DM044

Attempt # 7 Cast Time: 1521 Water Depth (m): 5.2

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM044-7-BMI Estimated Hydrowire angle (degrees): _____

Easting: 446810.38 Sampler Penetration (average) (inches): ~~6~~ 4

Northing: 5420321.07

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #4 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (NO) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-16-19 Field Supervisor Initials RD Date: 10/16/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 8 of 8
Date 101619

Project Number: 60612698
Area of Interest: Peninsula Eddy
Anchored? (NO) YES
Location ID: DM044
Attempt # 8 Cast Time: 1602
Water Depth (m): 5.2
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM044-8-BM1
Estimated Hydrowire angle (degrees):
Easting: ~~448~~ 446810.46
Sampler Penetration (average) (inches): 5
Northing: 5420327.09
Sample Type: Physical/Chemical (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? ~~YES~~ NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer
Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #4
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:		Time:	8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	DM044-BM1-1-101619	Time: 1615	Yellow 5-gallon bucket	2.5 *gallons*
BMI Duplicate Sample ID:		Time:	Yellow 5-gallon bucket	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-16-19
Field Supervisor Initials RD Date: 10/16/19

1615
42.4

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/19/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Caynse
Location ID: DU045
Vessel Crew: P.G., M.M.
Sampling Crew: K.M., S.H., P.H.
C.R. Observer: —
EPA Observer: J.G.
Arrival Time: 0940
Departure Time: 1341
River Stage: ~~Water Surface Elev. (ft):~~ ~~Water Surface Elevation Source:~~
Weather Conditions Upon Arrival: Temp (°F): 54 Wind (mph): 0
Clouds/Precipitation: partly cloudy in am. Sunny by 1130

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Move S or fines than mFs

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) similar to DU046 grab attempt
River Mile: 737.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: None - in afternoon 1 boat
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Some milfoil, but closer to shore only.
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Near Railroad tracks, close to 45ST1183

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): 6 rejected/3 accepted

Attempts
1 - rejected; 2 - rejected (no sediment in grab)
3 - rejected (same silty fine sand as in DU046 grab Attempt 1)
4 - accepted 5 - rejected - water only - sampler hit debris/rock Poor recovery
6 - rejected hit hard pan

Video Reconnaissance Information

GPS Target Name:
Easting: ~~446832.94~~ KM
Northing: ~~5420295.76~~ KM 6.1 KM
Observations:

GPS Target Name: DU045-SV-1
Easting: 446832.94
Northing: 5420295.76
Observations: Cobbles w/ Sand in between
6.1m deep

GPS Target Name:
Easting:
Northing:
Observations: ~~Attempt 7~~ successful attempt. Added to grab attempt 4. Filled all other jars + 2.5 gal bucket

GPS Target Name:
Easting:
Northing:
Observations: ~~Attempt 8~~ - rejected for low penetration for BMI

Sample Lead Initials: SH Date: 9-19-19
Field Supervisor Initials: [illegible] Date: 9-19-19

~~Attempt 9~~ - accepted - used for BMI

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 9
Date 9-19-19

Project Number: 60612698 **Area of Interest:** Dead Mans Eddy

Anchored? (NO) YES **Location ID:** DM045

Attempt # 1 Cast Time: 0943 Water Depth (m): 5.4

GPS Target Parameters Sheave Counter Depth (m):

Name: DM045-1 Estimated Hydrowire angle (degrees):

Easting: 446841.61 Sampler Penetration (inches): 1

Northing: 54202 84.46 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) ~~NO~~ PH

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? NA	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture: fine sand w/ few silts Redox Boundary: NO

Presence of debris: NO

Color: Gley 1 3/N Biological Structures: NO

Stratification: NO Shells: NO

Density: Loose Sheen/Odor: NO

Presence/Absence silica glass: NONE Other Notes: —

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DM Date: 9-19-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM045

Attempt # 2 Cast Time: 0951 Water Depth (m): 5.16

GPS Target Parameters Sheave Counter Depth (m):

Name: DM045-2 Estimated Hydrowire angle (degrees):

Easting: 446839.56 Sampler Penetration (inches): 0

Northing: 5420287.64 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler? No sample in bucket	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

No recovery

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture: No sample in bucket Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DM Date: 9-19-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM045

Attempt # 3 Cast Time: 0958 Water Depth (m): 6.2

GPS Target Parameters Sheave Counter Depth (m):

Name: DM045-3 Estimated Hydrowire angle (degrees):

Easting: 4468 44.24 Sampler Penetration (inches): 1

Northing: 5420287.29 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) ~~NO~~ PH

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	(YES)	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture: silty fine sand Redox Boundary: NO

Presence of debris: NO

Color: gley 1 3/N Biological Structures: mussel

Stratification: NO Shells: Trace

Density: Loose Sheen/Odor: sulfur odor

Presence/Absence silica glass: Present Other Notes: 2 cups Retrieved

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DM Date: 9-19-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 4 of 9
Date 9-19-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM045

Attempt # 4 Cast Time: 1012 Water Depth (m): 5.2

GPS Target Parameters Sheave Counter Depth (m): _____

~~Name~~: DM045-4 Estimated Hydrowire angle (degrees): _____

~~Easting~~: 446834.93 Sampler Penetration (inches): 6

Northing: 5420882.26 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI MSB 9/25/19 Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: fine Sand w/ few Silt Redox Boundary: Not observed

Presence of debris: NO

Color: Gky 1 3/N Biological Structures: 1 mussel

Stratification: homogenous Shells: Trace

Density: Loose Sheen/Odor: Sulfur slight

Presence/Absence silica glass: None Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information - Target mFS

Attempt #s in Sample if Composite of Multiple Attempts: #4 + #7 SEM-AVS Container Collected from Attempt #: 4

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): See DM045 attempt #7 Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: DM045-SE-1-091919 Time: 1012 # and type of Containers: 1 SEA-AVS

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

EPA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DM Date: 9-19-19

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698

Area of Interest: Dead Man's Eddy

Anchored? (NO) YES

Location ID: DM045

Attempt # 5

Cast Time: 1058

Water Depth (m): 5.9

GPS Target Parameters

Sheave Counter Depth (m):

Name: DM045-5

Estimated Hydrowire angle (degrees):

Easting: 446834.79

Sampler Penetration (inches): NONE, 0

Northing: 54202 82.98

Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler? No Sample - just water	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

No recovery

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture: only water in bucket

No sample retrieved

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19

Field Supervisor Initials DY Date: 9-19-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM045

Attempt # 6 Cast Time: 1105 Water Depth (m): 5.2

GPS Target Parameters Sheave Counter Depth (m): 54

Name: DM045-6 Estimated Hydrowire angle (degrees):

Easting: 446837.50 Sampler Penetration (inches): 0

Northing: 5420251.92 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	(NO)
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO NA
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	Rejected

No recovery

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: No recovery

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DY Date: 9-19-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/19/19

Project Number: 60612698 **Area of Interest:** Dead man's Eddy

Anchored? (NO) YES **Location ID:** DM045

Attempt # 7 Cast Time: 1135 Water Depth (m): 5.2

GPS Target Parameters Sheave Counter Depth (m): 5.4

Name: DM045-7 Estimated Hydrowire angle (degrees):

Easting: 446833.56 Sampler Penetration (inches): 4

Northing: 5420282.65 Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N/A	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: fine Sand w/ few silt Redox Boundary: Not observed

Presence of debris: NO

Color: gley 1 3/N Biological Structures: NO

Stratification: homogenous Shells: Trace

Density: Loose Sheen/Odor: slight sulfur odor

Presence/Absence silica glass: Trace Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information Target MPS

Attempt #s in Sample if Composite of Multiple Attempts: #4 + #7 SEM-AVS Container Collected from Attempt #: 4

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 15.0 Total Mass of Sediment (kg): 15.0

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: DM045-SE-1-091919 Time: 1012 # and type of Containers: 1 16oz + 4 x 8 oz Jars + 1 2-gallon bucket

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

J.A.P 11-26-19

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DM Date: 9-19-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698 **Area of Interest:** Dead man's Eddy

Anchored? (NO) YES **Location ID:** DM045

Attempt # 8 Cast Time: 1236 Water Depth (m): 5.2

GPS Target Parameters Sheave Counter Depth (m):

Name: DM045-8 Estimated Hydrowire angle (degrees):

Easting: 446833.18 Sampler Penetration (inches): ~~6~~ 3

Northing: 5420282.73 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay (BMI) Rejected Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? NA	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	(Rejected)

No recovery

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture: Sample Rejected due to lack of penetration Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SM Date: 9-19-19 Field Supervisor Initials DM Date: 9/19/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/19-19

Project Number: 60612698
Area of Interest: Dead man's Eddy
Anchored? (NO) YES
Location ID: DM045
Attempt # 9 Cast Time: 1248
Water Depth (m): 5.2
GPS Target Parameters
Sheave Counter Depth (m):
Name: DM045-9
Estimated Hydrowire angle (degrees):
Easting: 446833.77
Sampler Penetration (inches): 5
Northing: 54202[illegible]1.92
Sample Interval (0 to X inches bss): 0-5
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?		YES	(NO)
2. Overlying water present?		(YES)	NO
3. Overlying water excessively turbid?		YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	NA	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?		YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?		YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?		(YES)	NO
8. Sample is:		(Accepted)	Rejected

No recovery

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 300

Circled by J. Pretare 11-26-19

Sediment Characteristics

Sediment Type / Texture: fine
Redox Boundary: not observed
Presence of debris: Trace
Color: gley 1 3/N
Biological Structures: mussel
Stratification: homogenous
Shells: Trace
Density: Loose
Sheen/Odor: slight sulfer odor
Presence/Absence silica glass: NONE
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #: 4
Sieving Information: BMI Sample
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes (No)
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: DM045-BMI-1-091919 Time: 1012 # and type of Containers: 5-gal. Yellow Bucket
Duplicate Sample ID: Time: # and type of Containers:
EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19
Field Supervisor Initials DH Date: 9.19.19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/10/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV Tietan **Location ID:** DM045

Vessel Crew: C.Smith, A.Sims, J.Schaefer, L.Lesueur **Sampling Crew:** Anders Utter

EPA Observer: Sara Rearick

Arrival Time: 1320 **Departure Time:** 1444

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50° Wind (mph): 0 mph
Clouds/Precipitation: clear skies

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 5.80 m

Easting: 446834.05

Northing: 5420285.42 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM045-PW-1-101019 Time: 1354

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 10/10/19 Field Supervisor Initials [illegible] Date: 10/10/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/12/19

Project Number: 60612698
Area of Interest: Deadmans Eddy
Vessel: Cayuse
Location ID: DM046
Vessel Crew: Pete Jenkins, Maggie McKeon
Sampling Crew: S.H., K.M., P.H.
C.R. Observer:
EPA Observer: J. G.
Arrival Time: 0837
Departure Time: 0921
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph): Ø
Clouds/Precipitation: partly cloudy

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Better suited for Van Veen as was S to Fine Sand

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ~ 737.2
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Some milfoil just under surface of water

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad near 45ST1183 on east bank. Tailings on west bank.

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): ~~Attempts~~ 1 Rejected - Return w/ Van Veen due to sediment type. Due to overpenetration

Video Reconnaissance Information SV-1

GPS Target Name: DM046 - ~~VR-1~~ KM
Easting: 446861.92
Northing: 5420300 7.1m
Observations: "Muddy" - Very fine sand (silty)

GPS Target Name: DM046
Easting:
Northing: KM
Observations:

GPS Target Name: DM046
Easting:
Northing: KM
Observations:

GPS Target Name: DM046
Easting:
Northing: KM
Observations:

Sample Lead Initials SH Date: 9-19-19
Field Supervisor Initials DM Date: 9-19-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DU046
Vessel Crew: Peter Jenkins, Maggie McKean
Sampling Crew: Kelly Mitchell, Paul Hamidi, Stu Holmes
C.R. Observer:
EPA Observer: John Gondek
Arrival Time: 1213
Departure Time: 1421

River Stage:
Water Surface Elev. (ft): ~~N/A~~
Water Surface Elevation Source: ~~N/A~~

Weather Conditions Upon Arrival:
Temp (°F): 66 Wind (mph): 4 S
Clouds/Precipitation: partly sunny

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Fine sand w/ silt pockets, some trace shell, organic (wood) debris, a few mussels

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) trace sheen

River Mile: ~~737~~ 737.2
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: fishing vessel

Surface Vegetation Present: (Yes) No
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
milfoil - just below surface, some floating
Railroad tracks, tailings across to the west.

Sampling Information

Sampler Used: Van Veen
# of Sampling Attempts (Accepted vs. Rejected): 2/0
* Attempt 2 - accepted
Attempt 3 - accepted - for BULK
Sediment sample was collected for ~~chem~~ chem/physical

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 9-20-19
Field Supervisor Initials DM Date: 9-20-19

* Attempt 1 w/ Hamon on 9/19/19, which was not collected b/c no amount.

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 9-19-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM046

Attempt # 1 Cast Time: 0855 Water Depth (m): 6.2

GPS Target Parameters Sheave Counter Depth (m): _____

Name: DM046-1 Estimated Hydrowire angle (degrees): _____

Easting: 446868.08 Sampler Penetration (inches): 8

Northing: 5420296.23 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay (BMI) 11/25/19 NO sample type rejected Cultural Resource Check Completed? (YES) ~~NO~~ DH

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? NA	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 300

Sediment Characteristics Target mFS

Sediment Type / Texture: Silty fine sand w/rust mottling

Color: Gley 1 3/N

Stratification: 1cm silt over silty f. sand

Density: loose

Presence/Absence silica glass: None

Redox Boundary: None

Presence of debris: trace

Biological Structures: 4 mussels

Shells: trace

Sheen/Odor: slight sulfur odor

Other Notes: Sample rejected due to poor penetration, Return w/ Van Veen

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

EPA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH Date: 9-19-19 Field Supervisor Initials DH Date: 9-19-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-20-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM046

Attempt # 2 Cast Time: 1217 Water Depth (m): 4.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM046-2-chem Estimated Hydrowire angle (degrees): —

Easting: 446852.55 Sampler Penetration (inches): 7

Northing: 5420280.83 Sample Interval (0 to X inches bss): 0 to 6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Fine Sand w/few silt

Color: Gley 1 3/N

Stratification: homogeneous

Density: Loose

Presence/Absence silica glass: None observed

Redox Boundary: 0.5"

Presence of debris: trace

Biological Structures: mussels

Shells: Trace

Sheen/Odor: slight odor

Other Notes: Attempt 1 w/ hamon on 9-19

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: Not composite SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 31.3 Total Mass of Sediment (kg): 31.3

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: DM046-SE-1-092019 Time: 1217 # and type of Containers: 1 16oz + 5 x 8oz + 2 gal bucket

Duplicate Sample ID: Time: # and type of Containers: 1 5 gal bucket

EPA Split Sample ID: DM046-SE-3-092019 Time: 1217 # and type of Containers: 1 2 1/2 gal bucket

Sample Lead Initials SH Date: 9-20-19 Field Supervisor Initials DR Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-20-19

Project Number: 60612698 **Area of Interest:** Dredman's Eddy

Anchored? (NO) YES **Location ID:** DM046

Attempt # 3 Cast Time: 1336 Water Depth (m): 4.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM046-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 446851.17 Sampler Penetration (inches): 8

Northing: 5420282.56 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: fine Sand ~~w/ few Silt~~ Silty PV

Color: Gray 1 3/N

Stratification: homogeneous

Density: Loose

Presence/Absence silica glass: None observed

Redox Boundary: 0.5"

Presence of debris: TRACE

Biological Structures: Mussels

Shells: TRACE

Sheen/Odor: Slight odor

Other Notes: Sand is too fine to positively identify presence of silica glass

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 2

Sieving Information: BMI

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: DM046-BMI-1-092019 Time: 1336 # and type of Containers: 1 5gal yellow bucket

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/9/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV Tietan **Location ID:** DM046-PW-1-100919

Vessel Crew: Chris S. Alex S. Larry L. John S. **Sampling Crew:** Anders Utter

EPA Observer: No EPA

Arrival Time: 1123 **Departure Time:** 1340

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45° Wind (mph): 0 mph
Clouds/Precipitation: Partly ~~cloudy~~ Cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic 1 fishing boat 500-1,000 ft away

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Water Depth (m): 4.80

Easting: 446850.50

Northing: 5420280.78 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM046-PW-1-100919 Time: 1202

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 10/9/19 Field Supervisor Initials DM Date: 10/9/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: Cayuse **Location ID:** 047

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane **EPA Observer:** N/A

Arrival Time: 1520 **Departure Time:** 1525

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 8
Clouds/Precipitation: Partly Cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: No

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
East shore DM, small stream / drainage

Sampling Information

Sampler Used: Freeze grab
Video attempt

# of Sampling Attempts (Accepted vs. Rejected):
no samples

Video Reconnaissance Information

GPS Target Name: DM47
Easting:
Northing:
Observations: large cobbles, no fines

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/8/19 Field Supervisor Initials [illegible] Date: 10/8/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/18/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 047

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Anthony Palmieri, Stu Holmes, Ragan Driver

C.R. Observer: N/A **EPA Observer:** N/A

Arrival Time: 1320 **Departure Time:** 1515

River Stage:
Water Surface Elev. (ft): 1287.8
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph): 5
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) ~~Mixed Coarse (mCs)~~ Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: ~~(Powered)~~ (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
gravels & cobbles to high water mark, then grasses & shrubs to railroad tracks

Sampling Information

Sampler Used: Freeze grab

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 accepted Chem Attempt 3 accepted BMI
Attempt 2 accepted BMI

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/18/19 Field Supervisor Initials DM Date: 10/18/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** Deadmans

Anchored? (NO) YES **Location ID:** DM047

Attempt # 1 Cast Time: 1334 Water Depth (m): 5.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM047-1-Chem Estimated Hydrowire angle (degrees): —

Easting: 446816.23 Sampler Penetration (average) (inches): 5

Northing: 5420450.72

Sample Type: (Physical/Chemical) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: Sandy fine-coarse gravel w/ trace cobble, trace silt.

Redox Boundary: None

Presence of debris: Trace organics

Color: Light brown

Biological Structures: None

Stratification: None

Shells: None

Density: Loose

Sheen/Odor: None

Presence/Absence silica glass: Scattered

Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 only SEM-AVS Container Collected from Attempt #: 1 (provisional)

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 2.6 Total Mass of Sediment (kg): 6.9

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 4.3

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: DM047-SE-1-101819 Time: 1334

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace) ✓ (provisional)
Total Metals & TOC	8 oz WMGJ ✓
Grain Size	8 oz WMGJ ✓
BEM	16 oz Amber WMGJ (low volume, provisional)
Organics	1 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

				Sediment Volume
BMI Primary Sample ID:	DM047-BMI-1-101819	Time: 1434	Yellow 5-gallon bucket	2.5 *gallons*
BMI Duplicate Sample ID:	_____	Time. _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials RM Date: 10/18/19 Field Supervisor Initials DRY Date: 10/18/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? ~~NO~~ YES **Location ID:** DM047

Attempt # 2 Cast Time: 1402 Water Depth (m): 5.6

GPS Target Parameters DM047-2-BMI Sheave Counter Depth (m): —

Name: ~~DM047-2-Chem~~ Estimated Hydrowire angle (degrees): —

Easting: 446818.24 Sampler Penetration (average) (inches): 5

Northing: 5420452.50

Sample Type: ~~Physical/Chemical~~ BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES NO
2. Minimum sampler penetration depth (4 to 6 inches) acheived? ~~YES~~ NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? ~~YES~~ NO
4. Sample is: ~~Accepted~~ Rejected

Sample Collection Method: ~~Freeze Grab~~ w/ Hammer w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: SEE ATTEMPT #1 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	*Sediment Volume*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/18/19 Field Supervisor Initials DM Date: 10/18/19

Freeze Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-18-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM047

Attempt # 3 Cast Time: 1434 Water Depth (m): 5.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM047-3-BMI Estimated Hydrowire angle (degrees): —

Easting: 446817.86 Sampler Penetration (average) (inches): 5

Northing: 5420452.22

Sample Type: Physical/Chemical (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sample surface smooth or reflects the material collected indicate that material was lost during retrieval (i.e. no voids or discontinuities)? YES (NO)
2. Minimum sampler penetration depth (4 to 6 inches) acheived? (YES) NO
3. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? (YES) NO
4. Sample is: (Accepted) Rejected

Sample Collection Method: (Freeze Grab w/ Hammer) w/o Hammer Added Weights on Sampler (lbs): 175

Sediment Characteristics

Sediment Type / Texture: SEE ATTEMPT #1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:
- SEM-AVS: 8 oz WMGJ (no headspace)
- Total Metals & TOC: 8 oz WMGJ
- Grain Size: 8 oz WMGJ
- BEM: 16 oz Amber WMGJ
- Organics: 2 x 8 oz WMGJ (3/4 full except in Reference Area)

SE Duplicate Sample ID: Time:
- SEM-AVS: 8 oz WMGJ (no headspace)
- Total Metals & TOC: 8 oz WMGJ
- Grain Size: 8 oz WMGJ
- BEM: 16 oz Amber WMGJ
- Organics: 2 x 8 oz WMGJ (3/4 full except in Reference Area)

EPA SE Split Sample ID: Time: 8 oz WMGJ *Sediment Volume*

BMI Primary Sample ID: DM047-BMI-1-101819 Time: 1434 Yellow 5-gallon bucket (combined attempt 2+3.) 25 *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials RD Date: 10/18/19 Field Supervisor Initials [illegible] Date: 10/18/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-9-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tieton **Location ID:** DM047

Vessel Crew: John Schaefer, Ryan McElieu **Sampling Crew:** Alan Sims, Mark Biser (CMA) Linda Howard (AECOM)

EPA Observer: Marilyn Gauthier

Arrival Time: 1129 **Departure Time:**

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph): 3 NNE
Clouds/Precipitation: partly cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) MKB 9/25/19 River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: 0

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM047-PW-1-101919 Water Depth (m): 4.9

Easting: 446818.38

Northing: 5420453.50 Water Sample Color: yellowish

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM047-PW-1-101919 Time: 1309

Duplicate Sample ID: Time: 1309

EPA Split Sample ID: DM047-PW-3-101919 Time: 1309

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: AH Date: 10-9-19 Field Supervisor Initials: DM Date: 10/19/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Location ID: DM048

Date: 9/17/2019 **Vessel:** Cayuse

Sampling Crew: MS, MM, SH **Vessel Crew:** FW,

EPA Observer: JG **C.R. Observer:** MS

Arrival Time: 1617 **Departure Time:** 1640

River Stage:
Water Surface Elev. (ft): ~1299

Water Surface Elevation Source:
USGS

Weather Conditions Upon Arrival
Temp (°F): 63

Wind (mph): 0-2

Clouds/Precipitation: overcast, dry

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5

Boat Traffic:

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes No

Was Vegetation Removed: Yes No

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

One attempt yielded no recovery. Video recon of area reveals gravels and cobbles.

C.R. - cultural resources

Field Supervisor Initials DY Date: 9-18-19

Sample Lead Initials MM Date: 9-17-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/17/19

Project Number: 60612698 Area of Interest: Deadmans Eddy

Anchored? (NO) YES Location ID: DM048

Attempt # (1) 2 3 Cast Time 1627 Water Depth (feet): 6.1

Sample Location: Sheave Counter Depth (feet):

E Latitude: 446880.24 Estimated Hydrowire angle (degrees):

N Longitude: 5420366.82 Sampler Penetration (inches): 2

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: med. SAND
Texture: trace coarse sand
Color: 2.5YR 2.5/2
Stratification: Homogeneous
Density: Loose
Presence/Absence silica glass: None

Redox Boundary: n/a
Presence of debris: None
Biological Structures: None
Shells: None
Sheen/Odor: None
Other Notes: ~3 tbls recovery

Field Sieving/Weighing

Physical/Chemical Samples
Total Sample Mass (kg): _____
> 2mm removed by hand: YES NO
Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg): _____

BMI Samples
Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____
Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____
Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-17-19 Field Supervisor Initials DM Date: 9.18.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: Cayuse **Location ID:** 048

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: Tamarar Knudson - Spokane **EPA Observer:** N/A

Arrival Time: 1526 **Departure Time:** 1533

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport dock

Weather Conditions Upon Arrival:
Temp (°F): 55 Wind (mph): 8
Clouds/Precipitation: Partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) ~~Mixed Coarse (mCs)~~ Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? ~~YES~~ NO

Boat Position: ~~(Powered)~~ (Anchored) River Current: (Swift) ~~(Eddie)~~ (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) ~~(Small Waves)~~ (Choppy)

Boat Traffic NO

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
East shore DM, small stream/drainage

Sampling Information

Sampler Used: Freete grab
1 video attempt

# of Sampling Attempts (Accepted vs. Rejected):
no samples

Video Reconnaissance Information

GPS Target Name: DM48
Easting:
Northing:
Observations:
large cobbles, no fines

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials RD Date: 10/8/19 Field Supervisor Initials DA Date: 10/8/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: Deadman's Eddy

Location ID: DM049

Date: 9/18/19

Vessel: Cayuse

Sampling Crew: S.H., P.H., K.M.

Vessel Crew: P.J., M.M.

EPA Observer: J.G.

C.R. Observer: —

Arrival Time: 1612

Departure Time: 1620

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival
Temp (°F): 58°F
Wind (mph): 2 N
Clouds/Precipitation: mainly sunny

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Just based on VRs

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____

Boat Traffic: No

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

Near Railroad & Site 45ST1183 on E. bank.

General Notes:

- 2 VRs (see logbook for coordinates & depth)
- No attempts due to cobbles & boulders in VRs.

C.R. - cultural resources

Field Supervisor Initials DM Date: 9/19/19

Sample Lead Initials SH Date: 9-18-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number:	60612698	**Area of Interest:**	Deadman's Eddy
Vessel:	RV Tieton	**Location ID:**	DM049
Vessel Crew:	J. Schaefer R. McEliece	**Sampling Crew:**	S. Holmes (photo/video).
C.R. Observer:	N/A	**EPA Observer:**	G. Sedberry
Arrival Time:	1206	**Departure Time:**	1214

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____

Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: None

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A

# of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM049-SV-3
Easting: 446861.81
Northing: 5420365.52
G1208
D: 5.0 m
Observations: Cobbles w/ little sand

GPS Target Name: DM049-SV-4
Easting: 446845.65
Northing: 5420345.97
D: 6.2 m
G1210
Observations: Cobbles w/ little sand

GPS Target Name: DM049-SV-5
Easting: 446852.66
Northing: 5420322.45
D: 5.8 m
G 1212
Observations: Cobbles

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials ZM Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Location ID: DM050

Date: 9/17/2019 **Vessel:** Cayuse

Sampling Crew: MS, SH, MM **Vessel Crew:** JW, MM, JP

EPA Observer: JG **C.R. Observer:** MS

Arrival Time: 1642 **Departure Time:** 1700

River Stage:
Water Surface Elev. (ft): ~1299

Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival
Temp (°F): 63°

Wind (mph): 0-3 mph

Clouds/Precipitation: Overcast, dry

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.

Boat Traffic: 0

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

Video recon of area revealed gravels and cobbles. One area of sands found. Attempt yielded fine-med sands but grab overpenetrated. Additional video recon will continue 9/18.

C.R. - cultural resources

Field Supervisor Initials DM Date: 9-18-19

Sample Lead Initials MM Date: 9-17-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/17/19

Project Number: 60612698
Area of Interest: Deadman's Eddy

Anchored? (NO) YES
Location ID: DMO50

Attempt # (1) 2 3 Cast Time 1647
Water Depth (feet): 5.4

Sample Location:
Sheave Counter Depth (feet): 5.5

Latitude: 446898.22
Estimated Hydrowire angle (degrees):

Longitude: 5420304.77
Sampler Penetration (inches): ~8

Sample Type: Physical/Chemical Bioassay BMI
Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Additional Sampling Notes: Sampler overfilled, top did not close

Sediment Characteristics

Sediment Type: fn-med SAND w/ silt inclusions
Texture:
Color: 10YR 6/1
Stratification: Massive
Density: Loose
Presence/Absence silica glass: Not observed

Redox Boundary: Not present
Presence of debris: twigs (trace)
Biological Structures: None.
Shells: Trace broken shell fragments
Sheen/Odor: None
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples
Total Sample Mass (kg): _____
> 2mm removed by hand: YES NO
Seived (YES/NO)? 2mm 5mm
Mass of material > 2mm (kg): _____

BMI Samples
Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____
Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____
Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-17-19
Field Supervisor Initials DM Date: 9.18.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/20/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: Cayuse **Location ID:** DM050

Vessel Crew: P.J., M.M. **Sampling Crew:** S.H., P.H., K.M.

C.R. Observer: — **EPA Observer:** J.G.

Arrival Time: 0909 **Departure Time:** 1138

River Stage:
Water Surface Elev. (ft): —
Water Surface Elevation Source: KM

Weather Conditions Upon Arrival:
Temp (°F): 58° Wind (mph): 4 S/SW
Clouds/Precipitation: partly cloudy

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Fine sand (very dark gray) w/silt pockets, some sheen, some shell, one mussel, worms, organic debris - not very much!

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.25 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: small fishing boat

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad on east shore; Tailings to west on shoreline

Sampling Information

Sampler Used: Van Veen # of Sampling Attempts (Accepted vs. Rejected): Accepted: 1-SE, 1-BUI / 2 Rejected: 0

Video Reconnaissance Information

GPS Target Name: Observations: Note: Attempted Human grab on 9-17-20 See original sample loc form for details.
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 9-20-19 Field Supervisor Initials [illegible] Date: 09-20-19

P.J. Pete Jenkins, M.M. Maggie McKeon > crew
K.M. - Kelly Mitchell P.H. - Paul Hamidi
S.H. - Stu Holmes J.G. - Jo[illegible]ek

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-20-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM050

Attempt # 2 Cast Time: 0908 Water Depth (m): 6.4

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM050-2-Chem Estimated Hydrowire angle (degrees): —

Easting: 446898.01 Sampler Penetration (inches): 5.7

Northing: 5420306.93 Sample Interval (0 to X inches bss): 0 to 5.7

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Fine SAND w/ few silt. Trace clay inclusions.

Redox Boundary: 0.5"

Presence of debris: Trace fibers/organics

Color: GLEY1 3/N

Biological Structures: mussel

Stratification: Massive

Shells: trace small shells

Density: Loose

Sheen/Odor: trace sheen flurets

Presence/Absence silica glass: Not observed

Other Notes: 1st Attempt made on 9-17 w/ Hamon

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~PH~~ 2 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 44.5 Total Mass of Sediment (kg): 44.5

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Primary Sample ID: DM050-SE-1-092019 Time: 0908 # and type of Containers: 5 x 8 oz jars + 1 16 oz jar + 2 gal + 5 gal

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-20-19 Field Supervisor Initials DM Date: 9-20-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-20-19

Project Number: 60612698

Area of Interest: ~~DM050~~ PH Dead Man's Eddy

Anchored? (NO) YES

Location ID: DM050

Attempt # 3 Cast Time: 1032

Water Depth (m): 6.2

GPS Target Parameters

Sheave Counter Depth (m): —

Name: DM050-3-BMI

Estimated Hydrowire angle (degrees): —

Easting: 4468999.99

Sampler Penetration (inches): 6

Northing: 5420307.55

Sample Interval (0 to X inches bss): 0 to 6

Sample Type: Physical/Chemical/Bioassay (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: BMI Samph Fine sand w/ few silt

Redox Boundary: 0.5"

Presence of debris: Trace

Color: Gley1 3/N

Biological Structures: Mussels

Stratification: homogenous

Shells: Present

Density: Loose

Sheen/Odor: slight sheen + odor

Presence/Absence silica glass: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: 2

Sieving Information: BMI Samph

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Primary Sample ID: DM050-BMI-1-09.2019 Time: 1032 # and type of Containers: 1 Yellow 5-gal bucket

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

EPA Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH Date: 9-20-19

Field Supervisor Initials [illegible] Date: 9-20-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/8/19

Project Number: 60612698 **Area of Interest:** DME

Vessel: RV Tieton **Location ID:** DM-050

Vessel Crew: Chris S., Alan S., John S. Larry L. **Sampling Crew:** Anders Utter

EPA Observer: No EPA

Arrival Time: 1025 **Departure Time:** 1250

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 47° Wind (mph): < 5 mph
Clouds/Precipitation: Partly Cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic N/A

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Water Depth (m): 6.1

Easting: 446902.90

Northing: 5420309.19 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DM-050-PW-1-100819 Time: 1124

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 10/8/19 Field Supervisor Initials [illegible] Date: 10/8/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: Deadmans Eddy

Location ID: DM051

Date: 9/17/2019

Vessel: Cayuse

Sampling Crew: MM, SH, MS

Vessel Crew: JW, MM, JT

EPA Observer: J

C.R. Observer: MS

Arrival Time: 1526

Departure Time: MS ~~1530~~ 1603

River Stage:

Water Surface Elev. (ft): ~1299

Water Surface Elevation Source: USGS

Weather Conditions Upon Arrival

Temp (°F): (MS) 60 63

Wind (mph): 0-5

Clouds/Precipitation: Cloudy, ϕ precip. dry

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5

Boat Traffic: ϕ

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

C.R. - cultural resources

Field Supervisor Initials DM Date: 9-18-19

Sample Lead Initials MM Date: 9-17-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/17/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM051

Attempt # (1) 2 3 Cast Time 1526 Water Depth (m): 2.2

Sample Location: Sheave Counter Depth (feet): _____

Latitude: E 446874.99 Estimated Hydrowire angle (degrees): _____

Longitude: N 5420405.93 Sampler Penetration (inches): 1

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes: very little recovery

Sediment Characteristics

Sediment Type: M SAND w/ gravel, rounded Redox Boundary: NA

Texture: Presence of debris: no

Color: brown Biological Structures: no

Stratification: NO Shells: yes

Density: NA Sheen/Odor: no

Presence/Absence silica glass: None observed Other Notes: small recovery (~4%c)

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH Date: 9/17/19 Field Supervisor Initials DM Date: 9.18.19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/17/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM051

Attempt # 1 (2) 3 Cast Time 1553 Water Depth (~~feet~~ m): 2.9

Sample Location: Sheave Counter Depth (feet):

~~Latitude~~ N: 446864.71 Estimated Hydrowire angle (degrees):

~~Longitude~~ E: 5420416.29 Sampler Penetration (inches): 1

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO N/A
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO Tilting upon retrieval
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: fn-c GRAVEL w/ med. sand Redox Boundary: n/a

Texture: rounded Presence of debris: None

Color: Biological Structures: None

Stratification: Homogeneous Shells: Trace shells

Density: Loose Sheen/Odor: None

Presence/Absence silica glass: Trace Other Notes: 1/4 cup sample

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Sieved (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Sieved (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-17-19 Field Supervisor Initials DM Date: 9.18.19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Vessel: RV Tieton **Location ID:** DM051

Vessel Crew: J. Schaefer, R. McElhaney **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G. Sedberry

Arrival Time: 1214 **Departure Time:** 1221

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Rowered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM051-SV-1 D: 3.5m Observations: Gravel in hardpan
Easting: 446854.83 G 1216
Northing: 5420404.71

GPS Target Name: DM051-SV-2 D: 4.0m Observations: Gravel and small cobble in hardpan
Easting: 446852.45 G 1217
Northing: 5420425.46

GPS Target Name: DM051-SV-3 D: 3.9 m Observations: Gravel/cobble
Easting: 446835.92 G 1219
Northing: 5420418.72

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials AA Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: Deadmans Eddy ~~052~~

Location ID: DM 052

Date: 09/17/19

Vessel: Cayuse

Sampling Crew: MM, SH, MS

Vessel Crew: JW, MM, PJ

EPA Observer: JG

C.R. Observer: MS

Arrival Time: ~~805 315 MS 310~~

Departure Time: 1522

River Stage:

Water Surface Elev. (ft): ~1299

Water Surface Elevation Source: usgs

Weather Conditions Upon Arrival

Temp (°F): 70

Wind (mph): S

Clouds/Precipitation: Cloudy, 0 precip

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737.5

Boat Traffic: 0

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes No

Was Vegetation Removed: Yes No

Notable shore surface features:
(rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

General Notes:

C.R. - cultural resources

Field Supervisor Initials PJ Date: 9-18-19

Sample Lead Initials MM Date: 9-17-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9/17/19

Project Number: 60612698

Area of Interest: SH 9/19/19 ~~DM047~~ Deadmans Eddy

Anchored? (NO) YES

Location ID: DM052

Attempt # (1) 2 3 Cast Time 1513

Water Depth (M): 2.3

Sample Location:

Latitude: E 446886.95

Longitude: N 5420407.52

Sheave Counter Depth (feet):

Estimated Hydrowire angle (degrees):

Sampler Penetration (inches): 2

Sample Type: Physical/Chemical Bioassay BMI

Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO NA
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

SH 9/17/19

Sample Collection Method: Van Veen (Hamon) ~~Hand Tool~~

Additional Sampling Notes: low recoveries

Sediment Characteristics

Sediment Type: fc GRAVEL rounded

Texture: trace M. sand

Color:

Stratification: NO

Density:

Presence/Absence silica glass: yes

Redox Boundary: NO

Presence of debris: NO

Biological Structures: NO

Shells: NO

Sheen/Odor: NO

Other Notes: ~~=~~ low recovery

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____

Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-17-19

Field Supervisor Initials DM Date: 9-18-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: RV Tieton **Location ID:** DM052

Vessel Crew: J. Schaefer, R. McBliece **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G. Sedberry

Arrival Time: 1220 **Departure Time:** 1227

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM052-SV-1 D: 3.2m Observations: Gravel and silt/sand w/ vegetation
Easting: 446880.84 @ 1222
Northing: 5420425.74

GPS Target Name: DM052-SV-2 D: 3.4m Observations: Gravel and hardpan
Easting: 446903.70 @ 1224
Northing: 5420409.42

GPS Target Name: DM052-SV-3 D: 4.8m Observations: Gravel and hardpan
Easting: 446897.65 @ 1225
Northing: 5420392.73

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials: SHP Date: 10/23/19 Field Supervisor Initials: DH Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Location ID: DUØ53

Date: 9/18/19 **Vessel:** Cayuse

Sampling Crew: K.M., S.H., P.H **Vessel Crew:** P.J., M.M.

EPA Observer: J.G. **C.R. Observer:** —

Arrival Time: 1531 **Departure Time:** 1608

River Stage:

Water Surface Elev. (ft): _____

Water Surface Elevation Source: _____

Weather Conditions Upon Arrival

Temp (°F): 60°F

Wind (mph): 4 NW

Clouds/Precipitation: partly sunny

Site Information:

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) There was some mFs in the grab attempts, but VRs showed non-consistent strata - gravels & cobbles

Boat Position: (Powered) (Anchored)

River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____

Boat Traffic: Just us.

Water Surface: (Calm) (Small Waves) (Choppy)

Surface Vegetation Present: Yes (No)

Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)

Railroad - near 45ST1183 @ east bank

General Notes:

Attempt 1 - Turned out to be lg. gravel & maybe 10-15% fines. - Rejected

Attempt 2 - Mainly water - @ 1 tsp of fines - rejected

3 VRs - see logLook w/ coordinates (UTMs) & depth

C.R. - cultural resources

Field Supervisor Initials DTT Date: 9/19/19

Sample Lead Initials SH Date: 9-18-19

K.M. - Kelly Mitchell
S.H. - Stu Holmes
P.H. - Paul Hamidi
J.G. - John Gondek

P.J. Pete Jenkins
M.M. Maggie M

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9-18-19

Project Number: 60612698 **Area of Interest:** Dradman's Eddy

Anchored? (NO) YES **Location ID:** DM053

Attempt # (1) ~~2~~ SH 9-18-19 3 Cast Time 1543 Water Depth ~~(feet)~~ (M) 7.4

Sample Location: Sheave Counter Depth (feet): NA

Latitude: 44696.92 Estimated Hydrowire angle (degrees):

Longitude: 5420365.42 Sampler Penetration (inches): 3

Sample Type: Physical/Chemical Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? NA	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics Target Samplable Sands / mFs

Sediment Type: f, M + coarse pk/ Large gravel rounded w/ few f.-M. Sand

Texture:

Color: N/A

Stratification: NO

Density: Loose

Presence/Absence silica glass: Many pk present trace

Redox Boundary: NO

Presence of debris: NO

Biological Structures: NO

Shells: NO

Sheen/Odor: NO

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples NO Sample < 20% fines

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg):

Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples NO Sample

Seived (250 µm)? YES

Primary Sample ID: NO Sample Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-18-19 Field Supervisor Initials DM Date: 9/19/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9-18-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM053

Attempt # 1 (2) ~~3~~ Cast Time 1602 **Water Depth (feet):** 9.8 m

SH 9-18-19

Sample Location: **Sheave Counter Depth (feet):**

E. ~~Latitude~~: 446958.76 **Estimated Hydrowire angle (degrees):**

N. ~~Longitude~~: 5420421.51 **Sampler Penetration (inches):** 3

Sample Type: Physical/Chemical Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? N.A	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:**

Sediment Characteristics

Sediment Type: 1 tbsp fine - medium sand **Redox Boundary:** NO

Texture: SA **Presence of debris:** NO

Color: NA **Biological Structures:** NO

Stratification: NO **Shells:** NO

Density: Loose **Sheen/Odor:** NO

Presence/Absence silica glass: Present **Other Notes:** 1 tbsp of recovery

Field Sieving/Weighing

Physical/Chemical Samples NO Sample **Seived (YES/NO)?** 2mm 5mm

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples NO Sample

Seived (250 µm)? YES

Primary Sample ID: NO sample Time. _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH 9-18-19 Date: 9-18-19 Field Supervisor Initials DM Date: 9/19/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: RV Tieton **Location ID:** DM053

Vessel Crew: J. Schaefer, R. McFleece **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G. Sedberry

Arrival Time: 1227 **Departure Time:** 1234

River Stage:
Water Surface Elev. (ft): —
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM053-SV-4
Easting: 446936.80
Northing: 5420390.32
D: 8.7m
@ 1229
Observations: Gravel and Cobbles

GPS Target Name: DM053-SV-5
Easting: 446938.44
Northing: 5420371.63
D: 10.10m
@ 1230
Observations: Cobble

GPS Target Name: DM053-SV-6
Easting: 446925.80
Northing: 5420347.60
D: 7.4 m
@ 1232
Observations: Cobbles and small boulders

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials EK Date 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/19/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DM054
Vessel Crew: P.J., M.M.
Sampling Crew: S.H., P.H., KM
C.R. Observer: —
EPA Observer: M.G.
Arrival Time: KM ~~1410~~ 1412
Departure Time: 1430
River Stage:
Water Surface Elev. (ft): —
Water Surface Elevation Source: —
Weather Conditions Upon Arrival:
Temp (°F): 68 Wind (mph): Ø
Clouds/Precipitation: sunny / partly cloudy

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Circled by J.Pretare 11-26-19 (JAP)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 737.3
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: none
Shallow waters; small rock bar
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sandbar/tailings ~~of~~ KM on W. bank, Railroad ◁ 45ST1183 on east bank.

Sampling Information

Sampler Used: Hamon
~~Rejected~~: 1 - water only
# of Sampling Attempts (Accepted vs. Rejected): ~~Accepted~~: Ø

Video Reconnaissance Information

GPS Target Name: DM054-SV-1
Easting: 446847.23
Northing: 5420523.17
Depth = 4.20
Observations: well-sorted small cobbles. No sand.

GPS Target Name: DM054-SV-2
Easting: 446883.51
Northing: 5420547.79
4.5m depth
Observations: Assortment of boulders cobbles, gravel, small amts. sand

GPS Target Name: DM054-SV-3
Easting: 446861.30
Northing: 5420515.97 KM
4.8 m depth
Observations: Large gravels ◁ ~~cobble~~ KM cobbles, very little amts. Sand

GPS Target Name: DM054-SV-4
Easting:
Northing:
m depth KM
Observations: * Not sampleable w/Hamon *

Sample Lead Initials SH Date: 9-19-19
Field Supervisor Initials DM Date: 9.19.19

Marilyn Gauthier = M.G. EPA observer

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-19-19

Project Number: 60612698

Area of Interest: Deadmans Eddy

Anchored? (NO) YES

Location ID: DM054

Attempt # 1 Cast Time: 1423

Water Depth (m): 5.6

GPS Target Parameters

Sheave Counter Depth (m):

Name: DM054-1

Estimated Hydrowire angle (degrees):

Easting: 446842.07

Sampler Penetration (inches): 0

Northing: 5420463.44

Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES NO N/A

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

No recovery

Sample Collection Method: Van Veen Hamon Hand Tool

Added Weights on Sampler (lbs): 300

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes: No recovery. Appeared to have some sand w/ mostly gravel on video

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

EPA Split Sample ID: Time: # and type of Containers:

Sample Lead Initials SH Date: 9-19-19

Field Supervisor Initials DM Date: 9-19-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: R.V. Tieton **Location ID:** DMOSY

Vessel Crew: J. Schaefer, R. McEllece **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G. Sedberry

Arrival Time: 1234 **Departure Time:** 1242

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DMOSY-SV-4
Easting: 446841.63
Northing: 5420482.00
@1236
D: 5.5 m
Observations: Cobbles

GPS Target Name: DMOSY-SV-5
Easting: 446854.18
Northing: 5420468.91
D: 6.2 m
@1237
Observations: Cobbles

GPS Target Name: DMOSY-SV-6
Easting: 446855.62
Northing: 5420530.82
D: 4.8 m
@1240
Observations: Cobbles + small boulder

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials DA Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/18/19

Project Number: 60612698
Area of Interest: Deadman's Eddy
Vessel: Cayuse
Location ID: DM057
Vessel Crew: ~~M.M., B.F., K.M.~~ KM P.J., M.M.
Sampling Crew: M.M., B.F., K.M.
C.R. Observer: —
EPA Observer: J.G.
Arrival Time: 1037
Departure Time: 1332
River ~~Stage~~:
Water ~~Surface~~ Elev. (ft):
Water ~~Surface~~ Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 52 Wind (mph): 0
Clouds/Precipitation: Cloudy w/light rain on & off

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: ~737.5
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: Just us
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Railroad on east bank

Sampling Information

Sampler Used: Hamon
# of Sampling Attempts (Accepted vs. Rejected): 5 Total: 1 accepted & 4 rejected

Video Reconnaissance Information

GPS Target Name: ~~DM057-VR~~ DM057-VR
Easting: 447026.96
Northing: 5420499.11
Observations: Depth: 7m

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: MM Date: 9-18-19
Field Supervisor Initials: [illegible] Date: 9-19-19

KM - Kelly Mitchell
BF - Brian Fletcher
MM - Michaela McCoog
PJ - Pete Jenkins
MM - Maggie McKeon
JG - John Gondek

Revised 9/18/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9-18-19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? NO YES **Location ID:** DMD57

Attempt # 1 2 3 Cast Time 1047 **Water Depth (feet):** 8.1 m

Sample Location: **Sheave Counter Depth (feet):**

E Latitude: 447631.70 **Estimated Hydrowire angle (degrees):** -

NE Longitude: 5420492.13 **Sampler Penetration (inches):** < 1

Sample Type: Physical/Chemical Bioassay BMI **Cultural Resources Observed?** YES NO

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool **Additional Sampling Notes:** Low Penetration, Low recovery

Sediment Characteristics

Sediment Type: M. SAND some rounded cobbles some gravel **Redox Boundary:** None

Texture: **Presence of debris:** sticks

Color: 10YR 2/2 **Biological Structures:** None

Stratification: homogeneous **Shells:** None

Density: Loose **Sheen/Odor:** None

Presence/Absence silica glass: ~~undetermined~~ scattered mm **Other Notes:**

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO N/A

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-18-19 Field Supervisor Initials DY Date: 9/19/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/18/19

Project Number: 60612698 Area of Interest: Deadman's Eddy

Anchored? (NO) YES Location ID: DM057

Attempt # 1 (2) 3 Cast Time 1130 Water Depth (feet): ~~8.4 m~~

Sample Location: Sheave Counter Depth (feet): ~~8.4 m~~

E Latitude: 447031.78 Estimated Hydrowire angle (degrees): 0

N Longitude: 5420489.14 Sampler Penetration (inches): 4

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? ~~YES~~ (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived? (4")	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes:

Sediment Characteristics

Sediment Type: M. SAND
Texture: Trace fine gravel
Color: 10yr 2/2
Stratification:
Density: Loose
Presence/Absence silica glass: ~~Not observed~~, Yes mm ~~clusters of~~ pockets & scattered

Redox Boundary: No
Presence of debris: sticks, leaves
Biological Structures: No
Shells: Yes, partial & full spiral shell
Sheen/Odor: No
Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples 8.9 − 2.8 = 6.1
Total Sample Mass (kg): ~~4.7~~ mm
cobbles >~~2mm~~ removed by hand: YES (NO)
Seived (YES/(NO))? 2mm 5mm
Mass of material > 2mm (kg): 6.1

BMI Samples
Seived (250 µm)? YES

Primary Sample ID: DM057-SE-1-091819 Time: 1130 # and type of Containers: 6 jars, 1 2.5g bioassy
Duplicate Sample ID: Time: # and type of Containers:
Split Sample ID: Time: # and type of Containers:

Sample Lead Initials mm Date: 9-18-19 Field Supervisor Initials DM Date: 9/19/19

only fill Chem jars and 2.5 gallon bucket

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/18/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Anchored? (NO) YES **Location ID:** DM057

Attempt # 1 2 (3) Cast Time 1134 **Water Depth (feet):** 8.0m

Sample Location: **Sheave Counter Depth (feet):**

E Latitude: 447030.01 **Estimated Hydrowire angle (degrees):**

N Longitude: 5426459.67 **Sampler Penetration (inches):** 2

Sample Type: (Physical/Chemical) Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes: Poor Penetration/Poor recovery

Sediment Characteristics

Sediment Type: Same as attempt 2 **Redox Boundary:** no

Texture: **Presence of debris:** sticks

Color: **Biological Structures:** no

Stratification: **Shells:** yes

Density: **Sheen/Odor:** no

Presence/Absence silica glass: **Other Notes:** Poor recovery

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-18-19 Field Supervisor Initials DMX Date: 9/19/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9-18-19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** DM057

Attempt # 4 (1) 2 3 **Cast Time** 1156 **Water Depth (feet):** 8.0 m

Sample Location: **Sheave Counter Depth (feet):**

E **Latitude:** 447034.17 **Estimated Hydrowire angle (degrees):**

N **Longitude:** 5470484.69 **Sampler Penetration (inches):** 42

Sample Type: (Physical/Chemical) Bioassay BMI **Cultural Resources Observed?** YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Additional Sampling Notes:** Poor penetration & Recovery

Sediment Characteristics

Sediment Type: Same as attempt 2 DM057

Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Total Sample Mass (kg): _____

> 2mm removed by hand: YES NO

Seived (YES/NO)? 2mm 5mm

Mass of material > 2mm (kg): _____

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: _____ Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials MM Date: 9-18-19 Field Supervisor Initials DM Date: 9/19/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date: 9/18/19

Project Number: 60612698 **Area of Interest:** Deadman, Eddy

Anchored? (NO) YES **Location ID:** DM057

Attempt # 5 (1) 2 3 Cast Time 1206 Water Depth (feet): 8.5 m

Sample Location: Sheave Counter Depth (feet):

E Latitude: 447035.45 Estimated Hydrowire angle (degrees):

N Longitude: 5420477.02 Sampler Penetration (inches): 1

Sample Type: (Physical/Chemical) Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (6 inches) acheived?	<1" YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Additional Sampling Notes: poor recovery, less than 1 tbs

Sediment Characteristics

Sediment Type: See DM057-2 Redox Boundary:

Texture: Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples

Seived (YES/NO)? 2mm 5mm

Total Sample Mass (kg): Mass of material > 2mm (kg):

> 2mm removed by hand: YES NO

BMI Samples

Seived (250 µm)? YES

Primary Sample ID: Time: # and type of Containers:

Duplicate Sample ID: Time: # and type of Containers:

Split Sample ID: Time: # and type of Containers:

Sample Lead Initials MM Date: 9-18-19 Field Supervisor Initials DM Date: 9/19/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-16-19

Project Number: 60612698
Area of Interest: DME
Vessel: Triton
Location ID: DM059
Vessel Crew: John Scharfer, Ryan McElrea
Sampling Crew: Alan Simo, Mark Biser (CMA), Linda Howard (AECOM)
EPA Observer: Marilyn Gauthier
Arrival Time: 1327
Departure Time: 1435
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 41° Wind (mph): 1-2
Clouds/Precipitation: overcast
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic none
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
shoreline is rock cliff with vegetation

GPS Target Parameters and Water Depth

GPS Name: DM059-1-PW-101619
Water Depth (m): 5.4
Easting: 447028.92
Northing: 5420602.52
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: DM059-PW-1-101619 Time: 1400

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
~~5. Sulfate/Alkalinity/Chloride~~	125 mL Poly Unpreserved

Duplicate Sample ID: \ Time: \ Analyte and Bottle Type: \
EPA Split Sample ID: DM059-PW-3-101619 Time: 1400 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-16-19
Field Supervisor Initials: ~~LH 10/16/19~~ AM Date: 10/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/12/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 061

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Dave Hose, Ragan Driver, Glen Mejia

C.R. Observer: N/A **EPA Observer:** N/A

Arrival Time: 1130 **Departure Time:** 1330

River Stage:
Water Surface Elev. (ft): 1287.4
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 44 Wind (mph): 3
Clouds/Precipitation: partly cloudy, dry

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: some private fishing boats

Surface Vegetation Present: (Yes) No Was Vegetation Removed: (Yes) No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Steep slope up to railroad tracks

Sampling Information

Sampler Used: Hamon

# of Sampling Attempts (Accepted vs. Rejected):
1 accepted; 3 rejected

Video Reconnaissance Information

GPS Target Name: DM061-01
Easting: 447096.88
Northing: 5420644.91
Observations:
accepted
finely grained sand

GPS Target Name: DM061-02
Easting: 447115.26
Northing: 5420620.43
Observations:
rejected - over penetration

GPS Target Name: DM061-03
Easting: 447116.88
Northing: 5420625.80
Observations:
rejected - over penetration

GPS Target Name: DM061-04
Easting: 447097.56
Northing: 5420645.16
Observations:
rejected - insufficient material

Sample Lead Initials RD Date: 10/12/19 Field Supervisor Initials RH Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/2/19

Project Number: 60612698
Area of Interest: Deadman Eddy
Anchored? (NO) YES
Location ID: DM061
Attempt # 1 Cast Time: 1135
Water Depth (m): 3.2
GPS Target Parameters
Sheave Counter Depth (m): -
Name: DM061-1-CHEM
Estimated Hydrowire angle (degrees): -
Easting: 447696.98
Sampler Penetration (inches): 6
Northing: 5420644.91
Sample Interval (0 to X inches bss): -
Sample Type: ~~Physical/Chemical/Bioassay~~ BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: poor graded silty sand very fine grained contains piece of black glassy sand
Redox Boundary: none
Presence of debris: none
Biological Structures: organic, variety of gamiss, numerous benthics
Color: 5Y 2.5/1 black
Stratification: none
Shells: mussels
Density: soft
Sheen/Odor: no sheen, slight sulfuric odor
Presence/Absence silica glass: YES, 25%
Other Notes: organics present

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: -
SEM-AVS Container Collected from Attempt #: 1
Sieving Information: added to composite
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? (Yes) No
Mass of Sediment < 5 mm (kg): 5.6 (89%)
Total Mass of Sediment (kg): 6.3
Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0.7 (11%)
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: DM061-SE-1-101219 Time: 1145
Primary
- AVS
- total metals & TOC
- grain
- BEM
- Bioassay 1x2.5 0.75 gal 11.4lbs

~~SEM-AVS~~ ~~Total Metals & TOC~~ ~~Grain Size~~ ~~BEM~~ ~~Organics~~ Bioassays STET

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)
~~Total Metals & TOC~~	~~8 oz WMGJ~~ STET
~~Grain Size~~	~~8 oz WMGJ~~ STET
~~BEM~~	16 oz Amber WMGJ
~~Organics~~	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays STET	1 x 5 gallon white bucket ____ gallons
	1 x 2.5 gallon white bucket 0.75 gallons

11.4 lbs

SE Duplicate Sample ID: ____ Time: ____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: ____ Time: ____ 8 oz WMGJ
EPA TX Split Sample ID: ____ Time: ____ 2.5 gallon white bucket ____ *gallons*
BMI Primary Sample ID: ____ Time: ____ Yellow 5-gallon bucket ____ *gallons*
BMI Duplicate Sample ID: ____ Time: ____ Yellow 5-gallon bucket ____ *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/2/19 Field Supervisor Initials PA Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10.12.19

Project Number: 60612698 **Area of Interest:** Deadman-Foddy

Anchored? NO YES **Location ID:** DM061

Attempt # 2 Cast Time: 1158 Water Depth (m): 3

GPS Target Parameters Sheave Counter Depth (m):

Name: DM061-2 Estimated Hydrowire angle (degrees):

Easting: 447115.26 Sampler Penetration (inches):

Northing: 5420620.43 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: overfilled – reject	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/12/19 Field Supervisor Initials JOH Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10.12.19

Project Number: 60612698 **Area of Interest:** Deakmans Eddy

Anchored? (NO) YES **Location ID:** DM061

Attempt # 3 Cast Time: 1215 Water Depth (m): 1.3

GPS Target Parameters

Name: DM061-3 Sheave Counter Depth (m):

Easting: 447116.28 Estimated Hydrowire angle (degrees):

Northing: 5420625.50 Sampler Penetration (inches):

Sample Type: (Physical/Chemical/Bioassay) BMI Sample Interval (0 to X inches bss):

Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: overfilled – vegetation mat push top of sampler	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 10 12 19 Field Supervisor Initials DA Date: 10/12/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 10/12/19

Project Number: 60612698 **Area of Interest:** Dechutes Eddy

Anchored? (NO) YES **Location ID:** ~~3~~ DM061

Attempt # 4 Cast Time: 1241 Water Depth (m): 3.1

GPS Target Parameters Sheave Counter Depth (m):

Name: DM061-4 Estimated Hydrowire angle (degrees):

Easting: 447097.56 Sampler Penetration (inches):

Northing: 5420645.16 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES) SLGT	NO
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: ~~insuff~~ Of insufficient volume	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ		
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 10/12/19 Field Supervisor Initials DA Date: 10/12/19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/11/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV-Tieton **Location ID:** DM061

Vessel Crew: C.Smith, A.Sims, J.Schaefer, L.LeSueur **Sampling Crew:** Anders Utter

EPA Observer: Kaila Savage

Arrival Time: 1330 **Departure Time:** 1637

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50° Wind (mph): 0 mph
Clouds/Precipitation: clear skies

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: (Yes) No Was Vegetation Removed: (Yes) No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): ~~20 m~~ AM 10/11/19 2.20 m

Easting: ~~447102.04~~ AM 10/11/19 447096.95

Northing: ~~5420646.95~~ AM 10/11/19 5420648.26 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM061-PW-1-101119 Time: 1522

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: NA Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: NA Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AM Date: 10/11/19 Field Supervisor Initials OA Date: 10/11/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 061

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1020 **Departure Time:** 1100

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 49 Wind (mph): 5
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: some private fishing boats

Surface Vegetation Present: (Yes) No Was Vegetation Removed: (Yes) No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
talus & brush to railroad tracks.

Sampling Information

Sampler Used: Van Veen (small)

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 5 - accepted BMI
Previously attempted w/ Hanon Grab

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10-16-19 Field Supervisor Initials DRY Date: 10/16/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** DM061

Attempt # 5 Cast Time: 1030 Water Depth (m): 2.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: DM061-5-BMI Estimated Hydrowire angle (degrees): —

Easting: 447101.37 Sampler Penetration (inches): 7

Northing: 5420649 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Silty very fine sand Redox Boundary: present 0.5cm

Presence of debris: yes, vegetation, weeds, trace organics

Color: Gley 1 2.5/N Biological Structures: elodea, canadian grass, diatom veg

Stratification: none Shells: trace

Density: Very loose Sheen/Odor: none observed

Presence/Absence silica glass: ~~YES~~ None observed Other Notes: Isopods amphipods observed

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt ~~#s in~~ Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: DM061-BMI-1-101619 Time: 1035 Yellow 5-gallon bucket 2.5 gallons 44.4

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket 2.6 gallons 44.0

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Lbs

Sample Lead Initials SH Date: 10-16-19 Field Supervisor Initials RD Date: 10/16/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** DME
Vessel: Tieton **Location ID:** DM063
Vessel Crew: John Schaefer, Ryan McGeiece **Sampling Crew:** Alan Sims, Mark Biser (CMA) Linda Howard (AECOM)
EPA Observer: None
Arrival Time: 1049 **Departure Time:** 1100
River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____
Trident Sampler Type: Push Pole Vibraframe (Driveframe)
Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): 1-2
Clouds/Precipitation: partly cloudy

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *(Coarse (mBs, B, C, and G))*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic 0
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM063-1 Water Depth (m): 2.3
Easting: 447338.10
Northing: 5420973.99 Water Sample Color: aborted, no penetration

Additional Video Reconnaissance Information

GPS Name: _____ Observations:
Easting: _____
Northing: _____

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Aborted attempt

Sample Identification Information

Primary Sample ID: _____ Time: _____
Duplicate Sample ID: _____ Time: _____
EPA Split Sample ID: _____ Time: _____
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
4. Sulfide	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: _____
1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AH Date: 10/17/19 Field Supervisor Initials AH Date: 10-17-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: TIETON **Location ID:** DM063

Vessel Crew: John Schaefer, Ryan McEliece **Sampling Crew:** Alan Sims, Mark Biser (CMA), Linda Howard (AECOM)

EPA Observer: none

Arrival Time: 1104 **Departure Time:** 1118

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): 1-2
Clouds/Precipitation: partly cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic _____

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM063-2- Water Depth (m): 2.4

Easting: 447338.10

Northing: 5420973.22 Water Sample Color: aborted, no penetration

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: ~~_____~~ Time: _____

Aborted attempt

Duplicate Sample ID: _____ Time: _____

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

Analyte and Bottle Type:	
1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	250 mL Poly with NAOH & ZnAc (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials ZH Date 10-17-19 Field Supervisor Initials AH Date 10-17-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: Tiekton **Location ID:** DM063

Vessel Crew: John Schaefer, Ryan McElrea **Sampling Crew:** Alan Sims, Mark Boer (CMA) Linda Howard (AECOM)

EPA Observer: none

Arrival Time: 1118 **Departure Time:** 1215

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 48 Wind (mph): 1-2
Clouds/Precipitation: partly cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Ø

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DM063-3-PW Water Depth (m): 2.5

Easting: 447334.10

Northing: 5420971.39 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: DM063-PW-1-101719 Time: 1152

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc~~ (Zero Headspace)
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials LH Date: 10-17-19 Field Supervisor Initials AH Date: 10-17-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-17-19

Project Number: 60612698 **Area of Interest:** DME

Vessel: TIETON **Location ID:** DM064

Vessel Crew: John Schaefer, Ryan McElwee **Sampling Crew:** Alan Sims, Mark Biser (CMA), Linda Howard (AECOM)

EPA Observer: none

Arrival Time: 1328 **Departure Time:**

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 57 Wind (mph): 1-2
Clouds/Precipitation: partly cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* (*Coarse (mBs, B, C, and G)*)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic Ø

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: DMØ64-1 Water Depth (m): 6.20

Easting: 447286.31

Northing: 5421163.98 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: DMØ64-PW-1-101719 Time: 1413

Duplicate Sample ID: Time:

EPA Split Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type:

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: XH Date: 10-17-19 Field Supervisor initials: AH Date: 10-17-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698
Area of Interest: Deadman's Eddy
Location ID: DM 0606
Date: 9/18/19
Vessel: Cayuse
Sampling Crew: P.H., S.H., K.M.
Vessel Crew: P.J., M.M.
EPA Observer: J.G.
C.R. Observer: —
Arrival Time: 1434
Departure Time: 1521

River Stage:
Water Surface Elev. (ft): ~~_____~~
Water Surface Elevation Source: ~~_____~~

Weather Conditions Upon Arrival
Temp (°F): 52° F
Wind (mph): 0
Clouds/Precipitation: Cloudy to partly cloudy

Site Information:

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mGs, B, C, and G) oops! wrong!

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) ~~Swirl~~ Swirling (See below)
River Mile: ~ 737.9
Boat Traffic: small fishing boat
"boiling" water
very difficult to keep boat/Hannon steady
Water Surface: (Calm) (Small Waves) (Choppy)
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features: (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.)
Tailings (~~45~~ ST1132) at west bank

General Notes:
- Attempt 1 - all gravel-did not keep, rejected but successful grab.

4 VR's - see logbook for depth & utms

C.R. - cultural resources

Field Supervisor Initials DM Date: 9/19/19
Sample Lead Initials SH Date: 9-18-19

P.H. = Paul H. J.G. - John Gendek
S.H. = Stu Holmes
K.M = Kelly Mitchell (Archaeologist)
P.J. - Pete Jenkins
M.M. - Maggie M.

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date: 9-15-19

Project Number: 60612698 Area of Interest: Dead Man's Eddy

Anchored? (NO) YES Location ID: DM066

Attempt # (1) 2 3 Cast Time 1505 Water Depth (m): 11.5

Sample Location: Sheave Counter Depth (feet): NA

E ~~Latitude~~: 447447.64 Estimated Hydrowire angle (degrees):

N ~~Longitude~~: 542292.31 Sampler Penetration (inches): 2

Sample Type: ~~Physical/Chemical~~ Bioassay BMI Cultural Resources Observed? YES (NO)

Sample Acceptance Criteria:

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout? NA	YES	NO
5. Minimum sampler penetration depth (6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	(NO)
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Additional Sampling Notes

Sediment Characteristics Target: Sandy Sands/mFs

Sediment Type: Subrounded F, gravel + Rounded C, gravel
Texture:

Color: NA

Stratification: NO

Density: Loose

Presence/Absence silica glass. NONE

Redox Boundary: NO

Presence of debris: NO

Biological Structures: Yes - Trace n

Shells: NO

Sheen/Odor: NO

Other Notes:

Field Sieving/Weighing

Physical/Chemical Samples NO Sample Sieved (YES/NO)? 2mm 5mm

Total Sample Mass (kg): _____ Mass of material > 2mm (kg): _____

> 2mm removed by hand: YES NO

BMI Samples NA

Sieved (250 µm)? YES

Primary Sample ID: No Sample Time: _____ # and type of Containers: _____

Duplicate Sample ID: _____ Time: _____ # and type of Containers: _____

Split Sample ID: _____ Time: _____ # and type of Containers: _____

Sample Lead Initials SH 9-18-19 Date: 9-18-19 Field Supervisor Initials DM Date: 9/19/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/23/19

Project Number: 60612698 **Area of Interest:** Deadman's Eddy

Vessel: RV Tieton **Location ID:** DM066

Vessel Crew: J. Schaefer, R. McEliece **Sampling Crew:** S. Holmes (photo/video)

C.R. Observer: N/A **EPA Observer:** G Seeberry

Arrival Time: 1248 **Departure Time:** 1255

River Stage:
Water Surface Elev. (ft): _____
Water Surface Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 2
Clouds/Precipitation: None

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

Sampling Information

Sampler Used: N/A # of Sampling Attempts (Accepted vs. Rejected):

Video Reconnaissance Information

GPS Target Name: DM066-SV-5 D: 9.8m Observations: Cobbles
Easting: 447418.75 @ 1250
Northing: 5442273.68

GPS Target Name: DM066-SV-6 D: 11.0m Observations: Gravel and Cobbles
Easting: 447435.42 @ 1252
Northing: 5442295.39

GPS Target Name: DM066-SV-7 D: 13.4m Observations:
Easting: 447438.93 @ 1253
Northing: 5442282.63

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10/23/19 Field Supervisor Initials ZOK Date: 10/23/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 1-BS-NRT

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, Glen Mejia

C.R. Observer: Tamara Knudson/Spokane Tribe **EPA Observer:** N/A

Arrival Time: 1513 **Departure Time:** 1625

River Stage:
Water Surface Elev. (ft): 1287.7
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 60 Wind (mph): 3
Clouds/Precipitation: overcast, dry

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: (Yes) No RD Was Vegetation Removed: (Yes) (No) RD

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sandy beach of DME sand bar

Sampling Information

Sampler Used: Van Veen (small)

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 rejected - insufficient recovery
Attempt 2 accepted for chem/bioassay
Attempt 3 accepted for BMI

Video Reconnaissance Information

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

GPS Target Name: Observations:
Easting:
Northing:

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DW Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** 1-B5-NRT

Attempt # 1 Cast Time: 1519 Water Depth (m): 1.9

GPS Target Parameters Sheave Counter Depth (m): -

Name: 1-B5-NRT-1 Estimated Hydrowire angle (degrees): -

Easting: 446377.52 Sampler Penetration (inches): 2

Northing: 5421110.46 Sample Interval (0 to X inches bss): -

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: incomplete closure, insuffient penetration	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 10-15-19 Field Supervisor Initials DMG Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 101519

Project Number: 60612698 **Area of Interest:** Deadman Eddy

Anchored? (NO) YES **Location ID:** 1-B5-NRT

Attempt # 2 Cast Time: 1524 Water Depth (m): 1.9

GPS Target Parameters Sheave Counter Depth (m): –

Name: 1-B5-NRT-2-CHEM Estimated Hydrowire angle (degrees): –

Easting: 446375.26 Sampler Penetration (inches): 7

Northing: 5421109.88 Sample Interval (0 to X inches bss): 0–6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: silty very fine to fine Sand

Color: Grey 1 2.5/1Y (greenish black)

Stratification: massive, 5mm redox layer on surface

Density: loose, very loose

Presence/Absence silica glass: Yes 15% scattered

Redox Boundary: 5mm scattered, trace

Presence of debris: small woody, rootlet

Biological Structures: Vegetation

Shells: trace

Sheen/Odor: none.

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ✓ SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: 1-B5-NRT-SE-1-101519 Time: 1528

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket 2.9 gallons	48.8
	1 x 2.5 gallon white bucket 1.5 gallons	19.6

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons

BMI Primary Sample ID: 1-B5-NRT-BMI-1-101519 Time: 1607 Yellow 5-gallon bucket 2 x 2.7 gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19 Field Supervisor Initials DM Date: 10/15/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/15/19

Project Number: 60612698
Area of Interest: Dealmn Eddy
Anchored? (NO) YES
Location ID: 1-BS-NRT-3
Attempt # 3
Cast Time: 1600
Water Depth (m): 1.9
GPS Target Parameters
Sheave Counter Depth (m): –
Name: 1-BS-NRT-3-BM1
Estimated Hydrowire angle (degrees): –
Easting: 446378.06
Sampler Penetration (inches): 8
Northing: 542110.85
Sample Interval (0 to X inches bss): 0–6
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: See description for attempt # 2
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____
SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg): _____
Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: – Time: –

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: 1-BS-NRT-BM1-1-101519 Time: 1607 Yellow 5-gallon bucket 2.7 *gallons*
BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket 2.7 *gallons*
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10-15-19
Field Supervisor Initials DM Date: 10/15/19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698 **Area of Interest:** ~~I-35-NRT~~ DME

Vessel: Tiverton **Location ID:** I-35-NRT

Vessel Crew: John Schrecter, Ryan McElwee **Sampling Crew:** Alan Sims, Mark Bixler (Gravity)
Linda Hazard (AECOM

EPA Observer:

Arrival Time: 1100 **Departure Time:** 1210

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 34 Wind (mph): 1 mph
Clouds/Precipitation: overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic 0

Surface Vegetation Present: (Yes) No Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: I-35-NRT-1-PW Water Depth (m): 1

Easting: 446276.60

Northing: 5421109.88 Water Sample Color: very faint yellow tinge

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: I-35-NRT-PW-1-101519 Time: 1132

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10-15-19 Field Supervisor Initials AH Date: 10-15-19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-15-19

Project Number: 60612698 **Area of Interest:** DMIE

Vessel: Tiveton **Location ID:** 1-BW-NRT

Vessel Crew: John Schwarter, Ryan McElwee **Sampling Crew:** Alan Sos, Mark Bilser (CMA), Linda Howard (AECOM)

EPA Observer: Ellie Ananyeva

Arrival Time: 1304 **Departure Time:**

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 54 Wind (mph): 0
Clouds/Precipitation: overcast

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 737 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: 0

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: 1-BW-NRT-1-PW Water Depth (m): 0.5

Easting: 446335.34

Northing: 5421022.38 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: 1-BW-NRT-PW-1-101519 Time: 1337

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: LH Date: 10-15-19 Field Supervisor Initials: ~~LH~~ AH 10-15-19 Date: 10-15-19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/16/19

Project Number: 60612698 **Area of Interest:** DM

Vessel: RV Cayuse **Location ID:** 1-B6-NRT

Vessel Crew: Mike Duffield, Ed Sloan **Sampling Crew:** Stu Holmes, Ragan Driver, PD Glen Mejia

C.R. Observer: Tamara Knudson - Spokane Tribe **EPA Observer:** N/A

Arrival Time: 0900 **Departure Time:** 1010

River Stage:
Water Surface Elev. (ft): 1287.5
Water Surface Elevation Source: Northport Dock

Weather Conditions Upon Arrival:
Temp (°F): 43 Wind (mph): 5
Clouds/Precipitation: overcast, chance rain

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: 738 Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic none

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
Sandy beach of DME sand bar.

Sampling Information

Sampler Used: Van Veen (small)

# of Sampling Attempts (Accepted vs. Rejected):
Attempt 1 accepted - CHEM, AVS, Bioassay
Attempt 2 accepted - BMI

Video Reconnaissance Information

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials SH Date: 10-16-19 Field Supervisor Initials DM Date: 10/16/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 2
Date 10 16 19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 1 Cast Time: 0907

GPS Target Parameters
Name: 1-B6-NRT-CHEM
Easting: 446333.11
Northing: 5421022.65

Sample Type: (Physical/Chemical/Bioassay) BMI

Area of Interest: Deadman Eddy
Location ID: 1-B6-NRT
Water Depth (m): 0.8
Sheave Counter Depth (m): -
Estimated Hydrowire angle (degrees): -
Sampler Penetration (inches): 9
Sample Interval (0 to X inches bss): 0-6
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics
Sediment Type / Texture: 0-3" fine sand trace silt 3-6" well graded sand trace subrounded fine gravel, abundant silica glass
Color: 10YR2/1 black
Stratification: see sediment type description
Density: loose
Presence/Absence silica glass: YES, 50%
Redox Boundary: none observed
Presence of debris: none
Biological Structures: none
Shells: trace
Sheen/Odor: none
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information
Attempt #s in Sample if Composite of Multiple Attempts: —
SEM-AVS Container Collected from Attempt #: 1

Sieving Information:
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes (No)
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: ~~1-B6-NRT-CHEM-6w~~ 1-B6-NRT-SE-1-101619 Time: 0912

SE Duplicate Sample ID: Time:

EPA SE Split Sample ID: Time:

EPA TX Split Sample ID: Time:

BMI Primary Sample ID: 1-B6-NRT-BMI-1-101619 Time: 0942

BMI Duplicate Sample ID: Time:

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket 5	gallons
	1 x 2.5 gallon white bucket 2.14	gallons
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	gallons
	Yellow 5-gallon bucket 2.7 2.5	gallons
	Yellow 5-gallon bucket	gallons

16.5 / 10.8 / 28.4

Sample Lead Initials SH Date: 10-16-19
Field Supervisor Initials RD Date: 10/16/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10 16 19

Project Number: 60612698 **Area of Interest:** Deadmans Eddy

Anchored? (NO) YES **Location ID:** 1-B6-NRT-

Attempt # 2 Cast Time: 0949 Water Depth (m): 0.8

GPS Target Parameters Sheave Counter Depth (m): -

Name: 1-B6-NRT-2-BMI Estimated Hydrowire angle (degrees): -

Easting: 446334.24 Sampler Penetration (inches): 8.5

Northing: 542102.93 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is: Small sized van veen on Cayuse	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: See description for attempt #1 Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: 1-B6-NRT-BMI-1-101619	Time: 0942		Yellow 5-gallon bucket 2.7 2.9 _____ *gallons*	168. 52.6
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket 2.5 _____ *gallons*	50.2

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials SH Date: 10/16/19 Field Supervisor Initials DM Date: 10/16/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-28-19

Project Number: 60612698
Area of Interest: BIRCHBANK UPPER
Vessel: RV CAYUSE
Location ID: REF001
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, GEN MEJIA, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GONDEK
Arrival Time: 10:00
Departure Time: 12:10

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 40's Wind (mph): 2/10MPH
Clouds/Precipitation: RAIN

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: 1 X BIKE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ROCKY BEACH,

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected):
#1 - REJECT; #2 GOOD; #3 GOOD

Video Reconnaissance Information

GPS Target Name: REF001
Easting: 447481.75
Northing: 5445081.75
Observations: COBBLES + SAND... GRAVEL TOO

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DH Date: 9/28/19
Field Supervisor Initials: DH Date: 9/28/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09 28 19

Project Number: 60612698
Area of Interest: Bigmbank
Anchored? NO YES
Location ID: REF001
Attempt # 1 Cast Time: 0958
Water Depth (m): 6.3
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF001-1
Estimated Hydrowire angle (degrees):
Easting: 447481.75
Sampler Penetration (inches):
Northing: 5445081.75
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO JAP 9-27-2

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AR Date: 9.28.19
Field Supervisor Initials: DH Date: 9/28/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 092819

Project Number: 60612698 **Area of Interest:** Birchbank

Anchored? (NO) YES **Location ID:** REF601

Attempt # 2 Cast Time: 1006 Water Depth (m): 8.9

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF001-2-CHEM Estimated Hydrowire angle (degrees): _____

Easting: 447453.72 Sampler Penetration (inches): _____

Northing: 5446000.17 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Well graded sand medium – coarse grained with gravel (up to 2") Redox Boundary: none

Presence of debris: Woody debris minor

Color: reddish gray 5YR 5/2 Biological Structures: none

Stratification: none Sand = subrounded – rounded Shells: none

Density: none: massive loose gravel = subangular – rounded Sheen/Odor: none

Presence/Absence silica glass: none Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 87 lbs. Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) ~~(kg)~~: 14.0 lbs

Mass of Sediment > 3 inches (cobble) (kg): —

Sample Identification Information

SE Primary Sample ID: REF001-SE-1-092819 Time: 1014

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5 gallons
	1 x 2.5 gallon white bucket	2 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: — Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9.28.19 Field Supervisor Initials DH Date: 9/28/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 092819

Project Number: 60612698 **Area of Interest:** Birchhale

Anchored? ~~NO~~ YES **Location ID:** REF001

Attempt # 3 Cast Time: 1111 Water Depth (m): 8.9

GPS Target Parameters Sheave Counter Depth (m):

Name: REF001-3-BM1 Estimated Hydrowire angle (degrees):

Easting: 447454.30 Sampler Penetration (inches):

Northing: 5446002.19 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: SAND. Well graded medium coarse grain, with gravel 2" inch
sand - Subrounded - rounded
gravel - Subangular - rounded

Color: reddish gray 5YR5/2

Stratification: none - massive

Density: loose

Presence/Absence silica glass: none

Redox Boundary: none

Presence of debris: Minor woody debris

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: —	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: REF001-BM1-1-092819	Time: 1014		Yellow 5-gallon bucket	2 gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	2 gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 92919 Field Supervisor Initials: [illegible] Date: 9/28/19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/27/19

Project Number: 60612698
Area of Interest: Birchbank
Vessel: RV Tieton
Location ID: Refool
Vessel Crew: John S, Chad F., Chris S., Alan S.
Sampling Crew: Anders Utter
EPA Observer: Rachel Zajac-Fay
Arrival Time: 1245
Departure Time: 1455

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45 Wind (mph):
Clouds/Precipitation: Mixed clouds / little precipitation

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* ~~*Coarse (mBe, B, C, and G)*~~ ← Not the facies

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name:
Easting: 447489.04
Northing: 5445987.46 18
AU 9-27-19
Water Depth (m): ~~6.4 m~~ 5.80 m
AU 9/27/19
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: Refool-PW-1-092719 Time: 1340
Duplicate Sample ID: Refool-PW-2-092719 Time: 1340
EPA Split Sample ID: Time:
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
Analyte and Bottle Type:	125 mL Amber (H_2SO_4) DOC
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AU Date: 9/27/19
Field Supervisor Initials LOA Date: 9/27/19

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-28-19

Project Number: 60612698
Area of Interest: BIRCHBANK UPPER
Vessel: RV CAYUSE
Location ID: REF002
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, GLEN MEJIA, MARK HAIE
C.R. Observer: MARK HAIE
EPA Observer: JOHN CONDEK
Arrival Time: 8:20
Departure Time: 9:50
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 40s Wind (mph): <10 MPH
Clouds/Precipitation: RAIN

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ROCKY BEACH, SAND SPIT, SMALL COVE, STEEP WOODED HILLSIDE ADJACENT

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected): 3 TOTAL, 2 GOOD
#1; REJECT; #2 GOOD; #3 GOOD

Video Reconnaissance Information

GPS Target Name: REF002
Observations: SAND + NOTHING BUT SAND
Easting: 447490.90
Northing: 5446068.79

GPS Target Name:
Observations:
Easting: X
Northing: X

GPS Target Name:
Observations:
Easting:
Northing:

GPS Target Name:
Observations:
Easting:
Northing:

Sample Lead Initials: DH Date: 9/28/19
Field Supervisor Initials: DH Date: 9/28/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 092819

Project Number: 60612698 **Area of Interest:** Birchbank

Anchored? (NO) YES **Location ID:** REF002

Attempt # 1 Cast Time: 0946 Water Depth (m): 1.2

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF002-1 Estimated Hydrowire angle (degrees): _____

Easting: 447490.40 Sampler Penetration (inches): _____

Northing: 5446068.79 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: GM Date: 9/28/19 Field Supervisor Initials: JH Date: 9/28/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page ___ of ___

Date 9 28 19 (SD)

Project Number: 60612698

Area of Interest: Birch Island

Anchored? (NO) YES

Location ID: REF002

Attempt # 2

Cast Time: 0950

Water Depth (m): 0.6

GPS Target Parameters

Sheave Counter Depth (m): ___

Name: REF002-2-CHEM

Estimated Hydrowire angle (degrees): ___

Easting: 447492.62

Sampler Penetration (inches): 8 in

Northing: 5446072.19

Sample Interval (0 to X inches bss): ___

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: poorly graded sand medium grained / well round (Beach sand)

Redox Boundary: none

Presence of debris: none

Color: 5YR 5/2 reddish gray

Biological Structures: none

Stratification: no bedding

Shells: none

Density: loose

Sheen/Odor: none

Presence/Absence silica glass: none

Other Notes: (no silt/organ)

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ___

SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)

Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): ___

Total Mass of Sediment (kg): ___

Mass of Sediment 5 mm to 3 inches (gravel) (kg): ___

Mass of Sediment > 3 inches (cobble) (kg): ___

Sample Identification Information

SE Primary Sample ID: REF002-SE-1-092819

Time: 0857

		Cross off containers NOT filled	
	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	2 *gallons*
		1 x 2.5 gallon white bucket	5 *gallons*

SE Duplicate Sample ID: ___ Time: ___

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	___	Time: ___	8 oz WMGJ	
EPA TX Split Sample ID:	___	Time: ___	2.5 gallon white bucket	___ *gallons*
BMI Primary Sample ID:	—	Time: —	Yellow 5-gallon bucket	___ *gallons*
BMI Duplicate Sample ID:	___	Time: ___	Yellow 5-gallon bucket	___ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9-28-19

Field Supervisor Initials DH Date: 9/28/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 092819

Project Number: 60612698
Area of Interest: Birch Bank
Anchored? (NO) YES
Location ID: REF002
Attempt # 3 Cast Time: 0928
Water Depth (m): 0.6
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF002-3-BM1
Estimated Hydrowire angle (degrees):
Easting: 447492.39
Sampler Penetration (inches): 8 11
Northing: 5446070.46
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

JAP 1-17-20

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	—	Time: —	SEM-AVS	8 oz WMGJ (no headspace)
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
			Bioassays	1 x 5 gallon white bucket _____ gallons
				1 x 2.5 gallon white bucket _____ gallons
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ
			Grain Size	8 oz WMGJ
			BEM	16 oz Amber WMGJ
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:		Time:		8 oz WMGJ
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket _____ gallons
BMI Primary Sample ID:	REF002-BM1-1-092819	Time: 0957		Yellow 5-gallon bucket 2 gallons ~~SED~~
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket 2 gallons SED

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 09 28 19
Field Supervisor Initials LDH Date: 9/28/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/27/19

Project Number: 60612698
Area of Interest: Birchbank
Vessel: RV Tieton
Location ID: Ref002
Vessel Crew: John S., Chad F., Chris S., Ilya S.
Sampling Crew: Anders Ufer
EPA Observer: Rachel Zajac-Fay
Arrival Time: 1010
Departure Time: 1215

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 45° Wind (mph): 0 mph
Clouds/Precipitation: mixed clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name:
Water Depth (m): 0.85 m
Easting: 447491.69
Northing: 5446069.32
Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name:
Observations:
Easting:
Northing:

GPS Name:
Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: Ref002-PW-1-092719 Time: 1056

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:
EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AH Date: 9/27/19
Field Supervisor Initials [illegible] Date: 9/27/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-27-19

Project Number: 60612698
Area of Interest: BIRCH BANK UPPER
Vessel: RV CAYUSE
Location ID: REF003
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, GLEN MEJIA, MARK / HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GANDEK
Arrival Time: 8:40
Departure Time: 11:05
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): LOW 50s Wind (mph): < 10 MPH
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) (Mud (M)) NO MH Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ROCKY BEACH, SAND BAR, MINOR EVIDENCE OF VISITORS

Sampling Information

Sampler Used: VAN VEEN, #7 USED SHOVEL
# of Sampling Attempts (Accepted vs. Rejected): 7 ATTEMPTS, 1 GOOD
#1 REJECT; #2 REJECT; #3 REJECT; #4 REJECT; #5 REJECT; #6 REJECT; #7 GOOD

Video Reconnaissance Information

GPS Target Name: REF003
Easting: 447865.11
Northing: 5446881.96
Observations: LOTS OF COBBLES & SM GRAVEL. SEDIMENTS ON SAND BAR

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials MH Date: 9-27-19
Field Supervisor Initials AP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/27/2019

Project Number: 60612698
Area of Interest: Birch bank
Anchored? NO YES
Location ID: REF003
Attempt # 1 Cast Time: 0952
Water Depth (m): 1
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF003-1
Estimated Hydrowire angle (degrees):
Easting: 447865.11
Sampler Penetration (inches):
Northing: 5446881.96
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CW Date: 9/27/19
Field Supervisor Initials DH Date: 9/27/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09272019

Project Number: 60612698 **Area of Interest:** Birch Bank

Anchored? NO YES **Location ID:** REF003

Attempt # 2 Cast Time: 0858 Water Depth (m): 0.2 m

GPS Target Parameters Sheave Counter Depth (m):

Name: REF003-2 Estimated Hydrowire angle (degrees):

Easting: 447865.30 Sampler Penetration (inches):

Northing: 5446867.85 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 9/27/19 Field Supervisor Initials DA Date: 9/27/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 09272019

Project Number: 60612698

Area of Interest: Birchbank

Anchored? (NO) YES

Location ID: REF003

Attempt # 3 Cast Time: 0904

Water Depth (m): 1.0

GPS Target Parameters

Sheave Counter Depth (m):

Name: REF003-3

Estimated Hydrowire angle (degrees):

Easting: 447873.43

Sampler Penetration (inches):

Northing: 5446862.66

Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket*
Total Metals & TOC	8 oz WMGJ	*volumes*
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ		
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CM Date: 9/27/19

Field Supervisor Initials: DA Date: 9/27/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/27/19

Project Number: 60612698 **Area of Interest:** Birch Bank

Anchored? (NO) YES **Location ID:** REF003

Attempt # 4 Cast Time: 0917 Water Depth (m): 11

GPS Target Parameters Sheave Counter Depth (m):

Name: REF003-4 Estimated Hydrowire angle (degrees):

Easting: 447873.00 Sampler Penetration (inches):

Northing: 5446959.34 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LM Date: 9/27/19 Field Supervisor Initials: DH Date: 9/27/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9 27 19

Project Number: 60612698 **Area of Interest:** Birchbank

Anchored? NO YES **Location ID:** REF003

Attempt # 5 Cast Time: 0920 Water Depth (m): 1.2

GPS Target Parameters Sheave Counter Depth (m):

Name: REF003-5 Estimated Hydrowire angle (degrees):

Easting: 447867 84 Sampler Penetration (inches):

Northing: 5446857 45 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 9/17/19 Field Supervisor Initials DA Date: 9/27/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of ___
Date 9/27/19

Project Number: 60612698 **Area of Interest:** Birch bank

Anchored? NO YES **Location ID:** REF003

Attempt # 6 Cast Time: 0923 Water Depth (m): 1.5

GPS Target Parameters Sheave Counter Depth (m): ___

Name: REF003-6 Estimated Hydrowire angle (degrees): ___

Easting: 447870.01 Sampler Penetration (inches): ___

Northing: 5446850.82 Sample Interval (0 to X inches bss): ___

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	**YES**	NO
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ___ SEM-AVS Container Collected from Attempt #: ___

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): ___ Total Mass of Sediment (kg): ___

Mass of Sediment 5 mm to 3 inches (gravel) (kg): ___

Mass of Sediment > 3 inches (cobble) (kg): ___

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: ___	Time: ___	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	___ *gallons*
			1 x 2.5 gallon white bucket	___ *gallons*
SE Duplicate Sample ID: ___	Time: ___	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: ___	Time: ___		8 oz WMGJ	
EPA TX Split Sample ID: ___	Time: ___		2.5 gallon white bucket	___ *gallons*
BMI Primary Sample ID: ___	Time: ___		Yellow 5-gallon bucket	___ *gallons*
BMI Duplicate Sample ID: ___	Time: ___		Yellow 5-gallon bucket	___ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GR Date: 9/27/19 Field Supervisor Initials DA Date: 9/27/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 092719

Project Number: 60612698 **Area of Interest:** Birch Bank

Anchored? NO YES **Location ID:** REF003

Attempt # 7 Cast Time: 0940 Water Depth (m): 0.1

GPS Target Parameters Sheave Counter Depth (m):

Name: REF003-7-CHEM Estimated Hydrowire angle (degrees):

Easting: 447871 Sampler Penetration (inches):

Northing: 5446882 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO	N/A because of shovel
2. Overlying water present?	YES	NO	
3. Overlying water excessively turbid?	YES	NO	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO	
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO	
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO	
8. Sample is:	Accepted	Rejected	JAP 1-17-20

Sample Collection Method: Van Veen Hamon Hand Tool shovel Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: poorly graded medium grain sand

Color: reddish gray 5YR5/2

Stratification: no obvious

Density: loose

Sand grains Subrounded to rounded

Presence/Absence silica glass: none

Redox Boundary: none

Presence of debris: none

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes: none, no gravels

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 7

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: ~~REF003-SE-1-092719~~ REF003-SE-1-092719	Time: 095		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	5 gallons
			1 x 2.5 gallon white bucket	2 gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	gallons
BMI Primary Sample ID: —	Time: —		Yellow 5-gallon bucket	gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CA Date: 9 27 19 Field Supervisor Initials DH Date: 9/27/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 092719

Project Number: 60612698
Area of Interest: Birch bank
Anchored? NO YES
Location ID: REF 003
Attempt # 8 Cast Time: 1014
Water Depth (m): 0.1
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF003-8-BM1
Estimated Hydrowire angle (degrees):
Easting: 447871.
Sampler Penetration (inches):
Northing: 5446882
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**	N/A because of shovel
2. Overlying water present?	**YES**	NO	
3. Overlying water excessively turbid?	YES	**NO**	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO	
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**	
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO	
8. Sample is:	**Accepted**	Rejected	

JAP 1-17-20

Sample Collection Method: Van Veen Hamon (Hand Tool)
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: poorly graded medium grain Sand
Sand grain Subround to round
Color: reddish gray 5YR 5/2
Stratification: none obvious
Density: loose
Presence/Absence silica glass: none
Redox Boundary: none
Presence of debris: none
Biological Structures: Worm
Shells: none
Sheen/Odor: none
Other Notes: no grain

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: REF003-BM1-1-092719 Time: 0950 2X Yellow 5-gallon bucket 2 *gallons*
BMI Duplicate Sample ID: REF003-BM1-2-092719 Time: 0950 2X Yellow 5-gallon bucket 2 *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 92719
Field Supervisor Initials DA Date: 9/27/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/28/19

Project Number: 60612698 **Area of Interest:** Birch bank

Vessel: RV Tiston **Location ID:** Ref003

Vessel Crew: J. Schaefer, C. Foraline, C. Smith, A. Sims, M. Bisset **Sampling Crew:** Anders Utter

EPA Observer: Rachel Zajac-Fay

Arrival Time: 1040 **Departure Time:** 1257

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 45° Wind (mph): 5 mph
Clouds/Precipitation: 45° cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 0.76

Easting: 447864.56

Northing: 5446888.35 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: Ref003-PW-1-092819 Time: 1121

Duplicate Sample ID: _____ Time: _____

EPA Split Sample ID: Ref003-PW-3-092819 Time: 1121

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

Analyte and Bottle Type:	
1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved
1B. Dissolved Metals	With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AU Date: 9/28/19 Field Supervisor Initials MC Date: 9/28/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-27-19

Project Number: 60612698
Area of Interest: BIRCHBANK UPPER
Vessel: RV CAYUSE
Location ID: REF004
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, GLEN MEJIA, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GONDEK
Arrival Time: 11:15
Departure Time: 2:15
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 50s Wind (mph): <10 MPH
Clouds/Precipitation: CLOUDY

Site Information

Target Sediment Facies: ~~Sampleable Sand (S and mFs)~~ M Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ROCKY BEACH, FINGERS + SHOALS, MINOR VISITOR USE

Sampling Information

Sampler Used: SHOVEL
# of Sampling Attempts (Accepted vs. Rejected): 3 TOTAL, 2 GOOD
ATTEMPT 1 WAS JUST VIDEO, ATTEMPT 2 WAS HAND SHOVEL; ATTEMPT 3 SHOVEL

Video Reconnaissance Information

GPS Target Name: REF004
Easting: 447859.02
Northing: 5446933.49
Observations: COBBLES, COBBLES + MORE COBBLES. SOME SAND BETWEEN COBBLES.

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials DH Date: 9-27-19
Field Supervisor Initials JAP Date: 1-17-20

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 092719

Project Number: 60612698 **Area of Interest:** Birch Bank

Anchored? (NO) YES **Location ID:** REF004

Attempt # 1 Cast Time: 1109 Water Depth (m): 1.6

GPS Target Parameters Sheave Counter Depth (m):

Name: REF004 - 1 Estimated Hydrowire angle (degrees):

Easting: 4478 39.59 Sampler Penetration (inches):

Northing: 5446939.69 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon ~~Hand Tool~~ Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 9279 Field Supervisor Initials DR Date: 9/27/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09272019

Project Number: 60612698 **Area of Interest:** Birchbank

Anchored? (NO) YES **Location ID:** REF004

Attempt # 2 Cast Time: 1128 Water Depth (m): 0.2

GPS Target Parameters Sheave Counter Depth (m):

Name: REF004-2-CHEM Estimated Hydrowire angle (degrees):

Easting: 447859.02 Sampler Penetration (inches):

Northing: 5446933.49 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**	N/A because of shovel
2. Overlying water present?	**YES**	NO	
3. Overlying water excessively turbid?	YES	**NO**	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO	
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**	
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO	
8. Sample is:	(Accepted)	Rejected	

JAP 1-17-20

Sample Collection Method: Van Veen Hamon (Hand Tool) Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: well graded (multiple sizes) gravel with sand

Color: 5YR 5/1 gray

Stratification: massive no bedding

Density: Dense

Presence/Absence silica glass: none

Redox Boundary: none

Presence of debris: none

Biological Structures: trace organics

Shells: none

Sheen/Odor: none

Other Notes: grains subangular to rounded

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm ~~(kg)~~: 118.8 lbs Total Mass of Sediment (kg): 464.4 lbs

Mass of Sediment 5 mm to 3 inches (gravel) (~~kg~~): 322.2 lbs

Mass of Sediment > 3 inches (cobble) (~~kg~~): 23.4 lbs

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: REF004-SE-1-092719	Time: 1154	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	5 gallons
			1 x 2.5 gallon white bucket	2 gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID: REF004-SE-3-092719	Time: 1154		2.5 gallon white bucket	2 gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 9/27/19 Field Supervisor Initials DH Date: 9/27/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 092719

Project Number: 60612698
Anchored? (NO) YES
Attempt # 3 Cast Time: 1304
GPS Target Parameters
Name: ~~REF004-3-BMI~~ CR
Easting: 447859.02
Northing: 5446933.49
Sample Type: Physical/Chemical/Bioassay (BMI)

Area of Interest: Birch bank
Location ID: REF004
Water Depth (m): 0.2
Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon (Hand Tool) sandy probe
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: —	Time: —	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID: CR	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: ~~REF004-BMI-1-092719~~	Time: 1154		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CR Date: 9.27.19
Field Supervisor Initials DK Date: 9/27/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09272019

Project Number: 60612698
Anchored? ~~NO~~ YES
Attempt # 4 Cast Time: 1350

GPS Target Parameters
Name: REF004-4-BM1
Easting: 447859.02
Northing: 5446933.49

Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: Birch Island
Location ID: REF004
Water Depth (m): 0.2
Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle. tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

N/A because of shovel JAP 1-17-20

Sample Collection Method: Van Veen Hamon Hand Tool (see notes) Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: gravel with sand multiple sized grains subangular to rounded
Color: 5YR 5/1 gray
Stratification: massive no bedding
Density: dense
Presence/Absence silica glass: none

Redox Boundary: none
Presence of debris: none
Biological Structures: Trace organisms
Shells: none
Sheen/Odor: none
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID: —	Time: —	SEM-AVS		8 oz WMGJ (no headspace)	
		Total Metals & TOC		8 oz WMGJ	
		Grain Size		8 oz WMGJ	
		BEM		16 oz Amber WMGJ	
		Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays		1 x 5 gallon white bucket	____ gallons
				1 x 2.5 gallon white bucket	____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS		8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC		8 oz WMGJ	
		Grain Size		8 oz WMGJ	
		BEM		16 oz Amber WMGJ	
		Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:			8 oz WMGJ	
EPA TX Split Sample ID:	Time:			2.5 gallon white bucket	____ gallons
BMI Primary Sample ID: REF004-BM1-1-092719	Time: 1154			Yellow 5-gallon bucket	2 gallons
BMI Duplicate Sample ID:	Time:			Yellow 5-gallon bucket	N gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9-27-19 Field Supervisor Initials DH Date: 9/27/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/28/19

Project Number: 60612698 **Area of Interest:** Birchbank

Vessel: RV Tieton **Location ID:** Ref004

Vessel Crew: J. Schaefer, C. Furdine, C. Smith, A Sinz, M Biger **Sampling Crew:** Anders Utter

EPA Observer: Rachel Zajac-Fay

Arrival Time: 1318 **Departure Time:** 1614

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 45° Wind (mph): 5 mph
Clouds/Precipitation: Cloudy

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 0.6 m

Easting: 447850.55

Northing: 5446937.86 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: Ref004-PW-1-092819 Time: 1417

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 9/28/19 Field Supervisor Initials MS Date: 9/28/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/1/19

Project Number: 60612698 **Area of Interest:** UPPER GEDELLE

Vessel: TIETON **Location ID:** REF005

Vessel Crew: JOHN SHAEFFER & CHAD FURULIE **Sampling Crew:** CLIFFORD J. PEARSON (AECOM)
CHRIS SPETH & MARK BISER (CCMA)

EPA Observer: SHAUN ROARK

Arrival Time: 1455 **Departure Time:**

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 4
Clouds/Precipitation: MOSTLY CLOUDY, DRY

Trident Sampler Type: Push Pole Vibraframe Driveframe (PNEUMATIC)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ROCKY OUTCROP SHORELINE NEARBY CLOSE TO EASTSIDE OPEN RIVER CHANNEL W/ HIGH FLOW

GPS Target Parameters and Water Depth

GPS Name: REF005-1-PW Water Depth (m): 7.30

Easting: 448589.51

Northing: 5450162.93 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: REF005-PW-1-100119 Time: 1544

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials DA Date: 10/01/19 Field Supervisor Initials DA Date: 10/01/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698
Area of Interest: GENELLE
Vessel: RV CATUSE
Location ID: REF005
Vessel Crew: MIKE DUFFIELD, MAGGIE McKEON
Sampling Crew: DAVE HOSE, PAUL HAMIDI, MARK HAIE
C.R. Observer: MARK HAIE
EPA Observer: NICOLE BADON
Arrival Time: 8:15
Departure Time: ~~NICOLE BADON~~ 1:00

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 40s Wind (mph): <10MPH
Clouds/Precipitation: OVERCAST

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO — ON EDGE OF SEAM BETWEEN MAIN CURRENT + BACK EDDY

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
GENELLE ISLANDS, ROCKY HUMMOCKS IN RIVER, SPARSELY VEGETATED

Sampling Information

Sampler Used: HAMMOND
# of Sampling Attempts (Accepted vs. Rejected):
#1-GOOD; #2-REJECT; #3 REJECT; #4-REJECT; #5 REJECT; #6-GOOD; #7-GOOD; #8-GOOD

Video Reconnaissance Information

GPS Target Name: REF005
Easting: 448585.79
Northing: 5450164.57
Observations: GRAVEL & SAND

GPS Target Name:
Easting:
Northing:
Observations:

~~GPS Target Name:~~
~~Easting:~~
~~Northing:~~
~~Observations:~~
#16-REJECT; 17-GOOD; 18-REJECT; #19 REJECT; #20 REJECT; #21-REJECT; #22-GOOD

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials DH Date: 10/4/19
Field Supervisor Initials MS Date: 10/4/19

*ATTEMPT 9-REJECT; #10 GOOD; #11-REJECT; #12-GOOD; #13-GOOD; #14-REJECT; #15 REJECT

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF- General

Anchored? (NO) YES **Location ID:** REF005

Attempt # 1 Cast Time: 0850 Water Depth (m): 6.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-1-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448585.79 Sampler Penetration (inches): 8

Northing: 5450164.57 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: See Attempt #7

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7 SEM-AVS Container Collected from Attempt #: 7

Sieving Information: See Attempt # 17

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/3/19 Field Supervisor Initials: DH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF - Genelle

Anchored? (NO) YES **Location ID:** REF005

Attempt # 2 Cast Time: 0859 Water Depth (m): 6.2

GPS Target Parameters Sheave Counter Depth (m): -

Name: REF005-2 Estimated Hydrowire angle (degrees): -

Easting: 448585.38 Sampler Penetration (inches): < 4

Northing: 5450160.88 Sample Interval (0 to X inches bss): -

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample Rejected Under Penetration only few gravels in bucket

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Cross off containers NOT filled

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/3/19 Field Supervisor Initials: ~~DH 10/3~~ Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 — **Area of Interest:** REF-General

Anchored? (NO) YES — **Location ID:** REF005

Attempt # 3 — Cast Time: 0908 — Water Depth (m): 6.2

GPS Target Parameters — Sheave Counter Depth (m): —

Name: REF005-3 — Estimated Hydrowire angle (degrees): —

Easting: 448585.51 — Sampler Penetration (inches): 3

Northing: 5450161.21 — Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI — Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) 3"
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool — Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Sample Rejected — Redox Boundary:

Color: Only 3" Penetration — Presence of debris:

Stratification: — Biological Structures:

Density: — Shells:

Presence/Absence silica glass: — Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ — SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No — Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ — Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/3/19 — Field Supervisor Initials: DA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698

Area of Interest: REF Gentle

Anchored? (NO) YES

Location ID: REF005

Attempt # 4

Cast Time: 0915

Water Depth (m): 6.2

GPS Target Parameters

Sheave Counter Depth (m): -

Name: REF005-4

Estimated Hydrowire angle (degrees): -

Easting: 448584.41

Sampler Penetration (inches): 24"

Northing: 5450166.28

Sample Interval (0 to X inches bss): -

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 150 + SPIKES

Sediment Characteristics

Sediment Type / Texture: Sample rejected under penetration

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ZOH Date: 10/3/19

Field Supervisor Initials: ZOH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF General

Anchored? (NO) YES **Location ID:** REF005

Attempt # 5 Cast Time: 6921 Water Depth (m): 6.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-5 Estimated Hydrowire angle (degrees): —

Easting: 448594.12 Sampler Penetration (inches): >9"

Northing: 5450156.04 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sample rejected over-penetration

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/3/19 Field Supervisor Initials: DH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-

Project Number: 60612698 **Area of Interest:** REF-Gerrville

Anchored? (NO) YES **Location ID:** REF005

Attempt # 6 Cast Time: 0924 Water Depth (m): 6.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-6-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448591.68 Sampler Penetration (inches): 7

Northing: 5450161.23 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150 w/spikes

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: See Attempt #7 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7 SEM-AVS Container Collected from Attempt #: 7

Sieving Information: See attempt #17

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/3/19 Field Supervisor Initials: DK Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** REF-Grnd/2

Anchored? (NO) YES **Location ID:** REF005

Attempt # 7 Cast Time: 0949 Water Depth (m): 6.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-7-CHEM/AVS Estimated Hydrowire angle (degrees): —

Easting: 448592.18 Sampler Penetration (inches): 5

Northing: 5450158.48 Sample Interval (0 to X inches bss): 0-5

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150 + Spikes

Sediment Characteristics

Sediment Type / Texture: gravelly Sand
Sand - well graded, med to coarse, Sub Rounded to Rounded

Color: 5YR 5/1 Gray

Stratification: NO

Density: ~~Hard~~ Pk md. dense

Presence/Absence silica glass: NO

Redox Boundary: NO

Presence of debris: NO

Biological Structures: NO

Shells: NO

Sheen/Odor: NO

Other Notes: Gravel up to 1.5" sub rounded to sub angular

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7 SEM-AVS Container Collected from Attempt #: 7

Sieving Information: See attempt # 17

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: REF005-SE-1-100319 Time: 1000

		Cross off containers NOT filled	
	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ gallons
		1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DR Date: 10/3/19 Field Supervisor Initials: DR Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698

Area of Interest: REF - Gemlle

Anchored? (NO) YES

Location ID: REF005

Attempt # 8 Cast Time: 1014

Water Depth (m): 5.9

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF005-8-CHEM

Estimated Hydrowire angle (degrees): —

Easting: 448591.97

Sampler Penetration (inches): 7

Northing: 5450157.33

Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 150 + Spikes

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Color: Same as Attempt #7

Presence of debris:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7+8

SEM-AVS Container Collected from Attempt #: 7

Sieving Information: See Attempt #7

Sieved with 5 mm Sieve? (Yes) No

Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled.

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOK Date: 10/3/19 Field Supervisor Initials: LOK Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3-19

Project Number: 60612698 **Area of Interest:** REF

Anchored? (NO) YES **Location ID:** REF005

Attempt # 9 Cast Time: 1027 Water Depth (m): 6

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-9 Estimated Hydrowire angle (degrees): —

Easting: 448592.73 Sampler Penetration (inches): 24

Northing: 5450156.68 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sample rejected Under-Penetration

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/3/19 Field Supervisor Initials: DA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF - Grnelle

Anchored? (NO) YES **Location ID:** REF005

Attempt # 10 Cast Time: 1030 Water Depth (m): 5.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-10-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448594.61 Sampler Penetration (inches): 9

Northing: 5450155.47 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150 + 3 PIKES

Sediment Characteristics

Sediment Type / Texture: Same as Attempt #7

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7+8+10 SEM-AVS Container Collected from Attempt #: 7

Sieving Information: See Attempt #7

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID:	Time:		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:			
		SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LOA Date: 10/3/19 Field Supervisor Initials LOA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698
Anchored? (NO) YES
Attempt # 11 Cast Time: 1054

GPS Target Parameters
Name: REF005-11
Easting: 448594.55
Northing: 5450156.88

Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: REF Generic
Location ID: REF005
Water Depth (m): 5.7
Sheave Counter Depth (m): —
Estimated Hydrowire angle (degrees): —
Sampler Penetration (inches): > 9"
Sample Interval (0 to X inches bss): —
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sample rejected over-penetration
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS		8 oz WMGJ (no headspace)	
		Total Metals & TOC		8 oz WMGJ	
		Grain Size		8 oz WMGJ	
		BEM		16 oz Amber WMGJ	
		Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays		1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS		8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC		8 oz WMGJ	
		Grain Size		8 oz WMGJ	
		BEM		16 oz Amber WMGJ	
		Organics		2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____		Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____		Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____		Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____		Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: KOA Date: 10/3/19 Field Supervisor Initials: KOA Date: 10/3/19

Date 10-3-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Area of Interest: REF Granite

Anchored? (NO) YES

Location ID: REF005

Attempt # 12 Cast Time: 1059

Water Depth (m): 5.8

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF005-12-CHEM

Estimated Hydrowire angle (degrees): —

Easting: 448592.89

Sampler Penetration (inches): 9

Northing: 5450157.25

Sample Interval (0 to X inches bss): 0-6

Sample Type: ~~Physical/Chemical/Bioassay~~ BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color: Same as attempt #7

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7+8+10+12

SEM-AVS Container Collected from Attempt #: 7

Sieving Information: See Attempt #17

Sieved with 5 mm Sieve? (Yes) No

Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/3/19

Field Supervisor Initials: DH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Geneva

Anchored? (NO) YES **Location ID:** REF005

Attempt # 13 Cast Time: 1114 Water Depth (m): 4.9

GPS Target Parameters Sheave Counter Depth (m): -

Name: REF005-13-CHEM Estimated Hydrowire angle (degrees): -

Easting: 448590.66 Sampler Penetration (inches): 7

Northing: 5450156.55 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Same as Attempt #7

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7+8+10+12+13 SEM-AVS Container Collected from Attempt #: 7

Sieving Information: See attempt #17

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/3/19 Field Supervisor Initials: [illegible] Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698

Area of Interest: ~~REF005~~ REF

Anchored? (NO) YES

Location ID: REF005

Attempt # 14

Cast Time: 1129

Water Depth (m): 5.0

GPS Target Parameters

Sheave Counter Depth (m): –

Name: REF005-14

Estimated Hydrowire angle (degrees): –

Easting: 448591.35

Sampler Penetration (inches): < 4"

Northing: 5450158.05

Sample Interval (0 to X inches bss): –

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Presence of debris:

Color: Under-Penetration

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/3/19

Field Supervisor Initials: LOA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:**

Anchored? NO YES **Location ID:** REF005

Attempt # 15 Cast Time: 1133 **Water Depth (m):** 5.4

GPS Target Parameters **Sheave Counter Depth (m):** —

Name: REF005-15 **Estimated Hydrowire angle (degrees):** —

Easting: 448594.38 **Sampler Penetration (inches):** >9"

Northing: 5450158.85 **Sample Interval (0 to X inches bss):** —

Sample Type: Physical/Chemical/Bioassay BMI **Cultural Resource Check Completed?** YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool **Added Weights on Sampler (lbs):** 150

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Over penetration

Biological Structures:

Stratification: in Sands

Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: KOA Date: 10/3/19 Field Supervisor Initials: KOA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF

Anchored? (NO) YES **Location ID:** REF005

Attempt # 16 Cast Time: 1137 Water Depth (m): 5,6

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-16 Estimated Hydrowire angle (degrees): —

Easting: 448591,21 Sampler Penetration (inches): >9

Northing: 5450157,21 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sample overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	~~NO~~
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: over-Penetration Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/3/19 Field Supervisor Initials: LOA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Growth

Anchored? (NO) YES **Location ID:** REF005

Attempt # 17 Cast Time: 1142 Water Depth (m): 5.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-17-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448593.38 Sampler Penetration (inches): 8

Northing: 5450157.94 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: same as attempt #7 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+6+7+8+10+12+13+17 SEM-AVS Container Collected from Attempt #: 7

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 54.8 Total Mass of Sediment (kg): 129.1

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 74.3

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF005-SE-1-100319 Time: 1000

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket 5.4 *gallons*
	1 x 2.5 gallon white bucket 2.14 *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/3/19 Field Supervisor Initials: DA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Gendle

Anchored? (NO) YES **Location ID:** REF005

Attempt # 1B Cast Time: 1225 Water Depth (m): 5.1'

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-1B Estimated Hydrowire angle (degrees): —

Easting: 448591.24 Sampler Penetration (inches): < 4

Northing: 5450155.58 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sample Rejected Insufficient Volume Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/3/19 Field Supervisor Initials: KOA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698

Area of Interest: REF Control

Anchored? (NO) YES

Location ID: REF005

Attempt # 19

Cast Time: 1232

Water Depth (m): 5,2

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF005-19

Estimated Hydrowire angle (degrees): —

Easting: 448593,68

Sampler Penetration (inches): >9"

Northing: 5450157,96

Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sample Rejected

Color: Over-Penetration

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOH Date: 10/3/19

Field Supervisor Initials: LOH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Control

Anchored? NO YES **Location ID:** REF005

Attempt # 20 Cast Time: 1235 Water Depth (m): 5

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-20 Estimated Hydrowire angle (degrees): —

Easting: 448590.66 Sampler Penetration (inches): 24"

Northing: 5450159.11 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Rejected Redox Boundary:

Color: Insufficient Volume Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)		
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
		Bioassays	1 x 5 gallon white bucket	_____	*gallons*
			1 x 2.5 gallon white bucket	_____	*gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*	
		Total Metals & TOC	8 oz WMGJ		
		Grain Size	8 oz WMGJ		
		BEM	16 oz Amber WMGJ		
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
EPA SE Split Sample ID:	Time:		8 oz WMGJ		
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/3/19 Field Supervisor Initials: DH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Coeur d'Alene

Anchored? (NO) YES **Location ID:** REF005

Attempt # 21 Cast Time: 1240 Water Depth (m): 5.4

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-21R Estimated Hydrowire angle (degrees): —

Easting: 448591.22 Sampler Penetration (inches): 19

Northing: 5450161.44 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Rejected over Penetration

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ gallons
			1 x 2.5 gallon white bucket _____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket _____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/3/19 Field Supervisor Initials: DA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Grench

Anchored? (NO) YES **Location ID:** REF005

Attempt # 22 Cast Time: 1244 Water Depth (m): 5.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF005-22-BMI Estimated Hydrowire angle (degrees): —

Easting: 448586.47 Sampler Penetration (inches): 7

Northing: 5450162.23 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Same as attempt #7 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI SEM-AVS Container Collected from Attempt #: 7

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? PH (Yes) (NO) PH PH

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): N/A

Mass of Sediment > 3 inches (cobble) (kg): N/A

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	REF005-BMI-1-100319	Time:	1250	Yellow 5-gallon bucket	2.5 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: KH Date: 10/3/19 Field Supervisor Initials: KH Date: 10/3/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698
Area of Interest: GENELLE
Vessel: RV CAYUSE
Location ID: REF006
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, PAUL HAMIDI, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BANDICK
Arrival Time: 12:40
Departure Time: 4:18

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 30s-40s Wind (mph): 2-10 MPH
Clouds/Precipitation: OVERCAST

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
GENELLE ISLANDS, ROCKY HUMMOCKS IN RIVER

Sampling Information

Sampler Used: HAMMOND
# of Sampling Attempts (Accepted vs. Rejected): ~~COBBLES, GRAVEL~~ SAND
* #1-GOOD; #2-GOOD; #3 REJECT; #4 GOOD; #5 GOOD; #6 GOOD; #7 GOOD

Video Reconnaissance Information

GPS Target Name: REF006
Easting: 440632.21
Northing: 5455145.60
Observations: COBBLES, GRAVEL & SAND

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations: #9 REJECT; #10 REJECT #11-GOOD | 11 TOTAL, 8 GOOD, 3 REJECTS, 1 OF GOOD DISCARDED

Sample Lead Initials: DH 10-1-19 Date: M1 - FORGETTING DATE
Field Supervisor Initials: JAP Date: 1-17-20

* #8 - GOOD / ~~8 ATTEMPTS BEFORE ONE ENDED UP~~ AT ACCEPTED

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698

Area of Interest: REF - Genette

Anchored? (NO) YES

Location ID: REF006

Attempt # 1 Cast Time: 1256

Water Depth (m): 2.9

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF006-1-CHEM

Estimated Hydrowire angle (degrees): —

Easting: 448632.21

Sampler Penetration (inches): 4

Northing: 5450145.60

Sample Interval (0 to X inches bss): 0-4

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted PH	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample Rejected

Color: Since Riverwater had

Stratification: been used when sieving

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures.

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No

Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 10/02/19

Field Supervisor Initials: [illegible] Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF-Genelle

Anchored? (NO) YES **Location ID:** REF006

Attempt # 2 Cast Time: 1328 Water Depth (m): 3.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006-2-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448637.02 Sampler Penetration (inches): 8

Northing: 5450149.45 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 6

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: See Attempt #7 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2+4+5+6+7+8 SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LDH Date: 10/02/19 Field Supervisor Initials LDH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF & Genetic

Anchored? (NO) YES **Location ID:** REF006

Attempt # 3 Cast Time: 1335 Water Depth (m):

GPS Target Parameters Sheave Counter Depth (m):

Name: REF006-3 Estimated Hydrowire angle (degrees):

Easting: 448651.58 Sampler Penetration (inches):

Northing: 5450146.67 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth ~~(4 to 6 inches)~~ acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample Rejected Incomplete closure

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DA Date: 10/02/19 Field Supervisor Initials DA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF-Gentle

Anchored? (NO) YES **Location ID:** REF006

Attempt # 4 Cast Time: 1339 Water Depth (m): 1.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006-4-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448648.56 Sampler Penetration (inches): 6

Northing: 5450149.87 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: See Attempt #7

Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2+4+5+6+7+8 SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/02/19 Field Supervisor Initials: DH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF- Gemlk
Anchored? (NO) YES **Location ID:** REF006
Attempt # 5 Cast Time: 1357 Water Depth (m): 1.5
GPS Target Parameters Sheave Counter Depth (m): —
Name: REF006-5-CHEM Estimated Hydrowire angle (degrees): —
Easting: 448644.24 Sampler Penetration (inches): 6
Northing: 5450145.90 Sample Interval (0 to X inches bss): 0-6
Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Well graded Sand w/ gravel Redox Boundary: NONE
Presence of debris: Woody debris, Vegetation
Color: 5YR 5/1 Gray Biological Structures: NONE
Stratification: NONE Shells: TRACE MUSSEL
Density: Loose Sheen/Odor: NONE
Presence/Absence silica glass: NONE Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2+4+5+6+7+8 SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No
Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____
Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____
Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/02/19 Field Supervisor Initials: LOA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF006 Gravel

Anchored? (NO) YES **Location ID:** REF006

Attempt # 6 Cast Time: 1413 Water Depth (m): 1.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006-6-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448652.14 Sampler Penetration (inches): 6

Northing: 5450150.01 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: See Attempt #7 Redox Boundary:

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2,4,5,6,7,8 SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg).

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/02/19 Field Supervisor Initials: DA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF-Gerelle

Anchored? (NO) YES **Location ID:** REF006

Attempt # 7 Cast Time: 1431 Water Depth (m): 6,9

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006-7 Estimated Hydrowire angle (degrees): —

Easting: 448652,96 Sampler Penetration (inches): 6

Northing: 5456147,97 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Ramon) Hand Tool Added Weights on Sampler (lbs): ( )

Sediment Characteristics

Sediment Type / Texture: well graded sand w/gravel sand is fine to coarse subrounded to rounded gravel is up to 2 1/2" subrounded

Color: 5YR 5/1 Gray

Stratification: NONE (lenses w/organics)

Density: Firm

Presence/Absence silica glass: NONE

Redox Boundary: NONE

Presence of debris: wood, plants

Biological Structures: NONE

Shells: NONE

Sheen/Odor: NONE

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2+4+5+6+7+8 SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/02/19 Field Supervisor Initials: DH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date _____

Project Number: 60612698 **Area of Interest:** REF - Bench

Anchored? (NO) YES **Location ID:** REF006

Attempt # 8 Cast Time: 1450 Water Depth (m): 0.9

GPS Target Parameters Sheave Counter Depth (m): -

Name: REF006-8-CHEM Estimated Hydrowire angle (degrees): -

Easting: 448654.97 Sampler Penetration (inches): 6

Northing: 5450147.03 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Same as attempt #7 Biological Structures: 3 Mussels

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2,4,5,6,7,8 SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 42.7 Total Mass of Sediment (kg): 69.9

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 27.2

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF006-SE-1-100219 Time: 1400

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.7 *gallons*
	1 x 2.5 gallon white bucket	2.0 *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ZM Date: 10/02/19 Field Supervisor Initials: ZM Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF- Geneva

Anchored? (NO) YES **Location ID:** REF006

Attempt # 9 Cast Time: 1548 Water Depth (m): 1.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006-9 Estimated Hydrowire angle (degrees): —

Easting: 448653.92 Sampler Penetration (inches): 19"

Northing: 5450145.74 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sample Rejected Over-Penetration

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes.

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket _____ *gallons*	
			1 x 2.5 gallon white bucket _____ *gallons*	
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket _____ *gallons*	
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket _____ *gallons*	

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/02/19 Field Supervisor Initials: LOA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF- Generic

Anchored? (NO) YES **Location ID:** REF006

Attempt # 10 Cast Time: 1555 Water Depth (m): 0.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006-10 Estimated Hydrowire angle (degrees): —

Easting: ~~DES~~ 448653.75 Sampler Penetration (inches): > 9"

Northing: 5450147.81 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sample overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	~~NO~~
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 100

Sediment Characteristics

Sediment Type / Texture: Sample rejected over-filled

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/02/19 Field Supervisor Initials DA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF, Genelle

Anchored? (NO) YES **Location ID:** REF006

Attempt # 11 Cast Time: 1604 Water Depth (m): 1.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006-11-BMI Estimated Hydrowire angle (degrees): —

Easting: 448652.71 Sampler Penetration (inches): 6

Northing: 5450146.41 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture:

Color: Same as attempt #7

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris: wood debris, straws

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: REF006-BMI-1-100219 Time: 1615 Yellow 5-gallon bucket 2.5 gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No *See Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/02/19 Field Supervisor Initials: DA Date: 10/02/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/3/19

Project Number: 60612698 **Area of Interest:** UPPER GENEVE

Vessel: RV TIETON **Location ID:** REF006

Vessel Crew: JOHN SHAEFER & CHAD FURULIE **Sampling Crew:** CLIFFORD PEARSON

EPA Observer: SHAUN ROARK CHRIS SPEITH & MARK BISER (CMA)

Arrival Time: 1322 **Departure Time:** 1445

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 49° Wind (mph): 5
Clouds/Precipitation: CLOUDY, DRY

Trident Sampler Type: Push Pole Vibraframe Driveframe (PNEUMATIC)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* (*Mixed Coarse (mCs)*) *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NEAR SANDY SHORELINE HEAVILY USED BY WATER FOWL. HEAVILY VEGITATED SUBSURFACE

GPS Target Parameters and Water Depth

GPS Name: REF006-1-PW Water Depth (m): 1.21

Easting: 448652.54

Northing: 5450145.72 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: REF006-PW-1-100319 Time: 1405

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/3/19 Field Supervisor Initials: LOA Date: 10/3/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698
Area of Interest: CONELLE
Vessel: RV CAYUSE
Location ID: REF006 ALT
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, PAUL HAMIDI, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BADDAM
Arrival Time: 3:15
Departure Time: 3:35

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50s Wind (mph): 2/0MPH
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
CONELLE ISLANDS, ROCKY HUMMOCKS IN RIVER

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected): 3 ATTEMPTS, ALL REJECTS
#1 - REJECT; #2 REJECT; #3 REJECT

Video Reconnaissance Information

GPS Target Name: REF006
Easting: 448654.43
Northing: 5450151.15
Observations: MIXED GRAVEL & COBBLE, LITTLE BIT OF SAND

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DH Date: 10/01/19
Field Supervisor Initials: DH Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-01-19

Project Number: 60612698 **Area of Interest:** REF-Grab

Anchored? (NO) YES **Location ID:** REF006-ALT

Attempt # 1 Cast Time: 1521 Water Depth (m): 1,3

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF006 ALT-1 Estimated Hydrowire angle (degrees): —

Easting: 448654,43 Sampler Penetration (inches): 0

Northing: 5450151,15 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics Target IS Mixed

Sediment Type / Texture: No Sample

Color: Jaws not closing

Stratification: due to gravels

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/01/19 Field Supervisor Initials: LOA Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF Cornell

Anchored? NO YES **Location ID:** REF006 - ALT

Attempt # 2 Cast Time: 1527 Water Depth (m): 1.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF-006 ALT-2 Estimated Hydrowire angle (degrees): —

Easting: 448647.84 Sampler Penetration (inches): 0

Northing: 5450145.60 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: No Sample

Color: Jaws not closing

Stratification: due to gravels

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/01/19 Field Supervisor Initials: LOA Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF- Gerelk

Anchored? (NO) YES **Location ID:** REF006-ALT

Attempt # 3 Cast Time: 1532 Water Depth (m): 1.2

GPS Target Parameters Sheave Counter Depth (m): -

Name: REF006 ALT-3 Estimated Hydrowire angle (degrees): -

Easting: 448646.53 Sampler Penetration (inches): 6

Northing: 5450155.17 Sample Interval (0 to X inches bss): -

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: No sample - Jaws not closing due to gravels

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LDH Date: 10/01/19 Field Supervisor Initials LDH Date: 10/01/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30-19

Project Number: 60612698
Area of Interest: GENELLE
Vessel: RV CAYUSE
Location ID: REF007
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOUSE, PAUL HAMIDI, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BADOM
Arrival Time: 11:15
Departure Time: 1:00

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): MID 30s Wind (mph): <10MPH
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO — Circled by JPretare 11-26-19(JAP)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
GENELLE ISLANDS, ROCKY MOUNDS IN RIVER, SPARSE VEGETATION ON ISLANDS

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected): 4 ATTEMPTS, 3 GOOD
#1- GOOD #2-GOOD; #3-REJECT; #4 GOOD

Video Reconnaissance Information

GPS Target Name: REF007
Easting: 449722.93
Northing: 5450204.87
Observations: SAND AND SOME SILT

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials DH Date: 9/30/19
Field Supervisor Initials DA Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30-19

Project Number: 60612698

Area of Interest: Reference Area 2 UPPER

Anchored? (NO) YES

Location ID: REF007

Attempt # 1 Cast Time: 1122

Water Depth (m): 3.5

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF007-1-C14EM

Estimated Hydrowire angle (degrees): —

Easting: 448722.93

Sampler Penetration (inches): 7

Northing: 5450204.87

Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) ~~NO~~ PH

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	~~YES~~	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	~~YES~~	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: ~~5YR 3/1~~ pl mod-Coarse Sand Well graded Sand w/ Silt

Redox Boundary: NONE

Presence of debris: NONE

Color: 5YR 3/1 Very Dark gray

Biological Structures: NONE

Stratification: NONE

Shells: NONE

Density: Loose, Massive

Sheen/Odor: NONE

Presence/Absence silica glass: NONE

Other Notes: Sub-rounded to Rounded SAND gravels on surface

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ~~Not Composited~~ 1+2

SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? ~~Yes~~ PH (No)

Removed by Hand > 5mm? ~~Yes~~ PH (No)

Mass of Sediment < 5 mm (kg): ~~42.7~~ 51.5

Total Mass of Sediment (kg): ~~42.7~~ 51.5

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF007-SE-1-093019 Time: 1141

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)		
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	DH	
Bioassays	1 x 5 gallon white bucket	~~5.8~~	gallons
	1 x 2.5 galion white bucket	~~2.3~~	gallons DH

SE Duplicate Sample ID: _____ Time _____

SEM-AVS	8 oz WMGJ (no headspace)		*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: REF007-SE-3-093019 Time: 1141 2.5 gallon white bucket 2.3 gallons DH

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DH Date: 9/30/19 Field Supervisor Initials DH Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30-19

Project Number: 60612698 **Area of Interest:** REF-Gen 1/2 upper

Anchored? (NO) YES **Location ID:** REF007

Attempt # 2 Cast Time: 1159 Water Depth (m): 3.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF007-2-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448723.65 Sampler Penetration (inches):

Northing: 5456205.41 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Same as REF007 attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1 + 2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): 51.5 Total Mass of Sediment (kg): 51.5

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF007-SE-1-093019 Time: 1141

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.2 gallons
	1 x 2.5 gallon white bucket	2.3 gallons

SE Duplicate Sample ID: _____ Time: _____

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time. _____ 8 oz WMGJ

EPA TX Split Sample ID: REF007-SE-3-093019 Time: 1141 2.5 gallon white bucket 2.3 gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 9/30/19 Field Supervisor Initials: DH Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9 30 19

Project Number: 60612698
Area of Interest: REF-Genelle-Upper
Anchored? (NO) YES
Location ID: REF007
Attempt # 3 Cast Time: 1240
Water Depth (m): 3.5
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF007-3
Estimated Hydrowire angle (degrees):
Easting: 448723.73
Sampler Penetration (inches):
Northing: 5450205.88
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	(YES)	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 125

Sediment Characteristics

NO Sample

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 9/30/19
Field Supervisor Initials: DH Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/19

Project Number: 60612698

Area of Interest: REF-Cowlitz Upper

Anchored? (NO) YES

Location ID: REF007

Attempt # 4

Cast Time: 1243

Water Depth (m): 3.5

GPS Target Parameters

Sheave Counter Depth (m): –

Name: REF007-4-BMI

Estimated Hydrowire angle (degrees): –

Easting: 448722.74

Sampler Penetration (inches): 8

Northing: 5450203.13

Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI)

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Same as REF007 attempt #1

Color:

Presence of debris:

Stratification:

Biological Structures:

Density:

Shells:

Presence/Absence silica glass:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: 1

Sieving Information: BMI Sample

Sieved with 5 mm Sieve? Yes (No)

Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	REF007-BMI-1-093019	Time: 1301	2 x	Yellow 5-gallon bucket	2 *gallons* + 2991
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOH Date: 9/30/19

Field Supervisor Initials: LOH Date: 9/30/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/19

Project Number: 60612698 **Area of Interest:** UPPER BENELLS
Vessel: TEITOLI **Location ID:** REF007
Vessel Crew: JOHN SHAEFFER, CHAD FURLLIE **Sampling Crew:** CLIFF PEARSON (AECOM)
CHRIS SPEITH & MARK BISER (CMA)
EPA Observer: SHAUN ROARK
Arrival Time: ~~1545~~ 1530 **Departure Time:** 1742
River Stage:
Water Surface Elevation (ft): **Weather Conditions Upon Arrival:**
Temp (°F): 47° Wind (mph): 4
Elevation Source: Clouds/Precipitation: MOSTLY CLOUDY, DRY
Trident Sampler Type: Push Pole Vibraframe Driveframe

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic NONE
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NEAR SANDY SHORELINE

GPS Target Parameters and Water Depth

GPS Name: REF007-3-PW Water Depth (m): 4.40
Easting: 448723.07
Northing: 5450208.67 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: REF007- Observations:
Easting: 448722.92 NEAR SUBSURFACE VEGETATION.
Northing: 5450206.09 SOFT SAND (OVER PENETRATED W PROBE)
NO GRAVEL

GPS Name: REF007-2 Observations:
Easting: 448722.92 SOFT SANDS.
Northing: 5450207.03 NO GRAVEL

Sample Identification Information

Primary Sample ID: REF007-PW-1-093019 Time: 1632
Cross off bottles NOT filled
1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide~~ — ~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:
EPA Split Sample ID: Time: 1B Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials DA Date: 9/30/19 Field Supervisor Initials DA Date: 9/30/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30-19

Project Number: 60612698
Area of Interest: GENELLE
Vessel: RV CAYUSE
Location ID: REF008
Vessel Crew: MIKE DUFFIELD, MAGGIE McKEON
Sampling Crew: JASE HOSE, PAUL HAMIDI, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BADOM
Arrival Time: 1:25
Departure Time: 2:45

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): MI 50s
Wind (mph): <10 MPH
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
GENELLE ISLANDS, ROCKY, LIGHTLY VEGETATED MOUNDS IN RIVER, ROCKY SHORELINE

Sampling Information

Sampler Used: VANVEEN
# of Sampling Attempts (Accepted vs. Rejected): ~~XXXXX~~
#1 REJECT; #2 REJECT; #3 REJECT; #4 REJECT; #5 GOOD; #6 GOOD

Video Reconnaissance Information

GPS Target Name: REF008
Easting: 448598.58
Northing: 5450272.19
Observations: SAND, SOME COBBLES

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DH Date: 9/30/19
Field Supervisor Initials: DH Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30/19

Project Number: 60612698

Area of Interest: REF~~0~~08 #1 Grab

Anchored? (NO) YES

Location ID: REF008

Attempt # 1 Cast Time: 1352

Water Depth (m): 8.6

GPS Target Parameters

Sheave Counter Depth (m): –

Name:

Estimated Hydrowire angle (degrees): –

Easting: 448598.58

Sampler Penetration (inches): 2

Northing: 5450272.19

Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: NO Sample

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information: NO Sample

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket*
		Total Metals & TOC	8 oz WMGJ *volumes*
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOH Date: 9/30/19

Field Supervisor Initials: DA Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30-19

Project Number: 60612698
Area of Interest: REF-GeNRI/R
Anchored? (NO) YES
Location ID: REF008
Attempt # 2 Cast Time: 1400
Water Depth (m): 8.6
GPS Target Parameters
Sheave Counter Depth (m): —
Name: REF008-2
Estimated Hydrowire angle (degrees): —
Easting: 448594.21
Sampler Penetration (inches): 2
Northing: 5450269.24
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: No Sample
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:
Sieving Information:
Sieved with 5 mm Sieve? No Sample Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:		8 oz WMGJ
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 9/30/19
Field Supervisor Initials: DH Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30-19

Project Number: 60612698 **Area of Interest:** REF- GenRIk

Anchored? (NO) YES **Location ID:** REF008

Attempt # 3 Cast Time: 1404 Water Depth (m): 7,4

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF008-3 Estimated Hydrowire angle (degrees): —

Easting: 448623,14 Sampler Penetration (inches):

Northing: 5450297,23 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: NO Sample Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells.

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DK Date: 9/30/19 Field Supervisor Initials DK Date: 9/30/19

Date 9-30-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 **Area of Interest:**

Anchored? (NO) YES **Location ID:** REF008

Attempt # 4 Cast Time: 1400 Water Depth (m): 31.3

GPS Target Parameters Sheave Counter Depth (m):

Name: REF008-4 Estimated Hydrowire angle (degrees):

Easting: 448619.82 Sampler Penetration (inches):

Northing: 5450238.37 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool stick in Jaws Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: No Sample Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket*
		Total Metals & TOC	8 oz WMGJ	*volumes*
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LDH Date: 9/30/19 Field Supervisor Initials: LDH Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date _____

Project Number: 60612698 **Area of Interest:** REF-General

Anchored? (NO) YES **Location ID:** REF008

Attempt # 5 Cast Time: 1412 Water Depth (m): 3.2

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF008-5 Estimated Hydrowire angle (degrees): —

Easting: 448617.09 Sampler Penetration (inches): 0-9

Northing: 545023.08 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Well graded Sand Med to Coarse grain - subrounded to rounded

Color: 5Y 5/2 Reddish gray

Stratification: None

Density: Loose

Presence/Absence silica glass: No

Redox Boundary: None

Presence of debris: None

Biological Structures: None

Shells: None

Sheen/Odor: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: #5 SEM-AVS Container Collected from Attempt #: #5

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF008-SE-1-093019 Time: 1420

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.9 gallons
	1 x 2.5 gallon white bucket	2.14 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: JNK Date: 9/30/19 Field Supervisor Initials: JNK Date: 9/30/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-30-19

Project Number: 60612698 **Area of Interest:** REF-Gerrik

Anchored? (NO) YES **Location ID:**

Attempt # 6 Cast Time: 1451 Water Depth (m): 3.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF008-6-BMI Estimated Hydrowire angle (degrees): —

Easting: 448616.24 Sampler Penetration (inches): 0-9

Northing: 545023 8.58 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Same as REF008 Attempt #5 Redox Boundary:

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: BMI Sample

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket ____ *gallons*
			1 x 2.5 gallon white bucket ____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	____ *gallons*
BMI Primary Sample ID: REF008-BMI-1-093019	Time: 1501	Yellow 5-gallon bucket x 2	2.2 *gallons* each
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DK Date: 9/30/19 Field Supervisor Initials DA Date: 9/30/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/1/19

Project Number: 60612698 **Area of Interest:** UPPER BENEELL

Vessel: RIETON **Location ID:** REF008

Vessel Crew: JOHN SHAEFFER, CHAD FORLLIC **Sampling Crew:** CLELAND J PEARSON (ACCLM)

EPA Observer: SHAUN ROACH CHAS SMITH & MARK BISER (CCMA)

Arrival Time: 1208 **Departure Time:** 1350

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50 Wind (mph): 4
Clouds/Precipitation: PARTLY CLOUDY & DRY

Trident Sampler Type: Push Pole Vibraframe Driveframe (PNEMATIC)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NEAREST ROCKY SHORE (ROCK OUTCROPS)

GPS Target Parameters and Water Depth

GPS Name: REF008-1-PW Water Depth (m): 4.70
Easting: 448615.27
Northing: 5450240.99 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: _____ Observations:
Easting: _____
Northing: _____

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: REF008-PW-1-100119 Time: 1259

Duplicate Sample ID: REF008-PW-2-100119 Time: 1259

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: TOC - 125 ml AMBER H2SO4

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials LOA Date: 10/01/19 Field Supervisor Initials LOA Date: 10/01/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/30/19

Project Number: 60612698 **Area of Interest:** UPPER GENELLE

Vessel: TEITOL **Location ID:** REF009

Vessel Crew: JOHN SHAFFER, CHAD FURLONG **Sampling Crew:** CLIFF PEARSON (CP), CHRIS SPEITH (CS) & MARK BUSER (MB)

EPA Observer: SHAWN PARK

Arrival Time: 1310 **Departure Time:** ~~1300~~ CP 1447

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 42° Wind (mph): 4
Clouds/Precipitation: PARTLY CLOUDY, DRY

Trident Sampler Type: Push Pole Vibraframe Driveframe PNEUMATIC FRAME

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NEAR COBBLE & GRAVEL BEACH
~28 M. FROM ORIGINAL LOCATION.

GPS Target Parameters and Water Depth

GPS Name: REF009-3_PW Water Depth (m): 2.2

Easting: ~~448708.74~~ 448708.79

Northing: ~~5450311.27~~ 5450311.07 Water Sample Color: MURKY SLIGHTLY BROWNISH

Additional Video Reconnaissance Information

GPS Name: REF009_1 Observations: COBBLES & GRAVELS WITH SOME FINES LAYING ON TOP

Easting: 448705.27

Northing: 5450335.92 1.9 M. DEPTH

GPS Name: REF-009_2 Observations: COBBLES & GRAVELS WITH FINE LAYING ON TOP

Easting: 448707.37

Northing: 5450312.02

Sample Identification Information

Primary Sample ID: REF009-PW-1-20190930 Time: 1352

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials DH Date: 9/30/19 Field Supervisor Initials DH Date: 9/30/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698
Area of Interest: ~~[illegible]~~ GENELLE
Vessel: RV CAYUSE
Location ID: REF009
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, PAUL HAMIDI, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BATDORF
Arrival Time: 1:55
Departure Time: 2:15

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50s
Wind (mph): < 10MPH
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES (NO) Circled by J. Pretare 11-26-19 (JAP)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
GENELLE ISLANDS, ROCKY HUMMOCKS IN RIVER, ROCKY SHORE

Sampling Information

Sampler Used: VANDEEN
# of Sampling Attempts (Accepted vs. Rejected): 4 ATTEMPTS ALL REJECTS
#1-REJECT; #2-REJECT; #3 REJECT; #4 REJECT; ~~#5~~

Video Reconnaissance Information

GPS Target Name: REF009
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: LDH Date: 10/01/19
Field Supervisor Initials: LDH Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF

Anchored? (NO) YES **Location ID:** REF009

Attempt # 1 Cast Time: 1357 Water Depth (m): 1.8

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF009-1 Estimated Hydrowire angle (degrees): —

Easting: 4487 11.67 Sampler Penetration (inches): 0

Northing: 5450311.75 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: NO Sample Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information: NO Sample

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LOH Date: 10-01-19 Field Supervisor Initials LOH Date: 10-01-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF – Gravelly

Anchored? (NO) YES **Location ID:** REF009

Attempt # 2 Cast Time: 1411 Water Depth (m): 1.9

GPS Target Parameters Sheave Counter Depth (m): –

Name: REF009-2 Estimated Hydrowire angle (degrees): –

Easting: 448695.80 Sampler Penetration (inches): 0

Northing: 5450345.48 Sample Interval (0 to X inches bss): –

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: No sample Too gravelly Jaw not closing fully

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: Time:

No sample

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ		
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____	*gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____	*gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10-01-19 Field Supervisor Initials: DA Date: 10-01-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF-GENERAL

Anchored? (NO) YES **Location ID:** REF009

Attempt # 3 Cast Time: M24 Water Depth (m): 2.10

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF009-3 Estimated Hydrowire angle (degrees): —

Easting: 4486756.85 Sampler Penetration (inches): 0

Northing: 545036.75 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 ~~percent fines (i.e. ≤ 2 mm)~~?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: NO Sample

Color:

Stratification: Jaws not closing

Density:

Presence/Absence silica glass: due to gravels

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10-01-19 Field Supervisor Initials: DH Date: 10-01-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date ~~10/31/19~~ 10/1/19

#1105 (305)

Project Number: 60612698

Area of Interest: REF - General

Anchored? (NO) YES

Location ID: REF009

Attempt # 4

Cast Time: 1429

Water Depth (m): 1.4

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF009 -4

Estimated Hydrowire angle (degrees): —

Easting: 448671.28

Sampler Penetration (inches): 0

Northing: 5450365.80

Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool

Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: No Sample

Redox Boundary:

Presence of debris:

Color: Jaws not closing

Biological Structures:

Stratification:

Shells:

Density: due to gravels

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time. _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/01/19 Field Supervisor Initials: DH Date: 10/01/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698
Area of Interest: GENELLE
Vessel: RV CAYUSE
Location ID: REF009A
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, PAUL HAMIDI, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BANDICK
Arrival Time: 9:20
Departure Time: 12:45

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 30's Wind (mph): <10 MPH
Clouds/Precipitation: OVERCAST

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
GENELLE ISLANDS, ROCKY HUMMOCKS IN RIVER, LIGHTLY VEGETATED

Sampling Information

Sampler Used: HAMMOND
# of Sampling Attempts (Accepted vs. Rejected): 5 of 9 GOOD
* #1- GOOD; #2 REJECT; #3 REJECT; #4 GOOD; #5 GOOD; #6 GOOD #7 REJECT

Video Reconnaissance Information

GPS Target Name: REF009A
Easting: 448652.88
Northing: 5450377.45
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DA Date: 10/02/19
Field Supervisor Initials: DA Date: 10/02/19

#8-REJECT; #9-GOOD

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF - Grenth

Anchored? (NO) YES **Location ID:** REF009A

Attempt # 1 Cast Time: 0944 Water Depth (m): 1,2

GPS Target Parameters Sheave Counter Depth (m): -

Name: REF009A-1-CHEM Estimated Hydrowire angle (degrees): -

Easting: 448652,88 Sampler Penetration (inches): 9

Northing: 5450377,45 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Poorly graded Sand Med to coarse Sand, subrounded to rounded, no silt

Color: 5YR 5/1 Gray

Stratification: NO

Density: Loose

Presence/Absence silica glass: NO

Redox Boundary: NO

Presence of debris: Grasses

Biological Structures: NO

Shells: NO

Sheen/Odor: NO

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+4+5 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF009A-SE-1-100219 Time: 0956

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4,7 gallons
	1 x 2.5 gallon white bucket	2,0 gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/02/19 Field Supervisor Initials: DH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698
Area of Interest: REF - Gerrelle
Anchored? (NO) YES
Location ID: REF009A
Attempt # 2 Cast Time: 1014
Water Depth (m): 1.1
GPS Target Parameters
Sheave Counter Depth (m): -
Name: REF009A-2
Estimated Hydrowire angle (degrees): -
Easting: 448648.42
Sampler Penetration (inches): >9"
Northing: 5450385.64
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool
Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample Rejected Over-Penetrated
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:
Sieving Information:
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/02/19
Field Supervisor Initials: DH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF- Gravel

Anchored? (NO) YES **Location ID:** REF009A

Attempt # 3 Cast Time: 1046 Water Depth (m): 1.1

GPS Target Parameters Sheave Counter Depth (m):

Name: REF009A-3 Estimated Hydrowire angle (degrees):

Easting: 448649.44 Sampler Penetration (inches): >9"

Northing: 5450384.75 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample Rejected Over-Penetrated

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/02/19 Field Supervisor Initials: DA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF-General

Anchored? (NO) YES **Location ID:** REF009A

Attempt # 4 Cast Time: 1049 Water Depth (m): 1.3

GPS Target Parameters Sheave Counter Depth (m): –

Name: REF009A-4-CHEM Estimated Hydrowire angle (degrees): –

Easting: 448650.29 Sampler Penetration (inches): 10

Northing: 5450377.69 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as attempt #1 Redox Boundary:

Color: Presence of debris:

Stratification: Biological Structures:

Density: Shells:

Presence/Absence silica glass: Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+4+5 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF009A-SE-1-100219 Time: 0956

	Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

		sediment bucket volumes
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DA Date: 10/02/19 Field Supervisor Initials DH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF-Genell2

Anchored? (NO) YES **Location ID:** REF009A

Attempt # 5 Cast Time: 1105 Water Depth (m): 1.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF009A-5-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448650.79 Sampler Penetration (inches): 9

Northing: 5450376.50 Sample Interval (0 to X inches bss): 6-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: same as attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+4+5 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF009A-SE-1-100219 Time: 0956

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.7 *gallons*
	1 x 2.5 gallon white bucket	2.0 *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AJL Date: 10/02/19 Field Supervisor Initials: DA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF - Geneva

Anchored? (NO) YES **Location ID:** REF009A

Attempt # 6 Cast Time: 1134 Water Depth (m): 1.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF009A-6-BMI Estimated Hydrowire angle (degrees): —

Easting: 449648.83 Sampler Penetration (inches): 5

Northing: 5456380.12 Sample Interval (0 to X inches bss): 0-5

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted DH	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample rejected

Color: Insufficient Volume

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: REF009A-BMI-1-100219 DH		Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DH Date: 10/02/19 Field Supervisor Initials DH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/02/19

Project Number: 60612698 **Area of Interest:** REP - Gerrile

Anchored? (NO) YES **Location ID:** REF009A

Attempt # 7 Cast Time: 1155 Water Depth (m): 1.4

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF069A-7 Estimated Hydrowire angle (degrees): —

Easting: 448647.22 Sampler Penetration (inches): ≥ 9"

Northing: 5450377 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample rejected Over-Penetrated

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/02/19 Field Supervisor Initials: KDA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF6 Gemlk

Anchored? NO YES **Location ID:** REF009A

Attempt # 8 Cast Time: 1159 Water Depth (m): 1

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF009A-8 Estimated Hydrowire angle (degrees): —

Easting: 448650.79 Sampler Penetration (inches): 3

Northing: 5450379.37 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Sample Rejected UNDER - Penetration

Redox Boundary:

Presence of debris:

Color:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
		Bioassays	1 x 5 gallon white bucket _____ *gallons*
			1 x 2.5 gallon white bucket _____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace) *sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ
		Grain Size	8 oz WMGJ
		BEM	16 oz Amber WMGJ
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/02/19 Field Supervisor Initials: DH Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 9 of 9

Date 10-2-19

Project Number: 60612698 **Area of Interest:** REF - Genelle

Anchored? (NO) YES **Location ID:** REF009A

Attempt # 9 Cast Time: 1204 Water Depth (m): 1.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF009A-9-BMI Estimated Hydrowire angle (degrees): —

Easting: 448648.41 Sampler Penetration (inches): 8

Northing: 5450377.02 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 0

Sediment Characteristics

Sediment Type / Texture: Same as attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 8

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2 5 gallon white bucket _____ gallons

BMI Primary Sample ID: REF009A-BMI-1-100219 Time: 1212 Yellow 5-gallon bucket 2.5 gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/02/19 Field Supervisor Initials: [illegible] Date: 10/02/19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 10/3/19

Project Number: 60612698 **Area of Interest:** UPPER BENELLIE

Vessel: RV TIETON **Location ID:** REF009A

Vessel Crew: JOHN SHAEFFER & CHAD EURELLE **Sampling Crew:** CLIFFORD J. PEARSON (AECOM)
CHRIS SPEITH & MARK BISER (CMA)

EPA Observer: SHALIN ROARK

Arrival Time: 0950 **Departure Time:** 1305

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 46° Wind (mph): 2
Clouds/Precipitation: CLOUDY, DRY

Trident Sampler Type: Push Pole Vibraframe Driveframe (PNEUMATIC)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NEAR SANDY SHORELINE

GPS Target Parameters and Water Depth

GPS Name: REF009A-1-PW Water Depth (m): 2.50

Easting: 448643.49

Northing: 5450377.15 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: REF009A-PW-1-100319 Time: 1136

Duplicate Sample ID: REF009A-PW-2-100319 Time: 1136

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: DISS. METALS, FILTERED, 125 mL POLY, HNO3

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: DH Date: 10/3/19 Field Supervisor Initials: DH Date: 10/3/19

Revised 9/20/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698
Area of Interest: GONELLE
Vessel: RV CAYUSE
Location ID: REF010
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, PAUL HAMMOND, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BADON
Arrival Time: 1:00
Departure Time:

River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50's Wind (mph): < 10 MPH
Clouds/Precipitation: OVERCAST

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) (Mixed Coarse (mCs)) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) mf
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
GONELLE ISLANDS, ROCKY HUMMOCKS IN RIVER, ROCK BEACH OR STONE

Sampling Information

Sampler Used: HAMMOND
# of Sampling Attempts (Accepted vs. Rejected):
* #1 ~~GOOD~~ REJECT; #2 GOOD; #3 GOOD; #4 GOOD; #5 GOOD; #6 GOOD

Video Reconnaissance Information

GPS Target Name: REF010
Easting: 448691.46
Northing: 5450495.20
Observations: COBBLES, GRAVEL & SAND

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials DH Date: 10/4/19
Field Supervisor Initials JMS Date: 10/4/19

* #7 REJECT; #8 GOOD; #9 GOOD; #10 GOOD

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Grenville

Anchored? (NO) YES **Location ID:** REF010

Attempt # 1 Cast Time: 1357 Water Depth (m): 3,4

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-1 Estimated Hydrowire angle (degrees): —

Easting: 448691.46 Sampler Penetration (inches): >9"

Northing: 5450495.20 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 250

Sediment Characteristics

Sediment Type / Texture: Over-Penetration in Sand

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/3/19 Field Supervisor Initials DH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698

Area of Interest: REF Grnlk

Anchored? (NO) YES

Location ID: REF010

Attempt # 2

Cast Time: 1412

Water Depth (m): 4

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF010-2-CHEM

Estimated Hydrowire angle (degrees): —

Easting: 448685.64

Sampler Penetration (inches): 6

Northing: 5450496.41

Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

See attempt #4

Color:

Presence of debris:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: 3

Sieving Information: See attempt #9

Sieved with 5 mm Sieve? (Yes) No

Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOH Date: 10/3/19

Field Supervisor Initials: LOH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Gen2/R

Anchored? (NO) YES **Location ID:** REF010

Attempt # 3 Cast Time: 1421 Water Depth (m): 4.1

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-3-CHEM Estimated Hydrowire angle (degrees): —

Easting: 4486873.34 Sampler Penetration (inches): 6

Northing: 5450497.03 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: See Attempt #4

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information: See attempt #9

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: REF010-SE-1-100319 Time: 1430

		Cross off containers NOT filled
SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	8 oz WMGJ	
~~Grain Size~~	8 oz WMGJ	
~~BEM~~	16 oz Amber WMGJ	
~~Organics~~	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/3/19 Field Supervisor Initials: LOA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF

Anchored? (NO) YES **Location ID:** REF010

Attempt # 4 Cast Time: 1445 Water Depth (m): 3.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-4-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448689.04 Sampler Penetration (inches): 7

Northing: 5450495.51 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: well graded, Sand w/gravel Redox Boundary: NO

Sand is med to Coarse Sub rounded to rounded Presence of debris: wood debris (minor)

Color: 5YR 5/1 Gray Biological Structures: NO

Stratification: NO Shells: NO

Density: Dense Sheen/Odor: NO

Presence/Absence silica glass: NO Other Notes: gravels up to 2.5", few cobbles Sub rounded to rounded

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: 3

Sieving Information: See attempt #9

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/3/19 Field Supervisor Initials: LOA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF - Gerrelk

Anchored? (NO) YES **Location ID:** REF010

Attempt # 5 Cast Time: 1457 Water Depth (m): 3,9

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-5-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448687,82 Sampler Penetration (inches): 5

Northing: 5450498,59 Sample Interval (0 to X inches bss): 0-5

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Same as Attempt #4 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: more gravelly than #4

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information: See attempt #9

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____ Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____ Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____ Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____ Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: AH Date: 10/3/19 Field Supervisor Initials: AH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Gemlk

Anchored? (NO) YES **Location ID:** REF010

Attempt # 6 Cast Time: 1513 Water Depth (m): 3.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-6 Estimated Hydrowire angle (degrees): —

Easting: 448689.41 Sampler Penetration (inches): 9

Northing: 5450495.20 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 20

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Color: See Attempt #4 Presence of debris:

Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes: less gravelly than #4

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information: See attempt #9

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID:	Time:		***Cross off containers NOT filled***	
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:			*sediment bucket volumes*
		SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials KH Date 10/3/19 Field Supervisor Initials KH Date 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698

Area of Interest: REF geotech

Anchored? (NO) YES

Location ID: REF010

Attempt # 7

Cast Time: 1532

Water Depth (m): 3.9

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF010-7

Estimated Hydrowire angle (degrees): —

Easting: 448684.84

Sampler Penetration (inches): >9"

Northing: 5450497.28

Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sample overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture:

Redox Boundary:

Color: NOT accepted OVER PENETRATION IN SANDS

Presence of debris:

Biological Structures:

Stratification:

Shells:

Density:

Sheen/Odor:

Presence/Absence silica glass:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____

SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____

Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	_____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	_____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: KOH Date: 10/3/19

Field Supervisor Initials: KOH Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Grnmlc

Anchored? (NO) YES **Location ID:** REF010

Attempt # 8 (8) Cast Time: 1537 Water Depth (m): 3.9

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-8 Estimated Hydrowire angle (degrees): —

Easting: 448692.24 Sampler Penetration (inches): 7

Northing: 5450497.83 Sample Interval (0 to X inches bss): 6-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) (NO) PM

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: See Attempt #4 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #: 3

Sieving Information: See attempt #9

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID. REF010-SE-1-100319 Time: 1430

		Cross off containers NOT filled	
	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: KDA Date: 10/3/19 Field Supervisor Initials: KDA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF-GeNrh

Anchored? (NO) YES **Location ID:** REF010

Attempt # 9 Cast Time: 1551 Water Depth (m): 4

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-9-CHEM Estimated Hydrowire angle (degrees): —

Easting: 448687.54 Sampler Penetration (inches): 7

Northing: 5450498.03 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: See attempt #4

Color:

Stratification:

Density:

Presence/Absence silica glass: NO

Redox Boundary: NO

Presence of debris: wood stick

Biological Structures: NO

Shells: TRACE

Sheen/Odor: NO

Other Notes: gravels to 2.5", clear glass

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2+3+4+5+6+8+9 SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 47.3 Total Mass of Sediment (kg): 102.3

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 55 kg

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF010-SE-1-100319 Time: 1430

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	~~5.4~~ *gallons*
	1 x 2.5 gallon white bucket	~~2.14~~ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/3/19 Field Supervisor Initials: DA Date: 10/3/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-3-19

Project Number: 60612698 **Area of Interest:** REF Grnville

Anchored? (NO) YES **Location ID:** REF010

Attempt # 10 Cast Time: 1625 Water Depth (m): 4

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF010-~~10~~-BMI Estimated Hydrowire angle (degrees): —

Easting: 448686,93 Sampler Penetration (inches): 7

Northing: 5450499,23 Sample Interval (0 to X inches bss): 0-6

Sample Type: ~~Physical/Chemical/Bioassay~~ (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen (Ramon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: See Attempt #4 Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMT SEM-AVS Container Collected from Attempt #: 3

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? PH (Yes) (No)

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	____ *gallons*
			1 x 2.5 gallon white bucket	____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	____ *gallons*
BMI Primary Sample ID: REF010-BMI-1-100319	Time: 1630		Yellow 5-gallon bucket	2.0 *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	____ *gallons*

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: ~~KH~~ Date: 10/3/19 Field Supervisor Initials: ~~KH~~ Date: 10/3/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/4/19

Project Number: 60612698 **Area of Interest:** UPPER GENELLE

Vessel: RV TIETON **Location ID:** REF010

Vessel Crew: JOHN SCHAEFFER & CHAD FARRIER **Sampling Crew:** CLIFFORD PEARSON

CHRIS SPEITH & MARK BISER

EPA Observer: SHAWN ROARK

Arrival Time: 0920 **Departure Time:** 1140

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 41° Wind (mph): 4
Clouds/Precipitation: CLOUDY DRY

Trident Sampler Type: Push Pole Vibraframe Driveframe (PNEUMATIC)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J. Pretare on 11-26-19 (JAP)

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
IN A ROCKY 'BAY' W/O POSSIBLY W/O ANY OUTLET TO THE NORTH.

GPS Target Parameters and Water Depth

GPS Name: REF010-PW-1 Water Depth (m): 3.1

Easting: 448686.20

Northing: 5450496.09 Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: REF010-PW-1-(10)(4)19 Time: 1021

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 10/4/19 Field Supervisor Initials: DH Date: 10/4/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698
Area of Interest: GENELLE (ABOVE)
Vessel: RV CAYUSE
Location ID: REF011
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DALE HOSE, PAUL HAMIDI, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: NICOLE BANDOM
Arrival Time: 9:50
Departure Time: 1:50
River Stage:
Water Surface Elev. (ft):
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 40s Wind (mph): < 10 MPH
Clouds/Precipitation: CLOUDY/OVERCAST

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.): SANDY BEACH, STEEP ROCKY SHORES

Sampling Information

Sampler Used: VANVEEN
# of Sampling Attempts (Accepted vs. Rejected): 5 for 6
#1 - GOOD; #2 - GOOD; #3 - REJECT; #4 - GOOD; #5 - GOOD; #6 GOOD

Video Reconnaissance Information

GPS Target Name: REF011
Easting: 451256.61
Northing: 5453271.95
Observations: SAND

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DH Date: 10/01/19
Field Supervisor Initials: DH Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF- upstream of Grand

Anchored? (NO) YES **Location ID:** REF011

Attempt # 1 Cast Time: 1021 Water Depth (m): 2.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF011-1-chem Estimated Hydrowire angle (degrees): —

Easting: 451256.161 Sampler Penetration (inches): 10

Northing: 545327.85 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)	
2. Overlying water present?	(YES)	NO	
3. Overlying water excessively turbid?	YES	(NO)	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO	small winnowing
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)	
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO	
8. Sample is:	(Accepted)	Rejected	

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Poorly graded sand Mod sand Sub rounded to Rounded No silt

Color: 7.5YR 5/2 brown

Stratification: None

Density: loose

Presence/Absence silica glass: None

Redox Boundary: None observed

Presence of debris: None

Biological Structures: None obsv.

Shells: None

Sheen/Odor: None

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF011-SE-1-100119 Time: 1030

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: REF011-SE-3-100119 Time: 1030

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: _____ Time: _____

BMI Duplicate Sample ID: _____ Time: _____

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	_____ *gallons*
	Yellow 5-gallon bucket	_____ *gallons*
	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DA Date: 10/01/19 Field Supervisor Initials DA Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF- upstream of Gerelle

Anchored? (NO) YES **Location ID:** REF011

Attempt # 2 Cast Time: 1052 **Water Depth (m):** 2.5

GPS Target Parameters **Sheave Counter Depth (m):** -

Name: REF011-2-chem **Estimated Hydrowire angle (degrees):** -

Easting: 451256.58 **Sampler Penetration (inches):** 9

Northing: 5453272.97 **Sample Interval (0 to X inches bss):** 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Added Weights on Sampler (lbs):** 125

Sediment Characteristics

Sediment Type / Texture: Same as REF011 Attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1+2 SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF011-SE-1-100119 Time: 1030

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5.2 *gallons*
	1 x 2.5 gallon white bucket	2.19 *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: REF011-SE-3-100119 Time: 1030 8 oz WMGJ FILEd all chem JARS

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/01/19 Field Supervisor Initials LOA Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** R

Anchored? NO YES **Location ID:** REF011

Attempt # 3 Cast Time: 1144 Water Depth (m): 2.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF011-3 Estimated Hydrowire angle (degrees): —

Easting: 451255.83 Sampler Penetration (inches):

Northing: 5453271.39 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO stick in jaws
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: No Sample Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LDA Date: 10/01/19 Field Supervisor Initials LDA Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF-UP~~Bottom~~ Gravelly

Anchored? (NO) YES **Location ID:** REF011

Attempt # 4 Cast Time: 1147 Water Depth (m): 2.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF011-4-CHEM/DUP Estimated Hydrowire angle (degrees): —

Easting: 451254.33 Sampler Penetration (inches): 6

Northing: 545 3267.42 Sample Interval (0 to X inches bss): 0-6

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Same as REF011 Attempt # 1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures: Mussel

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: Not Composite SEM-AVS Container Collected from Attempt #: 4

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: _____ Time: _____

SE Duplicate Sample ID: REF011-SE-2-100119 Time: 1155

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: _____ Time: _____

BMI Duplicate Sample ID: _____ Time: _____

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	No buckets
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	_____ *gallons*
	Yellow 5-gallon bucket	_____ *gallons*
	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ZH Date: 10/01/19 Field Supervisor Initials: ZH Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF - Upstream of Grenelle

Anchored? (NO) YES **Location ID:** REF011

Attempt # 5 Cast Time: 1239 Water Depth (m): 2.5

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF011-5-BMI Estimated Hydrowire angle (degrees): —

Easting: 451255.65 Sampler Penetration (inches): 8

Northing: 5453268.58 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Similar to REF011 Attempt #1

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI Sample SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	REF011-BMI-1-100119	Time:	1250	Yellow 5-gallon bucket	2 X 2 *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/01/19 Field Supervisor Initials: LOA Date: 10/01/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-1-19

Project Number: 60612698 **Area of Interest:** REF-Upstream Generic

Anchored? (NO) YES **Location ID:** REF011

Attempt # 6 Cast Time: 1311 Water Depth (m): 2.5

GPS Target Parameters Sheave Counter Depth (m): -

Name: REF011-6 Estimated Hydrowire angle (degrees): -

Easting: 451255.67 Sampler Penetration (inches): 7.5

Northing: 5453269.17 Sample Interval (0 to X inches bss): 0-6

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:

Color: Same as REF011 Attempt #1

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI Sample SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): N/A Total Mass of Sediment (kg): N/A

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 0

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: REF011-BMI-2-100119 Time: 1315 Yellow 5-gallon bucket 2 x 2 *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: LOA Date: 10/01/19 Field Supervisor Initials LOA Date: 10/01/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698
Area of Interest: UP STREAM & GENELLE
Vessel: RV TIETON
Location ID: REFO11
Vessel Crew: JOHN SHAEFFER & CHAD FURLICIE
Sampling Crew: LUTHOR J. PEARSON CAECOM)
EPA Observer: ~~JD~~ SHAUN ROARK
CHRIS SPITH & MARK BISER (CMA)
Arrival Time: 1040
Departure Time: 1120
River Stage:
Water Surface Elevation (ft):
Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 41° Wind (mph): 3
Clouds/Precipitation: CLOUDY & DRY
Trident Sampler Type: Push Pole Vibraframe Driveframe (PNEUMATIC)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C, and G)
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic NONE
Surface Vegetation Present: Yes (No)
Was Vegetation Removed: (Yes) No
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NEAR SANDY SHORE WITH SINGLE PICNIC TABLE
SUBSURFACE VEGITATION AT SHORELINE PROMINANT

GPS Target Parameters and Water Depth

GPS Name: REFO11-1-PW
Water Depth (m): 1.6
Easting: 451256.18
Northing: 5453268.30
Water Sample Color: CLEAR

Additional Video Reconnaissance Information

GPS Name:
Easting:
Northing:
Observations:

GPS Name:
Easting:
Northing:
Observations:

Sample Identification Information

Primary Sample ID: REFO11-PW-1-100219 Time: 1129
Duplicate Sample ID: REFO11-PW-2-100219 Time: 1129
EPA Split Sample ID: REFO11-PW-3-100219 Time: 1129
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: SULFATE/ALK/CHLORIDE 125 ML POLY UNPRES
1B. Dissolved Metals → With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials: KOA Date: 10/02/19
Field Supervisor Initials: KOA Date: 10/02/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-4-19

Project Number: 60612698

Area of Interest: REF Upstream Control

Anchored? (NO) YES

Location ID: REF012

Attempt # 1

Cast Time: 0835

Water Depth (m): 9,4

GPS Target Parameters

Sheave Counter Depth (m):

Name: REF012-1

Estimated Hydrowire angle (degrees):

Easting: 451447,81

Sampler Penetration (inches): < 4"

Northing: 5453396,00

Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Rejected

Color: Insufficient volume

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:

SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No

Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):

Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/4/19

Field Supervisor Initials: DK Date: 10/4/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-4-19

Project Number: 60612698 **Area of Interest:** REF Upstream

Anchored? (NO) YES **Location ID:** REF012

Attempt # 2 Cast Time: 0847 Water Depth (m): 6.6

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF012-2 Estimated Hydrowire angle (degrees): —

Easting: 451429.73 Sampler Penetration (inches): < 4"

Northing: 5453415.89 Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	(NO)
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Low Volume

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/4/19 Field Supervisor Initials: DH Date: 10/4/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-4-19

Project Number: 60612698

Area of Interest: REF upstream

Anchored? (NO) YES

Location ID: REF012

Attempt # 3 Cast Time: 0853

Water Depth (m): 3.6

GPS Target Parameters

Sheave Counter Depth (m): —

Name: REF012-3

Estimated Hydrowire angle (degrees): —

Easting: 451418.44

Sampler Penetration (inches): >9"

Northing: 5453404.38

Sample Interval (0 to X inches bss): —

Sample Type: Physical/Chemical/Bioassay BMI

Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sample overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool

Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Rejected Over Penetration in Sand

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LDH Date: 10/4/19 Field Supervisor Initials LDH Date: 10/4/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-4-19

Project Number: 60612698 **Area of Interest:** REF Upstream

Anchored? (NO) YES **Location ID:** REF012

Attempt # 4 Cast Time: 0916 Water Depth (m): 2.3

GPS Target Parameters Sheave Counter Depth (m): —

Name: REF012-4 Estimated Hydrowire angle (degrees): —

Easting: 451479.50 Sampler Penetration (inches): > 9"

Northing: 5453433.81 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: Van Veen (Hamon) Hand Tool Added Weights on Sampler (lbs): 200

Sediment Characteristics

Sediment Type / Texture: Rejected: Large cobbles + Sand

Color:

Stratification: Incomplete closure Loss of Sand

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ gallons
			1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	sediment bucket volumes
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 10/4/19 Field Supervisor Initials: DA Date: 10/4/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-4-19

Project Number: 60612698

Anchored? (NO) YES

Attempt # ~~1~~ 5

Cast Time: 0930

GPS Target Parameters

Name: REF012-5-CHEM

Easting: 45478

Northing: 5453438

Sample Type: (Physical/Chemical/Bioassay) BMI

Area of Interest: REF upstream

Location ID: REF012

Water Depth (m): 0.2

Sheave Counter Depth (m): —

Estimated Hydrowire angle (degrees): —

Sampler Penetration (inches): 6

Sample Interval (0 to X inches bss): 0-6

Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen ~~PVA~~ Hamon (Hand Tool ~~shovel~~ PVA scoop)

Added Weights on Sampler (lbs): —

Sediment Characteristics

Sediment Type / Texture: well graded gravelly silty sand med. to coarse sand, subangular to subrounded

Color: 5YR 3/1 V. dark gray

Stratification: NO

Density: Medium

Presence/Absence silica glass: NO

Redox Boundary: NO

Presence of debris: NO

Biological Structures: mussels, worms

Shells: NO

Sheen/Odor: NO

Other Notes: gravels up to 2" subangular to subrounded

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: not composite

SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? (Yes) No

Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): 38.2

Total Mass of Sediment (kg): 55.5 #

Mass of Sediment 5 mm to 3 inches (gravel) (kg): 17.3

Mass of Sediment > 3 inches (cobble) (kg): 0

Sample Identification Information

SE Primary Sample ID: REF012-SE-1-100419 Time: 0930

SE Duplicate Sample ID: _____ Time: _____

EPA SE Split Sample ID: _____ Time: _____

EPA TX Split Sample ID: _____ Time: _____

BMI Primary Sample ID: _____ Time: _____

BMI Duplicate Sample ID: _____ Time: _____

Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	4.5 *gallons*
	1 x 2.5 gallon white bucket	1.1 *gallons*

sediment bucket volumes

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

8 oz WMGJ		
2.5 gallon white bucket	_____	*gallons*
Yellow 5-gallon bucket	_____	*gallons*
Yellow 5-gallon bucket	_____	*gallons*

Sample Lead Initials: KM Date: 10/4/19

Field Supervisor Initials: KM Date: 10/4/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10-4-19

Project Number: 60612698
Area of Interest: REF upstream of Gov.
Anchored? (NO) YES
Location ID: REF012
Attempt # 6 Cast Time: 1107
Water Depth (m): 0.3
GPS Target Parameters
Sheave Counter Depth (m): —
Name: REF012-6-BMI
Estimated Hydrowire angle (degrees): —
Easting: 451480
Sampler Penetration (inches): 6
Northing: 5453441
Sample Interval (0 to X inches bss): 0-6
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: Van Veen Hamon (Hand Tool) Stnl Scoop
Added Weights on Sampler (lbs): —

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color: Sec Attempt # 5
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: BMI
SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? Yes (No)
Mass of Sediment < 5 mm (kg): N/A
Total Mass of Sediment (kg): N/A
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ
EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: REF012-BMI-1-100419 Time: ~~1215~~ 1114 Yellow 5-gallon bucket 2.5 *gallons*
BMI Duplicate Sample ID: _____ Time: 1115 Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes (No) See *Rinsate Sample Collection Form*

Sample Lead Initials: LOH Date: 10/4/19
Field Supervisor Initials: LOH Date: 10/4/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 10/2/19

Project Number: 60612698 **Area of Interest:** UP STREAM OF BENEFIELD

Vessel: RV TIETON **Location ID:** REF012

Vessel Crew: JOHN SHAEFFER & CHAD FURUYE **Sampling Crew:** CLIFF ZIO J. PEARSON (AECOM)

EPA Observer: SHAUN ROARK CLIFF SPEITH & MARK BISER (CMA)

Arrival Time: 1320 **Departure Time:** 1645

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50' Wind (mph): 6
Clouds/Precipitation: CLOUDY & DRY

Trident Sampler Type: Push Pole Vibraframe Driveframe (PNEUMATIC)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) NRD 10/2/19 River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic NONE

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
NEAR ROCKY SHORELINE
VIDEO RECON BENEATH THE WATER REVEALED A SANDY FIELD IN THE AREA (NOT WHERE TRASH WAS PLACED)

GPS Target Parameters and Water Depth

GPS Name: REF012_S_PW Water Depth (m): 7.10
Easting: 451457.30
Northing: 5453418.92 Water Sample Color: CLOUDY

Additional Video Reconnaissance Information 4 ADDITIONAL GPS LOCATIONS TAKE IN MIXED COARSE & SAND BAR

GPS Name: _____ Observations:
Easting: _____
Northing: _____

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: REF012-PW-1-100219 Time: 1537

Duplicate Sample ID: ~~REF12-PW-2-100219~~ QA 10/2/19 Time: _____

EPA Split Sample ID: _____ Time: _____

Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Analyte and Bottle Type: ~~DIS. METALS, 125 mL Poly, HNO3, FILTERED~~ QA 10/2/19

1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials KOA Date: 10/02/19 Field Supervisor Initials KOA Date: 10/02/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698
Area of Interest: ARROW LAKE
Vessel: RV CAYUSE
Location ID: REF013
Vessel Crew: M. DUFFIELD, M. MCKEON
Sampling Crew: DAVE HOSE, GLEN MEDIA, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GONDEK
Arrival Time: ~~9:00~~ 10:40
Departure Time: ~~10:30~~ 1:20

River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): LOW 50s Wind (mph): < 10 MPA
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) N/A
River Mile: N/A
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
LAKE LEVEL LOW, GRAVEL BEACH NEARBY, VISITOR USE IN PAST, CAMPSITES & PLAYGROUND BACK IN FOREST

Sampling Information

Sampler Used: VANVEEN
# of Sampling Attempts (Accepted vs. Rejected): ATTEMPT 1 - GOOD; ATTEMPT 2 REJECTED - ROCK; ATTEMPT 3 GOOD; ATTEMPT 4 - GOOD. 4 ATTEMPTS, 3 GOOD, 1 REJECTION

Video Reconnaissance Information

GPS Target Name: REF013
Easting: 435359.05
Northing: 5466488.24
Observations: SAND

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials DH Date: 9-24-19
Field Supervisor Initials DH Date: 9-24-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 9-24-19

Project Number: 60612698 **Area of Interest:** ARROW LAKE

Anchored? (NO) YES **Location ID:** REF013

Attempt # 1 Cast Time: 11:05 Water Depth (m): 12.9 M

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF013-1-CHEM Estimated Hydrowire angle (degrees): _____

Easting: 435359.05 Sampler Penetration (inches): _____

Northing: 5466488.24 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: clay silt silty sand (sandy silt)

Color: 5YR 4/2 dark reddish gray (redox layer color)

Stratification: massive 5YR 5/1 gray

Density: medium

Presence/Absence silica glass: none

Redox Boundary: 0.5 mm

Presence of debris: none

Biological Structures: none

Shells: ppt broken shell

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: 1

Sieving Information: fines ≤ 2mm

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes (No)

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: ~~REF013-SE-1-09242019~~ Time: 1129
REF013-SE-1-09242019

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	~~16 oz Amber WMGJ~~	
~~Organics~~	~~2 x 8 oz WMGJ (3/4 full except in Reference Area)~~	
~~Bioassays~~	~~1 x 5 gallon white bucket~~	_____ gallons
	~~1 x 2.5 gallon white bucket~~	_____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: _____ Time: _____ 8 oz WMGJ

EPA TX Split Sample ID: _____ Time: _____ 2.5 gallon white bucket _____ gallons

BMI Primary Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

BMI Duplicate Sample ID: _____ Time: _____ Yellow 5-gallon bucket _____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 9/24/19 Field Supervisor Initials: DH Date: 9/24/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09/24/2019

Project Number: 60612698 **Area of Interest:** ARROW LAKE

Anchored? (NO) YES **Location ID:** REF013

Attempt # 2 Cast Time: 1147 Water Depth (m): 13

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF013-2 Estimated Hydrowire angle (degrees): _____

Easting: 435362.47 Sampler Penetration (inches): _____

Northing: 5466487.38 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO (see stow)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: rock in jaws	**Accepted**	~~Rejected~~

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 9/24/19 Field Supervisor Initials: D.H Date: 9/24/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09 24 2019

Project Number: 60612698 **Area of Interest:** ARROW LAKE
Anchored? (NO) YES **Location ID:** REF013
Attempt # 3 Cast Time: 1152 **Water Depth (m):** 12.8
GPS Target Parameters **Sheave Counter Depth (m):**
Name: REF013 - 3 - CHEM **Estimated Hydrowire angle (degrees):**
Easting: 435360.57 **Sampler Penetration (inches):**
Northing: 5466485.30 **Sample Interval (0 to X inches bss):**
Sample Type: Physical/Chemical/Bioassay BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES X	(NO) X
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES X	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES X	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? NOT sieved	(YES)	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool **Added Weights on Sampler (lbs):**

Sediment Characteristics

Sediment Type / Texture: silty sand **Redox Boundary:** 0.5 cm
Presence of debris: No
Color: 5Y 5/1 gray - 5YR 4/2 (redox) dark reddish gray **Biological Structures:** No
Stratification: massive **Shells:** present bivalve margaritifera [margaritifera] GM
Density: medium **Sheen/Odor:** No
Presence/Absence silica glass: none **Other Notes:** true organics

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2 **SEM-AVS Container Collected from Attempt #:**
Sieving Information: NOT sieved fine ≤ 2mm
Sieved with 5 mm Sieve? Yes (No) **Removed by Hand > 5mm?** Yes (No)
Mass of Sediment < 5 mm (kg): **Total Mass of Sediment (kg):**
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: REF013-SE-1-09242019 Time: 1129

	Cross off containers NOT filled	
SEM-AVS	~~8 oz WMGJ (no headspace)~~	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays 3"	1 x 5 gallon white bucket	5.2 gallons
	1 x 2.5 gallon white bucket	2.5 gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DH Date: 9/24/19 Field Supervisor Initials DH Date: 9/24/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09242019

Project Number: 60612698
Area of Interest: Arrow lake
Anchored? NO YES
Location ID: REF013
Attempt # 4 Cast Time: 1301
Water Depth (m): 12.9
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF013-4-BMI
Estimated Hydrowire angle (degrees):
Easting: 435361.09
Sampler Penetration (inches):
Northing: 5466486.09
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: silty sand
Redox Boundary: 0.5m 5YR 4/2 dark reddish gray
Presence of debris: No
Color: 5YR5/1 gray
Biological Structures: grass
Stratification: massive
Shells:
Density: medium
Sheen/Odor: no. [organic material grass] on
Presence/Absence silica glass: none
Other Notes: organic material grass

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1
SEM-AVS Container Collected from Attempt #:
Sieving Information:
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? (Yes) No 1" x 5inch
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: ~~REF013-BMI-1-09242019~~ Time: 1301
8m

Cross off containers NOT filled

~~SEM-AVS~~	~~8 oz WMGJ~~ (no headspace)
~~Total Metals & TOC~~	~~8 oz WMGJ~~
~~Grain Size~~	~~8 oz WMGJ~~
~~BEM~~	~~16 oz Amber WMGJ~~
~~Organics~~	~~2 x 8 oz WMGJ~~ (3/4 full except in Reference Area)
Bioassays	~~1 x 5 gallon white bucket~~ _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ DNR 9/24/19
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: REF013-BMI-09242019 Time: 1301 Yellow 5-gallon bucket (4/5) 2.0 gallons SED
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket (4/5) 2.5 gallons SED
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DH Date: 9/24/19
Field Supervisor Initials: DH Date: 9/24/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/26/19

Project Number: 60612698 **Area of Interest:** Arrow Lake

Vessel: RV Tieton **Location ID:** Ref013

Vessel Crew: J. Shaefer, C. Furline, C. Smith, A. Sims **Sampling Crew:** Anders Utter

EPA Observer: Rachel Zajac-Fay

Arrival Time: 0910 **Departure Time:** 1220

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 50° Wind (mph): ~10 mph
Clouds/Precipitation: cloudy + mild precipitation

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 12.6

Easting: 435360.02

Northing: 5466490.13 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:

Easting: _____

Northing: _____

GPS Name: _____ Observations:

Easting: _____

Northing: _____

Sample Identification Information

Primary Sample ID: Ref013-PW-1-092619 Time: 1108

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____

EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? (Yes) No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 9/26/19 Field Supervisor Initials DH Date: 9/26/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/24/19

Project Number: 60612698 **Area of Interest:** Arrow Lake
Vessel: RV Tieton **Location ID:** Ref014-PW-1
Vessel Crew: John S. Chris S. Alan S. **Sampling Crew:** Anders Utter
EPA Observer: Rachel Zajac-Fay
Arrival Time: 1305 **Departure Time:** 1539

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____

Weather Conditions Upon Arrival:
Temp (°F): 58° Wind (mph): _____
Clouds/Precipitation: Scattered clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (Mud (M) w/ sand) *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic Minimal
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 15.7
Easting: 435276.22
Northing: 5466530.84 Water Sample Color: Clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:
Easting: _____
Northing: _____

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: Ref014-PW-1 Time: 1418
Duplicate Sample ID: Ref014-PW-2 Time: 1418
EPA Split Sample ID: _____ Time: _____
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Cross off bottles NOT filled
1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Analyte and Bottle Type: Dissolved metals 125 mL Poly with HNO3
1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Sample Lead Initials AU Date: 9/24/19
Field Supervisor Initials ZJF Date: 9/24/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698
Area of Interest: ARROW LAKE
Vessel: RV CAYUSE
Location ID: REF014
Vessel Crew: MIKE DUFFIELD, MAGGIE McKEON
Sampling Crew: DAVE HOSE, GLEN MEJIA, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GONDEK
Arrival Time: 10:35
Departure Time: ~~GONDEK~~ 2:10

River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50S Wind (mph): 10-15
Clouds/Precipitation: CLOUDY

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) N/A
River Mile: N/A
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
COBBLE BEACH, LOW WATER, CAMPGROUND IN TREE LINE, CAMPERS/VISITORS

Sampling Information

Sampler Used: VANVEEN
# of Sampling Attempts (Accepted vs. Rejected): 12 ATTEMPTS ONLY 3 GOOD
* #1 REJECT; #2 REJECTED; #3 REJECTED; #4 REJECTED; #5 REJECTED; #6 REJECTED

Video Reconnaissance Information

GPS Target Name: REF014
Easting: 435278.01
Northing: 5466533.73
Observations: SAND, WOOD DEBRIS, COBBLES

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DH Date: 9/26/19
Field Supervisor Initials: DH Date: 9/26/19

* #7 GOOD; #8 REJECT; #9 REJECT; #10 REJECT; #11 GOOD, #12 GOOD

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09262019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? (NO) YES
Location ID: REF014
Attempt # 1 Cast Time: 1042
Water Depth (m): 15.2
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF014-1
Estimated Hydrowire angle (degrees):
Easting: 435278.01
Sampler Penetration (inches):
Northing: 5466533.73
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: Incomplete closure	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9/26/19
Field Supervisor Initials DH Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09/26/2019

Project Number: 60612698 **Area of Interest:** Arrow lake

Anchored? NO YES **Location ID:** REF014

Attempt # 2 Cast Time: 1048 Water Depth (m): 15.2

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF014-2 Estimated Hydrowire angle (degrees): _____

Easting: 435275.88 Sampler Penetration (inches): _____

Northing: 5466532.17 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 9.26.19 Field Supervisor Initials DA Date: 9/26/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09262019

Project Number: 60612698
Area of Interest: ~~REF~~ Arrow lake
Anchored? (NO) YES
Location ID: ~~REF015~~ 014
Attempt # 3 Cast Time: 1054
Water Depth (m): 15.2 CBR
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF014-3
Estimated Hydrowire angle (degrees):
Easting: 435277.61
Sampler Penetration (inches):
Northing: 5466528.79
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GA Date: 9.26.19
Field Supervisor Initials DK Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09 26 2019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? NO YES **Location ID:** REF014

Attempt # 4 Cast Time: 1103 Water Depth (m): 16.9

GPS Target Parameters Sheave Counter Depth (m):

Name: REF014-4 Estimated Hydrowire angle (degrees):

Easting: 435265.54 Sampler Penetration (inches):

Northing: 5466536.46 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CA Date: 9-26-19 Field Supervisor Initials DH Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9262019

Project Number: 60612698
Area of Interest: Arrow lake
Anchored? (NO) YES
Location ID: REF014
Attempt # 5 Cast Time: 1111
Water Depth (m): 20.5
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF014-5
Estimated Hydrowire angle (degrees):
Easting: 435246.24
Sampler Penetration (inches):
Northing: 5466521.22
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9.26.19 Field Supervisor Initials DH Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09262019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? NO YES **Location ID:** REF014

Attempt # 6 Cast Time: 1117 6m 1123 **Water Depth (m):** 13.1

GPS Target Parameters **Sheave Counter Depth (m):**

Name: REF014-6-CHEM **Estimated Hydrowire angle (degrees):**

Easting: 435315.04 **Sampler Penetration (inches):**

Northing: 5466529.12 **Sample Interval (0 to X inches bss):**

Sample Type: Physical/Chemical/Bioassay BMI **Cultural Resource Check Completed?** YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool **Added Weights on Sampler (lbs):** 50

Sediment Characteristics

Sediment Type / Texture:

Color:

Stratification:

Density:

Presence/Absence silica glass:

Redox Boundary:

Presence of debris:

Biological Structures:

Shells:

Sheen/Odor:

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CW Date: 9.26.19 Field Supervisor Initials DA Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 09262019

Project Number: 60612698 — **Area of Interest:** Arrow Lake

Anchored? (NO) YES — **Location ID:** REF014

Attempt # 7 — Cast Time: 1134 — Water Depth (m): 13.00

GPS Target Parameters — Sheave Counter Depth (m): _____

Name: REF014-7-CHEM — Estimated Hydrowire angle (degrees): _____

Easting: 435316.04 — Sampler Penetration (inches): _____

Northing: 5466528.68 — Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI — Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool — Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: ~~Silt (organic)~~ organic sandy silt — Redox Boundary: 2cm 5YR 4/2 dark reddish gray

Color: 7.5YR 5/1 gray — Presence of debris: wood

Stratification: massive — Biological Structures: wood

Density: Soft — Shells: none

Presence/Absence silica glass: none — Sheen/Odor: slight sulfuric odor

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ — SEM-AVS Container Collected from Attempt #: 7

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) — Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ — Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: ~~09262019~~ 092619 DW — Time: 1142

SE Duplicate Sample ID: ~~09262019~~ 092619 DW — Time: 1142

EPA SE Split Sample ID: _____ — Time: _____

EPA TX Split Sample ID: _____ — Time: _____

BMI Primary Sample ID: _____ — Time: _____

BMI Duplicate Sample ID: _____ — Time: _____

	Cross off containers NOT filled	
SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	8 oz WMGJ	
~~BEM~~	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*
SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	_____ *gallons*
	Yellow 5-gallon bucket	_____ *gallons*
	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 9.26.19 — Field Supervisor Initials: DA Date: 9/26/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09 26 2019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? NO YES
Location ID: REF014
Attempt # 8 Cast Time: 1201
Water Depth (m): 13.0
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF014-8
Estimated Hydrowire angle (degrees):
Easting: 435316.67
Sampler Penetration (inches):
Northing: 5466529.92
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 9.26.19
Field Supervisor Initials: [illegible] Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09262019

Project Number: 60612698
Area of Interest: Arrow Lake

Anchored? NO YES
Location ID: REF014

Attempt # 9
Cast Time: 1230
Water Depth (m): 12.9

GPS Target Parameters
Sheave Counter Depth (m):

Name: REF014-9
Estimated Hydrowire angle (degrees):

Easting: 435318.45
Sampler Penetration (inches):

Northing: 5466526.34
Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) achieved?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*

BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9-26-19
Field Supervisor Initials LOA Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09262019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? ~~NO~~ YES **Location ID:** REF014

Attempt # 10 Cast Time: 1246 Water Depth (m): 12.9

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF014-10 Estimated Hydrowire angle (degrees): _____

Easting: 4353 17.33 Sampler Penetration (inches): _____

Northing: 54665 25.98 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? rock in jaw	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 9.26.19 Field Supervisor Initials CDA Date: 9/26/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09 26 2019

Project Number: 60612698
Anchored? NO YES
Attempt # 11 Cast Time: 1257

GPS Target Parameters
Name: REF014-11-CHEM
Easting: 435318.13
Northing: 5466529.69

Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: Arrow Lake
Location ID: REF014
Water Depth (m): 12.8
Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	~~YES~~	~~NO~~
2. Overlying water present?	~~YES~~	NO
3. Overlying water excessively turbid?	YES	~~NO~~
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	~~YES~~	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	~~YES~~	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	~~NO~~
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	~~Accepted~~	Rejected

Sample Collection Method: ~~Van Veen~~ Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics
Sediment Type / Texture: Organic sandy silt
Color: 7.5YR 5/1 gray
Stratification: massive
Density: Soft
Presence/Absence silica glass: no
Redox Boundary: 2cm [5YR 4/2 dark reddish gray]
Presence of debris: Wood
Biological Structures: Worm
Shells: none
Sheen/Odor: slight sulfur odor
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information
Attempt #s in Sample if Composite of Multiple Attempts: 7, 11
SEM-AVS Container Collected from Attempt #: 7

Sieving Information:
Sieved with 5 mm Sieve? Yes ~~No~~
Removed by Hand > 5mm? ~~Yes~~ No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: REF014-SE-1-~~09262019~~ 092619 DR
Time: ~~1257~~ 1142 DR 9/27/19

SE Duplicate Sample ID: REF014-SE-2-~~09262019~~ 092619 DR
Time: ~~1257~~ 1142 DR

EPA SE Split Sample ID: Time:
EPA TX Split Sample ID: Time:
BMI Primary Sample ID: — Time: —
BMI Duplicate Sample ID: Time:

Cross off containers NOT filled.

~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	2 gallons
	1 x 2.5 gallon white bucket	5 gallons
~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	8 oz WMGJ	
	2.5 gallon white bucket	____ gallons
	Yellow 5-gallon bucket	____ gallons
	Yellow 5-gallon bucket	____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CW Date: 9.26.19
Field Supervisor Initials DR Date: 9/26/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09.26.2019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? NO YES
Location ID: REP 014
Attempt # 12 Cast Time: 1334
Water Depth (m): 12.8
GPS Target Parameters
Sheave Counter Depth (m):
Name: REP014-12-BM1
Estimated Hydrowire angle (degrees):
Easting: 4353 19.45
Sampler Penetration (inches):
Northing: 54665 27.63
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived? 6"	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: silt. organics
Redox Boundary: 2cm (5YR 4/2 dark reddish gray)
Presence of debris: wood
Color: 7.5YR 5/1 gray
Biological Structures: worms
Stratification: massive
Shells: none
Density: soft
Sheen/Odor: slight sulfur odor
Presence/Absence silica glass: none
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:
Sieving Information:
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: REP014-BMI-1-~~09262019~~ 092619 Time: 1340 Yellow 5-gallon bucket 2 *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket 2 *gallons*
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9.26.19
Field Supervisor Initials DM Date: 9/26/19

Revised 9/21/2019

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698
Area of Interest: ARROW LAKE
Vessel: RV CAYUSE
Location ID: REFOIS
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEEN
Sampling Crew: DAVE HOSE, GLEN MEJIA, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GONDECK
Arrival Time:
Departure Time:
River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:
Weather Conditions Upon Arrival:
Temp (°F): 50s Wind (mph): @ 10 MPH
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: Sampleable Sand (S and mFs) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO Circled by J.Pretare 11-26-19 (JAP)

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) N/A
River Mile: N/A
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
COBBLE BEACH, LOW LAKE LEVEL, CAMPGROUND BACK IN FOREST

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected):
ATTEMPT 1 - REJECTED; ATTEMPT 2 - REJECTED; ATTEMPT 3 - REJECTED

Video Reconnaissance Information

GPS Target Name: REFOIS
Observations: SAND
Easting: 435191.13
Northing: 5466552.97

GPS Target Name:
Observations:
Easting:
Northing:

GPS Target Name:
Observations:
Easting:
Northing:

GPS Target Name:
Observations:
Easting:
Northing:

Sample Lead Initials DH Date: ~~DH~~ 9-24-19
Field Supervisor Initials DH Date: 9-24-19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/24/2019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? (NO) YES **Location ID:** REF015

Attempt # 1 Cast Time: 1349 Water Depth (m): 20.4

GPS Target Parameters Sheave Counter Depth (m):

Name: REF015-1 Estimated Hydrowire angle (degrees):

Easting: 435191.13 Sampler Penetration (inches):

Northing: 5466552.97 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	(YES)	(NO) SIET
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 9/24/19 Field Supervisor Initials: DA Date: 9/24/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 09 24 2019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? (NO) YES **Location ID:** REF015

Attempt # 2 Cast Time: 1358 Water Depth (m): 20.3

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF015-2 Estimated Hydrowire angle (degrees): _____

Easting: 435187.21 Sampler Penetration (inches): _____

Northing: 5466554.49 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	(NO) overpenetrated
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time. _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: DA Date: 9/24/19 Field Supervisor Initials: DA Date: 9/24/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09242019

Project Number: 60612698 **Area of Interest:** ARROW LAKE

Anchored? (NO) YES **Location ID:** REF015

Attempt # 3 Cast Time: 1408 Water Depth (m): 20.5

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF015-3 Estimated Hydrowire angle (degrees): _____

Easting: 435185.58 Sampler Penetration (inches): _____

Northing: 5466556.35 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials DH Date: 9/24/19 Field Supervisor Initials DH Date: 9/24/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09/24/2019

Project Number: 60612698
Area of Interest: Arrow lake
Anchored? NO YES
Location ID: REF015
Attempt # 4 Cast Time: 1415
Water Depth (m): 20.3
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF015-4-BM1
Estimated Hydrowire angle (degrees):
Easting: 435187.17
Sampler Penetration (inches):
Northing: 5466558.67
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Sandy silt
Redox Boundary: 1 cm
Presence of debris: none
Color: 5YR5/1 gray
Biological Structures: moderate woody debris
Stratification: massive
Shells: - bivalve - margaritifera
Density: mostly soft
Sheen/Odor: none. [margaritifera]
Presence/Absence silica glass: none
Other Notes: organic material - 6m

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket DRA 9/24/19 _____ gallons
BMI Primary Sample ID: REF015-BM1-1-09242019 Time: 1428 Yellow 5-gallon bucket 4/3 (2) gallons SED
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket 4/3 (2) gallons SED

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials LDH Date: 9/24/19 Field Supervisor Initials LDA Date: 9/24/19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-24-19

Project Number: 60612698 **Area of Interest:** Arrow Lake
Vessel: Tieton **Location ID:** Ref015-1-PW
Vessel Crew: Chad F, John S., Chris S., Alan S. **Sampling Crew:** Anders Uffer
EPA Observer: Rachel Zajac-Fay
Arrival Time: 1110 **Departure Time:** 1255
River Stage:
Water Surface Elevation (ft): **Weather Conditions Upon Arrival:**
Temp (°F): 58° Wind (mph):
Elevation Source: Clouds/Precipitation: intermittent clouds
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (*Mud (M)* w/ sand) *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic Minimal
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes No
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Water Depth (m): 20.70 M
Easting: 435190.69
Northing: 5466559.24 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:
Easting:
Northing:

GPS Name: Observations:
Easting:
Northing:

Sample Identification Information

Primary Sample ID: ~~Ref015-1-PW~~ AM 9-24-19 Time: 1210
Ref015-PW-1

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:
EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes No See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AM Date: 9/24/19 Field Supervisor Initials DH Date: 9/24/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-26-19

Project Number: 60612698
Area of Interest: LAKE ARROW
Vessel: RV CAYUSE
Location ID: REFOIS
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, GLEN MEDIA, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GRONDEK
Arrival Time: 8:50
Departure Time: 10:30

River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 50s Wind (mph): < 10 MPH
Clouds/Precipitation: OVERCAST + RAIN

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) N/A
River Mile: N/A
Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic: NO

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ROCKY BEACH FROM LOW WATER, CAMPGROUND UP IN TREES,

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected): 3 ATTEMPTS: 1 REJECTED 2 GOOD GRABS
#5: GOOD; #6 REJECTED: #7 GOOD

Video Reconnaissance Information

GPS Target Name: REFOIS
Easting: 435187.17
Northing: 5466559.21
Observations: SANDY BOTTOM, SOME BRANCHES & OTHER ORGANIC DEBRIS

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DH Date: 9/26/19
Field Supervisor Initials: DH Date: 9/26/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09 26 2019

Project Number: 60612698 **Area of Interest:** ARROW LAKE

Anchored? (NO) YES **Location ID:** REF015

Attempt # 5 Cast Time: 0902 Water Depth (m): 20.3

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF015-5-CHEM Estimated Hydrowire angle (degrees): _____

Easting: 435187.17 Sampler Penetration (inches): _____

Northing: 54 106 559.21 Sample Interval (0 to X inches bss): _____

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Circled 1-17-20 VAP

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: silt (organics) 2cm oxidized layer depleted below

Color: 7.5YR5/1 gray

Stratification: massive

Density: Soft

Presence/Absence silica glass: none

Redox Boundary: 2.0 cm dark reddish gray 5YR4/2

Presence of debris: branches

Biological Structures: (20% organics)

Shells:

Sheen/Odor: slight sulfide

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) Branches No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: REF015-SE-1-~~09262019~~ 092619 DW 9/27/19 Time: 0920

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	~~16 oz Amber WMGJ~~	
Organics	~~2 x 8 oz~~ WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	1 x 5 gallon white bucket	_____ gallons
	1 x 2.5 gallon white bucket	_____ gallons

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GM Date: 9-26-19 Field Supervisor Initials DH Date: 9/26/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09262019

Project Number: 60612698 **Area of Interest:** ARROW LAKE

Anchored? NO YES **Location ID:** REF015

Attempt # 6 Cast Time: 0932 Water Depth (m): _____

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF015-6 Estimated Hydrowire angle (degrees): _____

Easting: 435187.24 Sampler Penetration (inches): _____

Northing: 5466560.25 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is: large log in jaws	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: _____

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____	Time: _____		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials MW Date: 9.26.19 Field Supervisor Initials DH Date: 9/26/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09262019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? (NO) YES **Location ID:** REF015

Attempt # 7 Cast Time: 0939 Water Depth (m): 20.9

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF015-7-CHEM Estimated Hydrowire angle (degrees): _____

Easting: 435187.14 Sampler Penetration (inches): _____

Northing: 5466559.29 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/(Chemical)/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Circled 1-17-20 JAP

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: silt (organics) Redox Boundary: 2 cm

Presence of debris: braver

Biological Structures: organics

Color: 7.5YR5/1 Gray Stratification: macsmc Shells: mussel

Density: Soft Sheen/Odor: slight sulfuric odor

Presence/Absence silica glass: none Other Notes:

Dark reddish gray 5YR 4/2 silt

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 5, 7 SEM-AVS Container Collected from Attempt #: 5

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Braver

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: REF015-SE-1-~~09262019~~ 092619 DF 9/27/19	Time: 0920	~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	***Cross off containers NOT filled***
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	5.2 gallons
			1 x 2.5 gallon white bucket	2 gallons
SE Duplicate Sample ID: _____	Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____	Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: REF015-SE-3-09262019	Time: 0920		2.5 gallon white bucket	2 gallons
BMI Primary Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID: _____	Time: _____		Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: JM Date: 9-26-19 Field Supervisor Initials: DH Date: 9/26/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-19

Project Number: 60612698
Area of Interest: LAKE ROOSEVELT

Vessel: RV CAYUSE
Location ID: REF016

Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, GLEN MEJIA, MARK HALE

C.R. Observer: MARK HALE
EPA Observer: JOHN GONDECK

Arrival Time: 11:17
Departure Time: 12:45

River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): LOW 60s Wind (mph): < 10 MPH
Clouds/Precipitation: PARTLY CLOUDY

Site Information

Target Sediment Facies: Sampleable Sand (S and mPs) Mixed Coarse (mCs) Mud (M) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? YES NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) N/A

River Mile: N/A
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: NONE

Surface Vegetation Present: Yes No
Was Vegetation Removed: Yes No

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
ROCK OUTCROPS + ROCKY BEACH ON LOW WATER LINE, STREAM COMING IN

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected): 3 ATTEMPTS
1ST ATTEMPT GOOD; #2 GOOD; #3 GOOD
ALL 3 GOOD GRABS

Video Reconnaissance Information

GPS Target Name: REF016
Easting: 419672.15
Northing: 5492198.62
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DH Date: 9/25/19
Field Supervisor Initials: DH Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698
Area of Interest: ARROW LAKE
Anchored? (NO) YES
Location ID: REF016
Attempt # 1 Cast Time: 1130
Water Depth (m): 19.2
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF016-1-CHEM
Estimated Hydrowire angle (degrees):
Easting: 418672.15
Sampler Penetration (inches):
Northing: 5492198.62
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)	Circled 1-7-20 JAP
2. Overlying water present?	(YES)	NO	
3. Overlying water excessively turbid?	YES	(NO)	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO	
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)	
7. Sample contains ≥ 20 percent fines (i e. ≤ 2 mm)?	(YES)	NO	
8. Sample is:	(Accepted)	Rejected	

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture: Sandy silt
Minor organics
brown 4cm
gray
Redox Boundary: 0.5cm 5YR4/3
Color: gray 5YR5/1
Presence of debris: none
Biological Structures: none
Stratification: massive
Shells: none
Density: Soft
Sheen/Odor: no sheen slight sulfur odor
Presence/Absence silica glass: none
Other Notes: ~~BTT~~

brown silty 4cm
Sand Sandy silt
medium grain
coarse
Subangular

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #: 1

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: REF016-SE-1-09252019 Time: 1140

Cross off containers NOT filled

~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	~~16 oz~~ Amber WMGJ	
~~Organics~~	~~2~~ x 8 oz WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~	~~1~~ x 5 gallon white bucket	_____ *gallons*
	~~1~~ x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 9/25/19
Field Supervisor Initials: KDK Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? (NO) YES
Location ID: REF016
Attempt # 2 Cast Time: 1202
Water Depth (m): 19.3
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF016-2-CHEM
Estimated Hydrowire angle (degrees):
Easting: 418674.60
Sampler Penetration (inches):
Northing: 5492198.46
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)	Circled 1-17-20 VAP
2. Overlying water present?	(YES)	NO	
3. Overlying water excessively turbid?	YES	(NO)	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO	
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)	
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO	
8. Sample is:	**Accepted**	Rejected	

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Sandy silt. brown top / gray watery
brown ↕ 4cm
gray below
Redox Boundary: 0.5cm brown 5YR 4/3
Presence of debris: coarse none
Color: gray 5YR 5/1
Biological Structures: Roots Woody debris
Stratification: massive
Shells: mussel.
Density: soft
Sheen/Odor: no sheen / slight sulfur
Presence/Absence silica glass: none
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 1, 2
SEM-AVS Container Collected from Attempt #: 1
Sieving Information:
Sieved with 5 mm Sieve? Yes (No)
Removed by Hand > 5mm? (Yes) No
woody debris
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: REF016-SE-1-09252019 Time: 1140

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ ~~(no headspace)~~		
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		
Bioassays	1 x 5 gallon white bucket	3	gallons
	1 x 2.5 gallon white bucket	2 ~~3/4~~	gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)		sediment bucket volumes
Total Metals & TOC	8 oz WMGJ		
Grain Size	8 oz WMGJ		
BEM	16 oz Amber WMGJ		
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)		

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket ____ gallons
BMI Primary Sample ID: — Time: — Yellow 5-gallon bucket ____ gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: M Date: 9/25/19
Field Supervisor Initials: KOH Date: 9/25/19

Revised 9/21/2019

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? (NO) YES
Location ID: REF016
Attempt # 3 Cast Time: 1243
Water Depth (m): 19.2
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF016-3-BMI
Estimated Hydrowire angle (degrees):
Easting: 419674.13
Sampler Penetration (inches):
Northing: 5492200.98
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	**Accepted**	Rejected

Circled 1-7-20 JAP

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: SANDY SILT brown top 4cm gray below
Redox Boundary: 0.5
Color: gray 5YR5/1 Brown 5YR 4/3 coarse
Presence of debris: woody branches
Biological Structures: some woody material
Stratification: massive
Shells: none
Density: soft
Sheen/Odor: no sheen / slight sulfur odor
Presence/Absence silica glass: none
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:
Sieving Information:
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 1302 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: REF016-BMI-1-09252019 Time: 1140 Yellow 5-gallon bucket #9 2 *gallons* Sed
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket #10 2 *gallons* Sed
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GN Date: 9/25/19
Field Supervisor Initials DH Date: 9/25/19

Revised 9/21/2019

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/19

Project Number: 60612698 **Area of Interest:** Arrow Lake (Upper)

Vessel: Tieton **Location ID:** Ref016

Vessel Crew: Chad F., John S., Alan S., Chris S. **Sampling Crew:** Anders Utter

EPA Observer: Rachel Zajac-Fay

Arrival Time: 0840 **Departure Time:** 1120

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 54° Wind (mph): 0 mph
Clouds/Precipitation: clear skies

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (Mud (M)) *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Water Depth (m): 18.60

Easting: 418672.76

Northing: 5492198.33 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: Ref016-PW-1-092519 Time: 1028

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Time: 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 9-25-19 Field Supervisor Initials ZOA Date: 9/25/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9.25.19

Project Number: 60612698
Area of Interest: ARROW LAKE
Vessel: CU CAYUSE
Location ID: REF017
Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE GLEN MEJIA, MARK HALE
C.R. Observer: MARK HALE
EPA Observer: JOHN GONDEK
Arrival Time: 1:20
Departure Time: 4:05

River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 60'S Wind (mph): L LOMPAH
Clouds/Precipitation: PARTLY ~~CLOUDY~~ MH PARTLY CLOUDY

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) N/A

River Mile:
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
COBBLE BEACH, LOW LAKE LEVEL, STREAM IS NOW NORTH OF REF POINT

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected):
#1-REJECTED; #2 GOOD; #3 REJECTED; #4 GOOD; #5 GOOD

Video Reconnaissance Information

GPS Target Name: REF017
Easting: 418651.99
Northing: 5492298.13
Observations: COBBLES + SAND, LOG TOO

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials DH Date: 9/25/19
Field Supervisor Initials DH Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09 25 2019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? NO YES
Location ID: REF017
Attempt # 1 Cast Time: 1340
Water Depth (m): 21.9
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF017-1
Estimated Hydrowire angle (degrees):
Easting: 418651.99
Sampler Penetration (inches):
Northing: 5492098.13
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? brown in jar	YES	NO
8. Sample is:	Accepted	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 125

Sediment Characteristics

Sediment Type / Texture:
Redox Boundary:
Presence of debris:
Color:
Biological Structures:
Stratification:
Shells:
Density:
Sheen/Odor:
Presence/Absence silica glass:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	Time:	8 oz WMGJ	
EPA TX Split Sample ID:	Time:	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:	Time:	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:	Time:	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 9/25/19
Field Supervisor Initials: [illegible] Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698 **Area of Interest:** Arrow lake

Anchored? (NO) YES **Location ID:** ~~REF~~ 017

Attempt # 2 Cast Time: 1352 Water Depth (m): 21.9

GPS Target Parameters Sheave Counter Depth (m): _____

Name: REF017-2-CHEM Estimated Hydrowire angle (degrees): _____

Easting: 418651 61 Sampler Penetration (inches): _____

Northing: 5492299.04 Sample Interval (0 to X inches bss): _____

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	~~NO~~
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	~~YES~~	NO
8. Sample is:	(Accepted)	Rejected

Circled 1-17-20 day

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Silt ~~on top~~ Brown top 2cm Silt minor organics soft

Color: ~~dark reddish~~ Brown – 5YR 4/2 dk reddish gray gray – 5YR 6/1

Stratification: massive (no beddings) below gray silt soft minor organics plastic

Density: soft

Presence/Absence silica glass: none light gray lens

Redox Boundary: none.

Presence of debris: minor organics

Biological Structures: none

Shells: mussel shell

Sheen/Odor: no sheen / none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: _____ SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): _____ Total Mass of Sediment (kg): _____

Mass of Sediment 5 mm to 3 inches (gravel) (kg): _____

Mass of Sediment > 3 inches (cobble) (kg): _____

Sample Identification Information

SE Primary Sample ID: ~~REF016-SE-1-09252019~~ REF017-SE-1-09252019 Time: 1405

Cross off containers NOT filled

SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~	
~~Grain Size~~	~~8 oz WMGJ~~	
~~BEM~~	~~16 oz Amber WMGJ~~	
~~Organics~~	~~2 x 8 oz WMGJ~~ (3/4 full except in Reference Area)	
~~Bioassays~~	~~1 x 5 gallon~~ white bucket	_____ *gallons*
	1 x 2.5 gallon white bucket	_____ *gallons*

SE Duplicate Sample ID: _____ Time: _____

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	_____	Time: _____	8 oz WMGJ	
EPA TX Split Sample ID:	_____	Time: _____	2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	~~_____~~	Time: ~~_____~~	Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	_____	Time: _____	Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials _____ Date: _____ Field Supervisor Initials LOA Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 09252019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? (NO) YES **Location ID:** REF017

Attempt # 3 Cast Time: 1417 Water Depth (m): 22.

GPS Target Parameters Sheave Counter Depth (m):

Name: REF017-3 Estimated Hydrowire angle (degrees):

Easting: 418650.29 Sampler Penetration (inches):

Northing: 5492297.97 Sample Interval (0 to X inches bss):

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	(YES)	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? rock jaws	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ *gallons*
		1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID: Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: Time:		8 oz WMGJ	
EPA TX Split Sample ID: Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID: Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID: Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: GM Date: 9/25/19 Field Supervisor Initials: DP Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? (NO) YES **Location ID:** REF017

Attempt # 4 Cast Time: 1423 **Water Depth (m):** 21.9

GPS Target Parameters **Sheave Counter Depth (m):**

Name: REF017-4-CHEM **Estimated Hydrowire angle (degrees):**

Easting: 418652.44 **Sampler Penetration (inches):**

Northing: 5492298.86 **Sample Interval (0 to X inches bss):**

Sample Type: (Physical/Chemical/Bioassay) BMI **Cultural Resource Check Completed?** (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Circled 1-17-20 JAP

Sample Collection Method: (Van Veen) Hamon Hand Tool **Added Weights on Sampler (lbs):** 50

Sediment Characteristics

Sediment Type / Texture: Silt - 5YR 4/2 dark reddish brown 2cm TOP

Color: Silt - 5YR 6/1 gray Below

Stratification: massive

Density: soft

Presence/Absence silica glass: None

Redox Boundary: none

Presence of debris: minor organics

Biological Structures: none

Shells: none

Sheen/Odor: none

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 2, 4 SEM-AVS Container Collected from Attempt #: 2

Sieving Information:

Sieved with 5 mm Sieve? Yes (No) Removed by Hand > 5mm? (Yes) No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: ~~REF017-4~~ on ~~REF017-SE-1-20190~~ on REF017-SE-1-09252019 Time: 1405

Cross off containers NOT filled

~~SEM-AVS~~	~~8 oz WMGJ (no headspace)~~	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	5-2 gallons
	1 x 2.5 gallon white bucket	2 gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ

EPA TX Split Sample ID: Time: 2 5 gallon white bucket ____ gallons

BMI Primary Sample ID: Time: Yellow 5-gallon bucket ____ gallons

BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket ____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CM Date: 9-25-19 Field Supervisor Initials DA Date: 9/05/19 19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698
Area of Interest: Arrow lake
Anchored? (NO) YES
Location ID: REF017
Attempt # 5 Cast Time: 1459
Water Depth (m): 22
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF017-5-BM1
Estimated Hydrowire angle (degrees):
Easting: 418651.98
Sampler Penetration (inches):
Northing: 5492299.45
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay (BMI)
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)	Circled 1-17-20 JAP
2. Overlying water present?	(YES)	NO	
3. Overlying water excessively turbid?	YES	(NO)	
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO	
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO	
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)	
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO	
8. Sample is:	(Accepted)	Rejected	

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs): 50

Sediment Characteristics

Sediment Type / Texture: Top 2cm - silt 5YR4/2 dark reddish brown
Redox Boundary: None
Color: silt 5YR6/1 gray
Presence of debris: organics
Biological Structures: none
Stratification: massive
Shells: none
Density: Soft
Sheen/Odor: none
Presence/Absence silica glass: None
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: — Time: —	SEM-AVS	8 oz WMGJ (no headspace)	
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
	Bioassays	1 x 5 gallon white bucket	_____ gallons
		1 x 2.5 gallon white bucket	_____ gallons
SE Duplicate Sample ID: _____ Time: _____	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
	Total Metals & TOC	8 oz WMGJ	
	Grain Size	8 oz WMGJ	
	BEM	16 oz Amber WMGJ	
	Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID: _____ Time: _____		8 oz WMGJ	
EPA TX Split Sample ID: _____ Time: _____		2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID: REF017-BM1-1-09252019 Time: 1505		Yellow 5-gallon bucket	2 gallons Set
BMI Duplicate Sample ID: _____ Time: _____		Yellow 5-gallon bucket	2 gallons Set

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: CM Date: 9-25-19
Field Supervisor Initials: DH Date: 9/25/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 9/25/19

Project Number: 60612698 **Area of Interest:** Arrow Lake (upper)
Vessel: RV Tieton **Location ID:** Ref017
Vessel Crew: John S., Chad F., Chris S., Alan S. **Sampling Crew:** Anders Utter
EPA Observer: Rachel Zajac-Fay
Arrival Time: 1135 **Departure Time:** 1315

River Stage:
Water Surface Elevation (ft): _____
Elevation Source: _____
Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Weather Conditions Upon Arrival:
Temp (°F): 55° Wind (mph): 0 mph
Clouds/Precipitation: partially cloudy

Site Information

Target Sediment Facies: *Sampleable Sand (S and mFs)* *Mixed Coarse (mCs)* (*Mud (M)*) *Coarse (mBs, B, C, and G)*
Verified sediment bed composition is consistent with target strata? (YES) NO
Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)
River Mile: _____ Water Surface: (Calm) (Small Waves) (Choppy)
Boat Traffic None
Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)
Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: _____ Water Depth (m): 24.60 m
Easting: 418634.20
Northing: 5492296.54 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: _____ Observations:
Easting: _____
Northing: _____

GPS Name: _____ Observations:
Easting: _____
Northing: _____

Sample Identification Information

Primary Sample ID: Ref017-PW-1-092519 Time: 1220

Cross off bottles NOT filled

1. Dissolved Metals	Capsule Filter - 125 mL Poly with HNO3
2. DOC	Disc Filter - 125 mL Amber with H2SO4
3. TOC	125 mL Amber with H2SO4
~~4. Sulfide~~	~~250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride	125 mL Poly Unpreserved

Duplicate Sample ID: _____ Time: _____ Analyte and Bottle Type: _____
EPA Split Sample ID: _____ Time: _____ 1B. Dissolved Metals With Same Capsule Filter - 125 mL Poly with HNO3
Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 9/25/19 Field Supervisor Initials [illegible] Date: 9/25/19

Sample Location Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9-25-2019

Project Number: 60612698
Area of Interest: ARROW LAKE

Vessel: RV CATUSE
Location ID: REF018

Vessel Crew: MIKE DUFFIELD, MAGGIE MCKEON
Sampling Crew: DAVE HOSE, GLEN MEDIA, MARK HALE

C.R. Observer: MARK HALE
EPA Observer: JOHN GONDEK

Arrival Time: 9:30 AM
Departure Time: 11:05

River Stage:
Water Surface Elev. (ft): N/A
Water Surface Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): Low 50's Wind (mph): < 10MPH
Clouds/Precipitation: CLEAR

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) Mixed Coarse (mCs) (Mud (M)) Coarse (mBs, B, C,and G)

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored)
River Current: (Swift) (Eddie) (Calm) (Ripple) N/A

River Mile: N/A
Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic: NONE

Surface Vegetation Present: Yes (No)
Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):
MIDDLE OF LAKE, ROCKY SHORELINE TO WEST (LOW WATER) NO DEVELOPMENT, STREAM

Sampling Information

Sampler Used: VAN VEEN
# of Sampling Attempts (Accepted vs. Rejected): 8 ATTEMPTS, 5 REJECTED 3 GOOD

* #1: REJECTED, JUST H_2O; #2 REJECTED; #3 REJECT; #4 GOOD; #5 REJECTED; #6 REJECTED; #7 GOOD

Video Reconnaissance Information

GPS Target Name: REF018
Easting: 418573.18
Northing: 5492381.91
Observations: SAND w/ FEW ROCKS, COBBLES + ORGANIC DEBRIS (STICKS)

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

GPS Target Name:
Easting:
Northing:
Observations:

Sample Lead Initials: DA Date: 9/25/19
Field Supervisor Initials: DA Date: 9/25/19

* #8 GOOD;

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of ___
Date 09252019

Project Number: 60612698 **Area of Interest:** ARROW LAKE

Anchored? (NO) YES **Location ID:** REF018

Attempt # 1 Cast Time: 0850 Water Depth (m): 19.7

GPS Target Parameters Sheave Counter Depth (m): ___

Name: REF018-1 Estimated Hydrowire angle (degrees): ___

Easting: 418573.18 Sampler Penetration (inches): ___

Northing: 5492381.91 Sample Interval (0 to X inches bss): ___

Sample Type: (Physical/Chemical/Bioassay) BMI Cultural Resource Check Completed? YES (NO)

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived? NOT achieved	**YES**	(NO)
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is:	**Accepted**	(Rejected)

Sample Collection Method: (Van Veen) Harmon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ___ SEM-AVS Container Collected from Attempt #: ___

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): ___ Total Mass of Sediment (kg): ___

Mass of Sediment 5 mm to 3 inches (gravel) (kg): ___

Mass of Sediment > 3 inches (cobble) (kg): ___

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: ___ Time: ___

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	___ *gallons*
	1 x 2.5 gallon white bucket	___ *gallons*

SE Duplicate Sample ID: ___ Time: ___

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:	___	Time: ___	8 oz WMGJ	
EPA TX Split Sample ID:	___	Time: ___	2.5 gallon white bucket	___ *gallons*
BMI Primary Sample ID:	___	Time: ___	Yellow 5-gallon bucket	___ *gallons*
BMI Duplicate Sample ID:	___	Time: ___	Yellow 5-gallon bucket	___ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials [illegible] Date: 9-25-19 Field Supervisor Initials: [illegible] Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Date 9/25/2019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? NO YES **Location ID:** REF018

Attempt # 2 Cast Time: 0859 Water Depth (m): 16.6

GPS Target Parameters Sheave Counter Depth (m): ___

Name: REF018-2 Estimated Hydrowire angle (degrees): ___

Easting: 418590.13 Sampler Penetration (inches): ___

Northing: 5492403.91 Sample Interval (0 to X inches bss): ___

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? Wood in jaws	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ___ SEM-AVS Container Collected from Attempt #: ___

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): ___ Total Mass of Sediment (kg): ___

Mass of Sediment 5 mm to 3 inches (gravel) (kg): ___

Mass of Sediment > 3 inches (cobble) (kg): ___

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: ___ Time: ___

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket ___ *gallons*
	1 x 2.5 gallon white bucket ___ *gallons*

SE Duplicate Sample ID: ___ Time: ___

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: ___	Time: ___	8 oz WMGJ	
EPA TX Split Sample ID: ___	Time: ___	2.5 gallon white bucket	___ *gallons*
BMI Primary Sample ID: ___	Time: ___	Yellow 5-gallon bucket	___ *gallons*
BMI Duplicate Sample ID: ___	Time: ___	Yellow 5-gallon bucket	___ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ___ Date: 9-25-19 Field Supervisor Initials: ___ Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? ~~NO~~ YES **Location ID:** REF018

Attempt # 3 Cast Time: ~~0904~~ 0906 Water Depth (m): 15.2

GPS Target Parameters Sheave Counter Depth (m):

Name: REF018-3 Estimated Hydrowire angle (degrees):

Easting: 416591.88 Sampler Penetration (inches):

Northing: ~~5492400.10~~ 5492400.10 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: branches in jaw	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

				Cross off containers NOT filled	
SE Primary Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
			Bioassays	1 x 5 gallon white bucket	_____ *gallons*
				1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:		Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
			Total Metals & TOC	8 oz WMGJ	
			Grain Size	8 oz WMGJ	
			BEM	16 oz Amber WMGJ	
			Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:		Time:		8 oz WMGJ	
EPA TX Split Sample ID:		Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:		Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: Date: 9-25-19 Field Supervisor Initials: Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? (NO) YES
Location ID: REF018
Attempt # 4 Cast Time: 0913
Water Depth (m): 22.9
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF018-4-CHEM
Estimated Hydrowire angle (degrees):
Easting: 418593.95
Sampler Penetration (inches):
Northing: 5492358.48
Sample Interval (0 to X inches bss):
Sample Type: (Physical/Chemical/Bioassay) BMI
Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	(Accepted)	Rejected

Circled 1-17-20 JAP

Sample Collection Method: (Van Veen) Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: ~~organic~~, sand silt sand-medium size grain 40%, 98% fines
Redox Boundary: 0.5 cm
Presence of debris: branches - woody
Color: dark gray 5YR 4/1
Biological Structures: none
Stratification: none - massive
Shells:
Density: soft
Sheen/Odor: ~~none~~ sulfuric order organic
Presence/Absence silica glass: none
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:
No Sampler Homogenized

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ gallons
	1 x 2.5 gallon white bucket _____ gallons

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ gallons
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ gallons
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ gallons
Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials CV Date: 9-25-19
Field Supervisor Initials ~~9/25/19~~ DK Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698
Anchored? NO YES
Attempt # 5 Cast Time: 0934

GPS Target Parameters
Name: REF018-5
Easting: 418601.41
Northing: 5492360.04

Sample Type: Physical/Chemical/Bioassay BMI

Area of Interest: Arrow Lake
Location ID: REF018
Water Depth (m): 24.9
Sheave Counter Depth (m):
Estimated Hydrowire angle (degrees):
Sampler Penetration (inches):
Sample Interval (0 to X inches bss):
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)? Empty	**YES**	NO
8. Sample is:	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture:
Color:
Stratification:
Density:
Presence/Absence silica glass:
Redox Boundary:
Presence of debris:
Biological Structures:
Shells:
Sheen/Odor:
Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts:
SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)
Bioassays	1 x 5 gallon white bucket _____ *gallons*
	1 x 2.5 gallon white bucket _____ *gallons*

SE Duplicate Sample ID: Time:

SEM-AVS	8 oz WMGJ (no headspace)
Total Metals & TOC	8 oz WMGJ
Grain Size	8 oz WMGJ
BEM	16 oz Amber WMGJ
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)

sediment bucket volumes

EPA SE Split Sample ID: Time: 8 oz WMGJ
EPA TX Split Sample ID: Time: 2.5 gallon white bucket _____ *gallons*
BMI Primary Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*
BMI Duplicate Sample ID: Time: Yellow 5-gallon bucket _____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials GN Date: 9-25-19 Field Supervisor Initials DA Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698 **Area of Interest:** Arrow lake

Anchored? NO YES **Location ID:** REF018

Attempt # 6 Cast Time: 0947 Water Depth (m): 17.3

GPS Target Parameters Sheave Counter Depth (m):

Name: REF018-6 Estimated Hydrowire angle (degrees):

Easting: 418591.97 Sampler Penetration (inches):

Northing: 5492378.52 Sample Interval (0 to X inches bss):

Sample Type: Physical/Chemical/Bioassay BMI Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	**NO**
2. Overlying water present?	**YES**	NO
3. Overlying water excessively turbid?	YES	**NO**
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	**YES**	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	**YES**	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	**NO**
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	**YES**	NO
8. Sample is: not enough material	**Accepted**	Rejected

Sample Collection Method: Van Veen Hamon Hand Tool Added Weights on Sampler (lbs):

Sediment Characteristics

Sediment Type / Texture: Redox Boundary:

Presence of debris:

Color: Biological Structures:

Stratification: Shells:

Density: Sheen/Odor:

Presence/Absence silica glass: Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: SEM-AVS Container Collected from Attempt #:

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): Total Mass of Sediment (kg):

Mass of Sediment 5 mm to 3 inches (gravel) (kg):

Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

			Cross off containers NOT filled	
SE Primary Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
		Bioassays	1 x 5 gallon white bucket	_____ *gallons*
			1 x 2.5 gallon white bucket	_____ *gallons*
SE Duplicate Sample ID:	Time:	SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
		Total Metals & TOC	8 oz WMGJ	
		Grain Size	8 oz WMGJ	
		BEM	16 oz Amber WMGJ	
		Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
EPA SE Split Sample ID:	Time:		8 oz WMGJ	
EPA TX Split Sample ID:	Time:		2.5 gallon white bucket	_____ *gallons*
BMI Primary Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*
BMI Duplicate Sample ID:	Time:		Yellow 5-gallon bucket	_____ *gallons*

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 9-25-19 Field Supervisor Initials: DH Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1
Date 09252019

Project Number: 60612698
Area of Interest: Arrow Lake
Anchored? NO YES
Location ID: REF018
Attempt # 7
Cast Time: 0957
Water Depth (m): 28.4
GPS Target Parameters
Sheave Counter Depth (m):
Name: REF018-7-CHEM
Estimated Hydrowire angle (degrees):
Easting: 418561.65
Sampler Penetration (inches):
Northing: 5492366.44
Sample Interval (0 to X inches bss):
Sample Type: Physical/Chemical/Bioassay BMI
Cultural Resource Check Completed? YES NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	NO
2. Overlying water present?	YES	NO
3. Overlying water excessively turbid?	YES	NO
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	YES	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	YES	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	NO
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	YES	NO
8. Sample is:	Accepted	Rejected

Circled 1-17-20 JAP

Sample Collection Method: Van Veen Hamon Hand Tool
Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sandy Silt
not as much organic as #4
layer of fine sand at surface
Color: ~~brown~~ gray 5YR4/1
Stratification: massive
Density: soft
Presence/Absence silica glass: none
reddish brown 0.5 cm
lg gray 1 cm
gray
Redox Boundary: ~~none~~ 0.5 cm
Presence of debris: woody
Biological Structures: none
Shells: none
Sheen/Odor: none slight sulfur odor
Other Notes: reducing environment
reddish brown 5YR5/3
5YR7/1 (silt) 1cm
layer

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: 4,7
SEM-AVS Container Collected from Attempt #: 7
Sieving Information:
Sieved with 5 mm Sieve? Yes No
Removed by Hand > 5mm? Yes No
woody debris
Mass of Sediment < 5 mm (kg):
Total Mass of Sediment (kg):
Mass of Sediment 5 mm to 3 inches (gravel) (kg):
Mass of Sediment > 3 inches (cobble) (kg):

Sample Identification Information

SE Primary Sample ID: REF018-SE-1-09252019
Time: 1007
Filled AM samples

SEM-AVS	8 oz WMGJ (no headspace)	
~~Total Metals & TOC~~	~~8 oz WMGJ~~ SET	
~~Grain Size~~	~~8 oz WMGJ~~ SET	
~~BEM~~	~~16 oz Amber WMGJ~~ SET	
~~Organics~~	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
~~Bioassays~~ SET	~~1 x 5 gallon white bucket~~	4.7 gallons
	1 x 2.5 gallon white bucket	~~2.5~~ 2.0 gallons

Cross off containers NOT filled

SE Duplicate Sample ID:
Time:

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID:		Time:	8 oz WMGJ	
EPA TX Split Sample ID:		Time:	2.5 gallon white bucket	_____ gallons
BMI Primary Sample ID:		Time:	Yellow 5-gallon bucket	_____ gallons
BMI Duplicate Sample ID:		Time:	Yellow 5-gallon bucket	_____ gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: [illegible] Date: 9-25-19
Field Supervisor Initials: DH Date: 9/25/19

Mechanical Grab Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of ___
Date 09252019

Project Number: 60612698 **Area of Interest:** Arrow Lake

Anchored? (NO) YES **Location ID:** REF018

Attempt # 3 Cast Time: 1048 Water Depth (m): 29

GPS Target Parameters Sheave Counter Depth (m): ___

Name: REF018-E-BM1 Estimated Hydrowire angle (degrees): ___

Easting: 418561.42 Sampler Penetration (inches): ___

Northing: 5492365.73 Sample Interval (0 to X inches bss): ___

Sample Type: Physical/Chemical/Bioassay (BMI) Cultural Resource Check Completed? (YES) NO

Sample Acceptance Criteria

1. Sampler overfilled or sediment pressed against top of sampler?	YES	(NO)
2. Overlying water present?	(YES)	NO
3. Overlying water excessively turbid?	YES	(NO)
4. Sediment surface relatively undisturbed, relatively flat, no sign of channeling or sample washout?	(YES)	NO
5. Minimum sampler penetration depth (4 to 6 inches) acheived?	(YES)	NO
6. Any sign of sediment loss (incomplete closure, penetration at angle, tilting upon retrieval)?	YES	(NO)
7. Sample contains ≥ 20 percent fines (i.e. ≤ 2 mm)?	(YES)	NO
8. Sample is:	Accepted	Rejected

circled 1-7-20

Sample Collection Method: (Van Veen) Hamon Hand Tool Added Weights on Sampler (lbs): 150

Sediment Characteristics

Sediment Type / Texture: Sandy silt Moderate

Color: gray sandy silt

Stratification: massive

Density: soft

Presence/Absence silica glass: none

Redox Boundary: 0.25 cm / ~~0.5~~ 3cm

Presence of debris: minor organic brown sandy silt

Biological Structures: none

Shells: none

Sheen/Odor: No Sheen

Other Notes:

Physical/Chemical/Bioassay Samples Only - Sieve and Composite Information

Attempt #s in Sample if Composite of Multiple Attempts: ___ SEM-AVS Container Collected from Attempt #: ___

Sieving Information:

Sieved with 5 mm Sieve? Yes No Removed by Hand > 5mm? Yes No

Mass of Sediment < 5 mm (kg): ___ Total Mass of Sediment (kg): ___

Mass of Sediment 5 mm to 3 inches (gravel) (kg): ___

Mass of Sediment > 3 inches (cobble) (kg): ___

Sample Identification Information

Cross off containers NOT filled

SE Primary Sample ID: ~~___~~ Time: ___

SEM-AVS	8 oz WMGJ (no headspace)	
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	
Bioassays	1 x 5 gallon white bucket	___ gallons
	1 x 2.5 gallon white bucket	___ gallons

SE Duplicate Sample ID: ___ Time: ___

SEM-AVS	8 oz WMGJ (no headspace)	*sediment bucket volumes*
Total Metals & TOC	8 oz WMGJ	
Grain Size	8 oz WMGJ	
BEM	16 oz Amber WMGJ	
Organics	2 x 8 oz WMGJ (3/4 full except in Reference Area)	

EPA SE Split Sample ID: ___ Time: ___ 8 oz WMGJ

EPA TX Split Sample ID: ___ Time: ___ 2 5 gallon white bucket ___ gallons

BMI Primary Sample ID: REF018-BM1-1-09252019 Time: 1100 Yellow 5-gallon bucket 2 gallons sed

BMI Duplicate Sample ID: ___ Time: ___ Yellow 5-gallon bucket 2 gallons

Equipment Blank Collected? Yes No See *Rinsate Sample Collection Form*

Sample Lead Initials: ___ Date: 9-25-19 Field Supervisor Initials: ___ Date: 9/25/19

Porewater Location and Chemistry Collection Form
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Page 1 of 1

Date 9/25/19

Project Number: 60612698 **Area of Interest:** Arrow Lake (upper)

Vessel: RV Tieton **Location ID:** Ref018

Vessel Crew: John S., Chad F., Chris S., Alan S. **Sampling Crew:** Anders Utter

EPA Observer: Rachel Zajac-Fay

Arrival Time: 1320 **Departure Time:** 1610

River Stage:
Water Surface Elevation (ft):
Elevation Source:

Weather Conditions Upon Arrival:
Temp (°F): 60° Wind (mph): 0 mph
Clouds/Precipitation: Mixed clouds

Trident Sampler Type: Push Pole Vibraframe (Driveframe)

Site Information

Target Sediment Facies: (Sampleable Sand (S and mFs)) *Mixed Coarse (mCs)* *Mud (M)* *Coarse (mBs, B, C, and G)*

Verified sediment bed composition is consistent with target strata? (YES) NO

Boat Position: (Powered) (Anchored) River Current: (Swift) (Eddie) (Calm) (Ripple)

River Mile: Water Surface: (Calm) (Small Waves) (Choppy)

Boat Traffic None

Surface Vegetation Present: Yes (No) Was Vegetation Removed: Yes (No)

Notable shore surface features (rock outcrops, streams, wetlands, oxbows, outfalls, roads, houses, campsites, construction, etc.):

GPS Target Parameters and Water Depth

GPS Name: Water Depth (m): 24.6 m

Easting: 418597.49

Northing: 5492360.11 Water Sample Color: clear

Additional Video Reconnaissance Information

GPS Name: Observations:

Easting:

Northing:

GPS Name: Observations:

Easting:

Northing:

Sample Identification Information

Primary Sample ID: Ref018-PW-1-092519 Time: 1442

Cross off bottles NOT filled

1. Dissolved Metals — Capsule Filter - 125 mL Poly with HNO3
2. DOC — Disc Filter - 125 mL Amber with H2SO4
3. TOC — 125 mL Amber with H2SO4
~~4. Sulfide — 250 mL Poly with NAOH & ZnAc (Zero Headspace)~~
5. Sulfate/Alkalinity/Chloride — 125 mL Poly Unpreserved

Duplicate Sample ID: Time: Analyte and Bottle Type:

EPA Split Sample ID: Ref018-PW-3 Time: 1442 1B. Dissolved Metals — With Same Capsule Filter - 125 mL Poly with HNO3

Equipment Blank Collected? Yes (No) See *Porewater Rinsate Sample Collection Form*

Sample Lead Initials AU Date: 9/25/19 Field Supervisor Initials DA Date: 9/25/19

Appendix G

Porewater Calibration and Data Sheets

Evans AOI

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: 4-B1-2019

Date: 9/27/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1102
Off Station Time: 1247

Station Conditions
Water Depth: 23.5m

Vessel GPS
North: 5393513.28
East: 424493.51

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1139	1139
Logging Period (s)	30	30
Temperature (C)	16.401	16.186
Conductivity (mS/cm)	0.146	0.213
Data File Name	Trident_4-B1-2019_092719.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1207	1223			
Logging Period (s)	30	30			
Temperature (C)	16.229	16.238			
Conductivity (mS/cm)	0.21	0.209			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1129	1136
Temperature (C)	15.2	16
Conductivity (uS/cm)	147.8	231.4
TDS (ppm)	94.8	153.5
pH	8.21	7.72
ORP (mV)	199	183
DO (mg/L)	NA	3.68

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1206	1222			
Temperature (C)	16.5	16.9			
Conductivity (uS/cm)	178.9	218.1			
TDS (ppm)	115.8	142.7			
pH	7.36	6.68			
ORP (mV)	211	235			
DO (mg/L)	3.19	2.92			

Camera File Name	2019-09-27 11-16-08.mp4

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: 4-B6-2019

Date: 10/2/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 810
Off Station Time: 1105

Station Conditions
Water Depth: 25.0m

Vessel GPS
North: 5391740.17
East: 423103.35

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	946	946
Logging Period (s)	30	30
Temperature (C)	14.509	14.588
Conductivity (mS/cm)	0.14	0.194
Data File Name	Trident_4-B6-2019_100219.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1032	1047			
Logging Period (s)	30	30			
Temperature (C)	14.688	14.699			
Conductivity (mS/cm)	0.195	0.195			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	926	944
Temperature (C)	6.7	9.8
Conductivity (uS/cm)	145.1	173.4
TDS (ppm)	93.11	112.1
pH	7.73	7.75
ORP (mV)	252	229
DO (mg/L)	NA	5.45

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1036	1048			
Temperature (C)	12	12.3			
Conductivity (uS/cm)	187	188			
TDS (ppm)	121.4	122.1			
pH	7.5	7.5			
ORP (mV)	235	236			
DO (mg/L)	4.58	4.04			

Camera File Name	2019-10-02 4-B6-2019.mp4

Recorded By: jm

Comments/Observations:

Slag material covering probe gasket

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV001

Date: 9/28/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1417
Off Station Time: 1600

Station Conditions
Water Depth: 24.8m

Vessel GPS
North: 5391534.32
East: 422461.4

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1444	1444
Logging Period (s)	30	30
Temperature (C)	15.95	15.72
Conductivity (mS/cm)	0.144	0.214
Data File Name	Trident_EV001_092819.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1515	1533			
Logging Period (s)	30	30			
Temperature (C)	15.828	15.863			
Conductivity (mS/cm)	0.213	0.212			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1438	1443
Temperature (C)	7.7	9.8
Conductivity (uS/cm)	148.2	184.1
TDS (ppm)	95.07	119.4
pH	7.95	8.06
ORP (mV)	237	224
DO (mg/L)	NA	3.75

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1514	1532			
Temperature (C)	11.6	10.6			
Conductivity (uS/cm)	181.1	178.1			
TDS (ppm)	117.3	115.3			
pH	8.14	8.18			
ORP (mV)	223	219			
DO (mg/L)	3.26	2.52			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV002

Date: 9/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1336
Off Station Time: 1515

Station Conditions
Water Depth: 23.8

Vessel GPS
North: 5391672
East: 42494.88

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1401	1401
Logging Period (s)	30	30
Temperature (C)	16.885	16.747
Conductivity (mS/cm)	0.127	0.177
Data File Name	Trident_EV002_092119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1424	1432			
Logging Period (s)	30	30			
Temperature (C)	16.901	16.713			
Conductivity (mS/cm)	0.174	0.179			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1355	1400
Temperature (C)	24.4	22.4
Conductivity (uS/cm)	144.5	177.5
TDS (ppm)	92.71	114.8
pH	8.01	8.24
ORP (mV)	242	225
DO (mg/L)	NA	3.55

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1426	1430			
Temperature (C)	22.4	22.5			
Conductivity (uS/cm)	180.4	180.7			
TDS (ppm)	116.9	117.1			
pH	8.28	8.27			
ORP (mV)	223	220			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide sample start 1406 sample end Duplicate taken on DOC

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV003

Date: 9/27/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1332
Off Station Time: 1630

Station Conditions
Water Depth: 25.5m

Vessel GPS
North: 5391490.49
East: 422506.57

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1402	1402
Logging Period (s)	30	30
Temperature (C)	16.265	16.125
Conductivity (mS/cm)	0.143	0.178
Data File Name	Trident_EV003_092719.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1431	1448			
Logging Period (s)	30	30			
Temperature (C)	16.202	16.23			
Conductivity (mS/cm)	0.18	0.181			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1350	1401
Temperature (C)	14.8	17
Conductivity (uS/cm)	145.9	159.1
TDS (ppm)	93.59	102.4
pH	8.25	8.13
ORP (mV)	204	215
DO (mg/L)	NA	4.51

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1430	1446			
Temperature (C)	17.9	18.2			
Conductivity (uS/cm)	162	164			
TDS (ppm)	104.3	105.6			
pH	7.79	7.83			
ORP (mV)	215	216			
DO (mg/L)	3.94	3.71			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV005

Date: 9/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1154
Off Station Time: 1320

Station Conditions
Water Depth: 24.3m

Vessel GPS
North: 5391707.41
East: 422602.54

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1226	1226
Logging Period (s)	30	30
Temperature (C)	16.844	16.69
Conductivity (mS/cm)	0.127	0.19
Data File Name	Trident_EV005_092119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1247	1252			
Logging Period (s)	30	30			
Temperature (C)	16.663	16.676			
Conductivity (mS/cm)	0.19	0.19			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1226	1225
Temperature (C)	22	24.2
Conductivity (uS/cm)	144.3	199.8
TDS (ppm)	92.59	130.1
pH	7.98	8.47
ORP (mV)	221	201
DO (mg/L)	NA	4.53

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1245	1251			
Temperature (C)	25.5	25.8			
Conductivity (uS/cm)	202.5	203			
TDS (ppm)	132	132.3			
pH	8.49	8.47			
ORP (mV)	175	179			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide sample start 1230 Sample End 1251

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV008

Date: 9/28/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 815
Off Station Time: 1051

Station Conditions
Water Depth: 26.0m

Vessel GPS
North: 5391652.4
East: 422711.84

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	928	928
Logging Period (s)	5	5
Temperature (C)	15.973	15.796
Conductivity (mS/cm)	0.143	0.202
Data File Name	Trident_EV008_092819.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1004	1020			
Logging Period (s)	5	5			
Temperature (C)	15.896	15.918			
Conductivity (mS/cm)	0.189	0.19			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	918	925
Temperature (C)	7.7	8.7
Conductivity (uS/cm)	152.5	189.4
TDS (ppm)	97.96	123.1
pH	7.06	7.33
ORP (mV)	226	202
DO (mg/L)	NA	5.13

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1002	1018			
Temperature (C)	8.6	8.6			
Conductivity (uS/cm)	170.2	169.5			
TDS (ppm)	109.8	109.3			
pH	7.85	7.72			
ORP (mV)	230	238			
DO (mg/L)	4.68	3.82			

Camera File Name	

Recorded By: BC

Comments/Observations:

Long cable used at this station. Shortened Trident averaging time due to communication issue over long cable.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV010

Date: 9/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 845
Off Station Time: 1123

Station Conditions
Water Depth: 24.7m

Vessel GPS
North: 5391526.43
East: 422649.66

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1032	1032
Logging Period (s)	30	30
Temperature (C)	16.742	16.711
Conductivity (mS/cm)	0.126	0.178
Data File Name	Trident_EV010_092119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1046	1057			
Logging Period (s)	30	30			
Temperature (C)	16.707	16.703			
Conductivity (mS/cm)	0.178	0.179			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1024	1032
Temperature (C)	18.1	17.4
Conductivity (uS/cm)	142.3	174.7
TDS (ppm)	97.27	113
pH	8.04	8.66
ORP (mV)	230	202
DO (mg/L)	NA	4.75

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1048	1058			
Temperature (C)	17.3	17.8			
Conductivity (uS/cm)	179.1	180.6			
TDS (ppm)	116	117			
pH	8.83	8.9			
ORP (mV)	146	166			
DO (mg/L)	NA	NA			

Camera File Name

Recorded By: CFS

Comments/Observations:

Equipment blank taken Sample start 1034 Sample end 1056 EPA Split Dissolved Metals

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV011

Date: 10/3/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1330
Off Station Time: 1546

Station Conditions
Water Depth: 21.1m

Vessel GPS
North: 5391459.87
East: 422760.55

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1212	1412
Logging Period (s)	30	30
Temperature (C)	14.227	14.223
Conductivity (mS/cm)	0.138	0.14
Data File Name	Trident_EV011_100319.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1459	1506			
Logging Period (s)	30	30			
Temperature (C)	14.248	14.252			
Conductivity (mS/cm)	0.143	0.144			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1410	1413
Temperature (C)	15.3	18.1
Conductivity (uS/cm)	146.2	161.8
TDS (ppm)	93.73	104.1
pH	7.58	7.35
ORP (mV)	221	245
DO (mg/L)	NA	7.73

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1458	1507			
Temperature (C)	18.3	18.3			
Conductivity (uS/cm)	168	150.5			
TDS (ppm)	108.3	96.62			
pH	7.29	7.55			
ORP (mV)	250	241			
DO (mg/L)	8.34	8.59			

Camera File Name	2019-10-03 13-41-15.mp4 2019-10-03 13-46-20.mp4 2019-10-03 13-50-04.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV012

Date: 9/20/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1348
Off Station Time: 1530

Station Conditions
Water Depth: 24.8m

Vessel GPS
North: 5391570.92
East: 422812.86

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1417	1417
Logging Period (s)	30	30
Temperature (C)	16.799	16.655
Conductivity (mS/cm)	0.126	0.253
Data File Name	Trident_EV012_092019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1430	1440			
Logging Period (s)	30	30			
Temperature (C)	16.637	16.636			
Conductivity (mS/cm)	0.28	0.267			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1409	1414
Temperature (C)	22.9	23.1
Conductivity (uS/cm)	142.6	177.2
TDS (ppm)	91.48	114.6
pH	8.06	8.39
ORP (mV)	211	187
DO (mg/L)	NA	3.67

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1432	1441			
Temperature (C)	22.8	23.9			
Conductivity (uS/cm)	179.5	179.3			
TDS (ppm)	116.3	116.7			
pH	8.55	8.6			
ORP (mV)	198	192			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide Sample start 1421 sample end 1439

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV013

Date: 9/20/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1202
Off Station Time: 1318

Station Conditions
Water Depth: 24.9m

Vessel GPS
North: 5391591.04
East: 422903.75

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1239	1239
Logging Period (s)	30	30
Temperature (C)	16.586	16.746
Conductivity (mS/cm)	0.125	0.2
Data File Name	Trident_EV013_092019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1250	1258			
Logging Period (s)	30	30			
Temperature (C)	16.752	16.579			
Conductivity (mS/cm)	0.2	0.2			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1225	1230
Temperature (C)	23.9	27.4
Conductivity (uS/cm)	143.4	208.8
TDS (ppm)	92.07	136.1
pH	8	7.91
ORP (mV)	191	146
DO (mg/L)	NA	5.14

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1249	1259			
Temperature (C)	25.9	24.3			
Conductivity (uS/cm)	204.4	202.1			
TDS (ppm)	133.3	131.7			
pH	8.19	8.38			
ORP (mV)	201	173			
DO (mg/L)	NA	NA			

Camera File Name

Recorded By: CFS

Comments/Observations:

no sulfide sample start 1236 sample end 1258 duplicate taken in dissolved metals

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: EV015 Date: 10/9/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 900
Off Station Time: 1120

Station Conditions
Water Depth: 25.6m

Vessel GPS
North: 5391621.23
East: 423072.39

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1013	1013
Logging Period (s)	30	30
Temperature (C)	12.454	12.529
Conductivity (mS/cm)	0.146	0.141
Data File Name	Trident_EV015_100919.dat	

Porewater Sensor Checks

Sample Volume (ml)	265ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1051	1110			
Logging Period (s)	30	30			
Temperature (C)	12.556	12.547			
Conductivity (mS/cm)	0.14	0.404			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	952	1009
Temperature (C)	9.5	13.8
Conductivity (uS/cm)	146.9	162.9
TDS (ppm)	94.29	105
pH	8.11	8.07
ORP (mV)	223	222
DO (mg/L)	NA	6.93

Porewater Water Quality Checks

Sample Volume (ml)	265ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1052	1108			
Temperature (C)	16.2	17.3			
Conductivity (uS/cm)	160.1	159.2			
TDS (ppm)	103	102.5			
pH	7.87	8.01			
ORP (mV)	221	227			
DO (mg/L)	6.89	7.12			

Camera File Name	2019-10-09 09-19-59.mp4 2019-10-09 09-21-04.mp4 2019-10-09 09-28-43.mp4

Recorded By: jm

Comments/Observations: EPA metals split - total volume 445ml

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV018

Date: 10/2/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1200
Off Station Time: 1534

Station Conditions
Water Depth: 23.8m

Vessel GPS
North: 5391683.16
East: 423348.47

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1443	1443
Logging Period (s)	30	30
Temperature (C)	14.672	14.652
Conductivity (mS/cm)	0.142	0.136
Data File Name	Trident_EV018_100219.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1427	1439			
Logging Period (s)	30	30			
Temperature (C)	14.639	14.649			
Conductivity (mS/cm)	0.146	0.149			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1335	1342
Temperature (C)	14	15
Conductivity (uS/cm)	146.1	148.8
TDS (ppm)	93.71	95.46
pH	7.95	8.11
ORP (mV)	208	223
DO (mg/L)	NA	8.49

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1428	1440			
Temperature (C)	16.5	16.7			
Conductivity (uS/cm)	159.2	162.6			
TDS (ppm)	102.4	104.7			
pH	6.89	7.33			
ORP (mV)	251	253			
DO (mg/L)	8.76	8.73			

Camera File Name	2019-10-02 12-38-28.mp4 2019-10-02 12-40-22.mp4 2019-10-02 13-16-37.mp4

Recorded By: jm

Comments/Observations:

Cobbles over bedrock

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV022

Date: 10/3/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1100
Off Station Time: 1300

Station Conditions
Water Depth: 19.4m

Vessel GPS
North: 5391700.89
East: 423611.56

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1143	1143
Logging Period (s)	30	30
Temperature (C)	14.237	14.32
Conductivity (mS/cm)	0.138	0.195
Data File Name	Trident_EV022_100319.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1226	1242			
Logging Period (s)	30	30			
Temperature (C)	14.35	14.388			
Conductivity (mS/cm)	0.189	0.188			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1138	1146
Temperature (C)	12.9	17.5
Conductivity (uS/cm)	141.9	170.1
TDS (ppm)	91.05	109.8
pH	8.13	7.57
ORP (mV)	223	232
DO (mg/L)	NA	6.5

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1228	1240			
Temperature (C)	17.8	17.7			
Conductivity (uS/cm)	168.4	195.4			
TDS (ppm)	108.6	127.3			
pH	7.07	7.67			
ORP (mV)	248	235			
DO (mg/L)	5.95	5.83			

Camera File Name	2019-10-03 11-17-35.mp4 2019-10-03 11-32-19.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV023

Date: 10/4/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1018
Off Station Time: 1215

Station Conditions
Water Depth: 14.5m

Vessel GPS
North: 5391827.94
East: 423863.42

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1059	1059
Logging Period (s)	30	30
Temperature (C)	13.982	13.975
Conductivity (mS/cm)	0.138	0.158
Data File Name	Trident_EV023_100419.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1141	1152			
Logging Period (s)	30	30			
Temperature (C)	14.08	14.085			
Conductivity (mS/cm)	0.157	0.156			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1045	1058
Temperature (C)	9.3	15
Conductivity (uS/cm)	143.6	177.5
TDS (ppm)	92.15	114.9
pH	8.23	7.49
ORP (mV)	235	227
DO (mg/L)	NA	9.53

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1142	1154			
Temperature (C)	15.7	16			
Conductivity (uS/cm)	202.2	166.8			
TDS (ppm)	132.1	107.5			
pH	7.47	7.35			
ORP (mV)	233	242			
DO (mg/L)	9.24	9.15			

Camera File Name	2019-10-04 10-29-12.mp4 2019-10-04 11-57-09.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV024

Date: 10/4/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1224
Off Station Time: 1425

Station Conditions
Water Depth: 15.6m

Vessel GPS
North: 5391859.42
East: 423912.68

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1321	1321
Logging Period (s)	30	30
Temperature (C)	13.818	13.883
Conductivity (mS/cm)	0.135	0.202
Data File Name	Trident_EV024_100419.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1403	1415			
Logging Period (s)	30	30			
Temperature (C)	13.978	13.968			
Conductivity (mS/cm)	0.196	0.194			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1316	1322
Temperature (C)	11.4	16
Conductivity (uS/cm)	149.2	194.1
TDS (ppm)	95.78	126.3
pH	7.94	7.42
ORP (mV)	211	238
DO (mg/L)	NA	6.68

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1403	1414			
Temperature (C)	18.4	17.6			
Conductivity (uS/cm)	172	168.2			
TDS (ppm)	111.1	108.5			
pH	7.08	7.79			
ORP (mV)	251	230			
DO (mg/L)	6.48	6.32			

Camera File Name	2019-10-04 12-58-09.mp4 2019-10-04 12-54-29.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV026

Date: 9/24/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 830
Off Station Time: 1220

Station Conditions
Water Depth: 22.0m

Vessel GPS
North: 5392163.5
East: 432831.85

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	3.5
Start Logging Time	1116	1116
Logging Period (s)	30	30
Temperature (C)	16.913	16.864
Conductivity (mS/cm)	0.152	0.181
Data File Name	Trident_EV026_092419.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	3.5	3.5			
Start Logging Time	1143	1158			
Logging Period (s)	30	30			
Temperature (C)	16.855	16.842			
Conductivity (mS/cm)	0.182	0.183			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	3.5
Purge Volme (ml)	300	300
Sample Time	1110	1114
Temperature (C)	18.7	18.9
Conductivity (uS/cm)	159.2	154.2
TDS (ppm)	102.4	99.13
pH	8.23	8.27
ORP (mV)	229	219
DO (mg/L)	NA	6.68

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	3.5	3.5			
Purge Volme (ml)	NA	NA			
Sample Time	1141	1157			
Temperature (C)	18.7	19.5			
Conductivity (uS/cm)	155.8	156.3			
TDS (ppm)	100.1	100.5			
pH	8.26	8.35			
ORP (mV)	228	220			
DO (mg/L)	6.36	6.43			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV027

Date: 9/28/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1105
Off Station Time: 1348

Station Conditions
Water Depth: 25.1m

Vessel GPS
North: 5392023.5
East: 423866.18

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1207	1207
Logging Period (s)	30	30
Temperature (C)	15.977	15.813
Conductivity (mS/cm)	0.144	0.251
Data File Name	Trident_EV027_092819.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1237	1254			
Logging Period (s)	30	30			
Temperature (C)	15.894	15.914			
Conductivity (mS/cm)	0.25	0.249			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1212	1205
Temperature (C)	7	11.8
Conductivity (uS/cm)	148.1	227.5
TDS (ppm)	95.13	149.1
pH	8.21	6.93
ORP (mV)	263	244
DO (mg/L)	NA	4.85

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1235	1253			
Temperature (C)	11.5	12.5			
Conductivity (uS/cm)	186.7	189.3			
TDS (ppm)	121.2	122.9			
pH	7.67	7.79			
ORP (mV)	240	265			
DO (mg/L)	3.16	2.89			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV032

Date: 10/22/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1031
Off Station Time: 1220

Station Conditions
Water Depth: 9.9m

Vessel GPS
North: 5391990.06
East: 424200.9
Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1108	1108
Logging Period (s)	30	30
Temperature (C)	10.095	10.103
Conductivity (mS/cm)	0.148	0.146
Data File Name	Trident_EV032_102219.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1125	1142			
Logging Period (s)	30	30			
Temperature (C)	10.126	10.135			
Conductivity (mS/cm)	0.146	0.146			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1101	1106
Temperature (C)	9.6	10.1
Conductivity (uS/cm)	156.6	148
TDS (ppm)	100.6	94.94
pH	7.46	7.88
ORP (mV)	169	176
DO (mg/L)	NA	8.78

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1130	1146			
Temperature (C)	10.4	9.7			
Conductivity (uS/cm)	148	148.5			
TDS (ppm)	94.92	95.25			
pH	7.66	7.65			
ORP (mV)	198	210			
DO (mg/L)	8.36	8.31			

Camera File Name	EV032_102219.mp4

Recorded By: AJS

Comments/Observations:

Sample Start 1110 End Sample 1142 SLOPE

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV036

Date: 10/3/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 810
Off Station Time: 1035

Station Conditions
Water Depth: 13.5m

Vessel GPS
North: 5392096.4
East: 424412.55

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	922	922
Logging Period (s)	30	30
Temperature (C)	14.267	14.304
Conductivity (mS/cm)	0.137	0.297
Data File Name	Trident_EV036_100319.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1005	1017			
Logging Period (s)	30	30			
Temperature (C)	14.406	14.419			
Conductivity (mS/cm)	0.342	0.342			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	900	921
Temperature (C)	10	15.1
Conductivity (uS/cm)	150.3	208.4
TDS (ppm)	96.45	136
pH	7.88	6.64
ORP (mV)	242	241
DO (mg/L)	NA	4.46

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1006	1017			
Temperature (C)	16.5	16.5			
Conductivity (uS/cm)	211.6	206.2			
TDS (ppm)	138.3	134.5			
pH	7.65	7.55			
ORP (mV)	218	207			
DO (mg/L)	4.35	3.56			

Camera File Name	2019-10-03 08-42-30.mp4 2019-10-03 10-21-38.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV037

Date: 9/24/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1249
Off Station Time: 1615

Station Conditions
Water Depth: 23.8m

Vessel GPS
North: 5392315.54
East: 424267.84

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1337	1337
Logging Period (s)	30	30
Temperature (C)	16.927	16.709
Conductivity (mS/cm)	0.15	0.281
Data File Name	Trident_EV037_092419.dat	

Porewater Sensor Checks

Sample Volume (ml)	240ml	400ml	Post		
Sensor Number	2005	2005	2005		
Sensor Depth (in)	4.5	4.5	4.5		
Start Logging Time	1426	1445	1455		
Logging Period (s)	30	30	30		
Temperature (C)	16.616	16.603	16.6		
Conductivity (mS/cm)	0.293	0.295	0.295		
Data File Name	Same	Same	Same		

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1325	1335
Temperature (C)	20.2	20
Conductivity (uS/cm)	145.1	291.7
TDS (ppm)	93.14	192.1
pH	8.19	7.98
ORP (mV)	193	231
DO (mg/L)	NA	4.45

Porewater Water Quality Checks

Sample Volume (ml)	240ml	400ml	Post		
Sample Depth (in)	4.5	4.5	4.5		
Purge Volme (ml)	NA	NA	NA		
Sample Time	1425	1443	1454		
Temperature (C)	20.3	20.3	20.1		
Conductivity (uS/cm)	309.6	325	316.6		
TDS (ppm)	204.7	215.6	209.6		
pH	7.99	7.63	7.79		
ORP (mV)	210	232	220		
DO (mg/L)	3.27	2.55	2.45		

Camera File Name	

Recorded By: BC

Comments/Observations:

EPA dup, ms and msd. Equipment blank for drive frame 2.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV038

Date: 10/22/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1245
Off Station Time: 1410

Station Conditions
Water Depth: 16.0m

Vessel GPS
North: 5392193.37
East: 424510.02
Vessel: ~~Yeti~~ Tieton

JAP 2-24-20

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1317	1317
Logging Period (s)	30	30
Temperature (C)	10.068	10.129
Conductivity (mS/cm)	0.149	0.15
Data File Name	Trident_EV038_102219.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1336	1351			
Logging Period (s)	30	30			
Temperature (C)	10.124	10.124			
Conductivity (mS/cm)	0.149	0.149			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1310	1313
Temperature (C)	11.6	11.8
Conductivity (uS/cm)	151.4	150.3
TDS (ppm)	97.26	97.72
pH	7.47	6.83
ORP (mV)	206	237
DO (mg/L)	NA	9.48

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1339	1356			
Temperature (C)	11.5	11.8			
Conductivity (uS/cm)	148.6	148.3			
TDS (ppm)	95.35	95.16			
pH	7.34	7.57			
ORP (mV)	218	227			
DO (mg/L)	8.3	8.31			

Camera File Name	EV038_102219.mp4

Recorded By: AJS

Comments/Observations:

Sample Start 1320 End Sample 1350

Trident Log Sheet - Two Sampling Levels

2-24-20 JAP.

Site: UCR

Station: ~~GB043~~ EV043

Date: 10/23/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1000
Off Station Time: 1330

Station Conditions
Water Depth: 26.0m

Vessel GPS
North: 5392703.96
East: 424733.52

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	3.5
Start Logging Time	1227	1227
Logging Period (s)	30	30
Temperature (C)	10.117	10.025
Conductivity (mS/cm)	0.146	0.141
Data File Name	Trident_EV043_102319.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	3.5	3.5			
Start Logging Time	1249	1308			
Logging Period (s)	30	30			
Temperature (C)	10.062	10.077			
Conductivity (mS/cm)	0.142	0.141			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	3.5
Purge Volme (ml)	300	300
Sample Time	1217	1226
Temperature (C)	13.8	18.4
Conductivity (uS/cm)	148.1	148.3
TDS (ppm)	95.04	95.12
pH	8.19	8.26
ORP (mV)	224	241
DO (mg/L)	NA	8.65

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	3.5	3.5			
Purge Volme (ml)	NA	NA			
Sample Time	1248	1307			
Temperature (C)	18.7	19.6			
Conductivity (uS/cm)	148.3	148.5			
TDS (ppm)	95.17	95.28			
pH	8.24	8.23			
ORP (mV)	248	253			
DO (mg/L)	9.15	8.77			

Camera File Name	EV043_102319.mp4

Recorded By: BC

Comments/Observations:

Documented full insertion with video.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV044

Date: 9/20/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 821
Off Station Time: 1113

Station Conditions
Water Depth: 7.3m

Vessel GPS
North: 5392737.25
East: 424996.42

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1005	1005
Logging Period (s)	30	30
Temperature (C)	16.478	16.504
Conductivity (mS/cm)	0.125	0.338
Data File Name	Trident_EV044_092019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1031	1035			
Logging Period (s)	30	30			
Temperature (C)	16.395	16.437			
Conductivity (mS/cm)	0.355	0.352			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	948	948
Temperature (C)	19	22.6
Conductivity (uS/cm)	192.5	310.2
TDS (ppm)	91.45	205.1
pH	7.84	7.12
ORP (mV)	211	-36
DO (mg/L)	NA	5.44

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1030	1034			
Temperature (C)	23.2	24			
Conductivity (uS/cm)	308.3	312.4			
TDS (ppm)	203.8	206.7			
pH	7.11	7.16			
ORP (mV)	-46	-56			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide sample start 1013, sample end 1032

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV046

Date: 9/23/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1428
Off Station Time: 1700

Station Conditions
Water Depth: 5.3m

Vessel GPS
North: 5392793.05
East: 425173.3

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1531	1531
Logging Period (s)	30	30
Temperature (C)	16.951	16.772
Conductivity (mS/cm)	0.148	0.162
Data File Name	Trident_EV046_092319.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1608	1624			
Logging Period (s)	30	30			
Temperature (C)	16.836	16.846			
Conductivity (mS/cm)	0.161	0.162			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1522	1527
Temperature (C)	16.3	17.3
Conductivity (uS/cm)	150.4	198.7
TDS (ppm)	96.52	129.6
pH	8.15	7.32
ORP (mV)	216	100
DO (mg/L)	NA	4.23

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1605	1623			
Temperature (C)	17.6	17.7			
Conductivity (uS/cm)	152.3	150.1			
TDS (ppm)	97.82	96.36			
pH	7.32	7.32			
ORP (mV)	92	88			
DO (mg/L)	3.55	3.15			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV048

Date: 9/30/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 945
Off Station Time: 1245

Station Conditions
Water Depth: 30.8m

Vessel GPS
North: 5392927.6
East: 424636.1

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1055	1055
Logging Period (s)	30	30
Temperature (C)	15	14.991
Conductivity (mS/cm)	0.23	0.139
Data File Name	Trident_EV048_093019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1211	1228			
Logging Period (s)	30	30			
Temperature (C)	15.2	15.217			
Conductivity (mS/cm)	0.24	0.24			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1053	1107
Temperature (C)	12.4	12.4
Conductivity (uS/cm)	147.5	183.8
TDS (ppm)	94.49	119.1
pH	7.75	8.46
ORP (mV)	219	151
DO (mg/L)	NA	4.65

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1208	1225			
Temperature (C)	15.3	16.6			
Conductivity (uS/cm)	186.4	188.3			
TDS (ppm)	121	122.2			
pH	8.53	8.5			
ORP (mV)	172	169			
DO (mg/L)	4.54	3.74			

Camera File Name	2019-09-30 10-37-32.mp4

Recorded By: jm

Comments/Observations:

Field dup for METALS

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV049

Date: 10/1/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1413
Off Station Time: 1620

Station Conditions
Water Depth: 22.4m

Vessel GPS
North: 5392941.89
East: 424687.69

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1441	1441
Logging Period (s)	30	30
Temperature (C)	14.586	14.684
Conductivity (mS/cm)	0.138	0.192
Data File Name	Trident_EV049_100119.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1529	1539			
Logging Period (s)	30	30			
Temperature (C)	14.756	14.771			
Conductivity (mS/cm)	0.195	0.195			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1431	1442
Temperature (C)	17.4	18
Conductivity (uS/cm)	142.4	219.5
TDS (ppm)	91.42	143.6
pH	8.09	7.96
ORP (mV)	203	189
DO (mg/L)	NA	5.1

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1530	1540			
Temperature (C)	15.7	15.2			
Conductivity (uS/cm)	219.9	210.7			
TDS (ppm)	143.9	137.6			
pH	7.9	7.73			
ORP (mV)	186	190			
DO (mg/L)	3.96	3.31			

Camera File Name	2019-10-01 EV049.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV051

Date: 9/25/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 800
Off Station Time: 1015

Station Conditions
Water Depth: 24.1m

Vessel GPS
North: 5393066.69
East: 424659.54

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	900	900
Logging Period (s)	30	30
Temperature (C)	16.712	16.438
Conductivity (mS/cm)	0.147	0.2
Data File Name	Trident_EV051_092519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	940	954			
Logging Period (s)	30	30			
Temperature (C)	16.441	16.453			
Conductivity (mS/cm)	0.204	0.21			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	848	859
Temperature (C)	15	14.7
Conductivity (uS/cm)	144	145.8
TDS (ppm)	92.4	93.51
pH	8.12	10.16
ORP (mV)	226	104
DO (mg/L)	NA	3.65

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	936	952			
Temperature (C)	15.7	16.3			
Conductivity (uS/cm)	169.8	194.3			
TDS (ppm)	109.6	126.1			
pH	10.19	10.17			
ORP (mV)	91	100			
DO (mg/L)	3.85	2.77			

Camera File Name

Recorded By: BC

Comments/Observations:

Field dup for metals.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV052

Date: 9/27/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 800
Off Station Time: 1036

Station Conditions
Water Depth: 23.3m

Vessel GPS
North: 5393165.36
East: 424617.18

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	921	921
Logging Period (s)	30	30
Temperature (C)	16.208	16.118
Conductivity (mS/cm)	0.143	0.177
Data File Name	Trident_EV052_092719.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	958	1014			
Logging Period (s)	30	30			
Temperature (C)	16.159	16.184			
Conductivity (mS/cm)	0.187	0.19			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	903	920
Temperature (C)	13.9	14.9
Conductivity (uS/cm)	146.5	155.5
TDS (ppm)	93.97	99.91
pH	8.22	9.51
ORP (mV)	219	151
DO (mg/L)	NA	4.67

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	957	1013			
Temperature (C)	15.5	15.7			
Conductivity (uS/cm)	162.2	164.4			
TDS (ppm)	104.4	105.9			
pH	9.71	9.65			
ORP (mV)	145	141			
DO (mg/L)	3.27	2.71			

Camera File Name

Recorded By: BC

Comments/Observations:

EPA split sample for metals

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV054

Date: 9/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 930
Off Station Time: 1300

Station Conditions
Water Depth: 6.1 m
JAP 2-24-20

Vessel GPS
North: 5393187.96
East: 425056.1

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1157	1157
Logging Period (s)	60	60
Temperature (C)	16.773	16.773
Conductivity (mS/cm)	0.124	0.276
Data File Name	Trident_EV054_091819.dat	

Porewater Sensor Checks

Sample Volume (ml)	160ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1216	1233			
Logging Period (s)	30	30			
Temperature (C)	16.741	16.738			
Conductivity (mS/cm)	0.283	0.284			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1207	1207
Temperature (C)	15.1	16.1
Conductivity (uS/cm)	140.4	304.3
TDS (ppm)	90.06	201
pH	8.04	7.28
ORP (mV)	164	-60
DO (mg/L)	NA	3.86

Porewater Water Quality Checks

Sample Volume (ml)	160ml	Post			
Sample Depth (in)	4-Jan	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1217	1233			
Temperature (C)	16.1	16.5			
Conductivity (uS/cm)	306	307.4			
TDS (ppm)	202.2	203.2			
pH	7.23	7.34			
ORP (mV)	-77	-104			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV057

Date: 9/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1142
Off Station Time: 1340

Station Conditions
Water Depth: 6.8m

Vessel GPS
North: 5393493.93
East: 424820.59

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1237	1237
Logging Period (s)	30	30
Temperature (C)	16.226	16.31
Conductivity (mS/cm)	0.126	0.431
Data File Name	Trident_EV057_091919.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1301	1310			
Logging Period (s)	30	30			
Temperature (C)	16.168	16.291			
Conductivity (mS/cm)	0.425	0.427			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1223	1237
Temperature (C)	23.1	23.1
Conductivity (uS/cm)	142.4	497.5
TDS (ppm)	91.34	335.5
pH	8.06	7.13
ORP (mV)	236	-86
DO (mg/L)	NA	3.44

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1303	1310			
Temperature (C)	22.8	23.1			
Conductivity (uS/cm)	495	442.2			
TDS (ppm)	333.8	331.7			
pH	7.13	7.15			
ORP (mV)	-86	-97			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide sample start 1247 sample end 1310

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV059

Date: 9/25/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1048
Off Station Time: 1340

Station Conditions
Water Depth: 23.2m

Vessel GPS
North: 5393581.72
East: 424553.85

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1218	1218
Logging Period (s)	30	30
Temperature (C)	16.804	16.75
Conductivity (mS/cm)	0.148	0.214
Data File Name	Trident_EV059_092519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1301	1318			
Logging Period (s)	30	30			
Temperature (C)	16.742	16.737			
Conductivity (mS/cm)	0.232	0.245			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1206	1216
Temperature (C)	21.6	20.5
Conductivity (uS/cm)	146.5	171.2
TDS (ppm)	93.85	110.5
pH	7.58	8.82
ORP (mV)	236	147
DO (mg/L)	NA	3.86

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1300	1317			
Temperature (C)	22	22.2			
Conductivity (uS/cm)	178.8	185.1			
TDS (ppm)	115.8	120			
pH	9	8.74			
ORP (mV)	147	141			
DO (mg/L)	2.22	2.35			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV060

Date: 9/26/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1310
Off Station Time: 1530

Station Conditions
Water Depth: 23.8m

Vessel GPS
North: 5393683.58
East: 424563.29

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1351	1351
Logging Period (s)	30	30
Temperature (C)	16.57	16.527
Conductivity (mS/cm)	0.148	0.327
Data File Name	Trident_EV060_092619.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1421	1438			
Logging Period (s)	30	30			
Temperature (C)	16.479	16.464			
Conductivity (mS/cm)	0.257	0.243			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1334	1350
Temperature (C)	23.2	23.8
Conductivity (uS/cm)	148.8	183.4
TDS (ppm)	95.68	118.9
pH	8.22	8.82
ORP (mV)	213	150
DO (mg/L)	NA	4.37

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1420	1436			
Temperature (C)	23.4	23.5			
Conductivity (uS/cm)	187.7	197.8			
TDS (ppm)	131.6	128.7			
pH	7.87	7.89			
ORP (mV)	152	157			
DO (mg/L)	3.4	2.57			

Camera File Name	

Recorded By: BC

Comments/Observations:

Field dup for Alkalinity

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV063

Date: 9/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 823
Off Station Time: 1142

Station Conditions
Water Depth: 7.5m

Vessel GPS
North: 5393897.95
East: 424891.81

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1031	1031
Logging Period (s)	30	30
Temperature (C)	16.141	16.275
Conductivity (mS/cm)	0.126	0.351
Data File Name	Trident_EV063_091919.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1046	1059			
Logging Period (s)	30	30			
Temperature (C)	16.271	16.271			
Conductivity (mS/cm)	0.357	0.364			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1030	1030
Temperature (C)	19.9	21.8
Conductivity (uS/cm)	142.5	429.9
TDS (ppm)	91.42	288.3
pH	7.85	7.14
ORP (mV)	239	-41
DO (mg/L)	NA	4.57

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1049	1101			
Temperature (C)	21.6	21.8			
Conductivity (uS/cm)	414.5	420.2			
TDS (ppm)	278.1	281.6			
pH	7.1	7.1			
ORP (mV)	-41	-59			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide…….sample start 1030…sample end 1058……EPA split taken.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV064

Date: 9/17/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1330
Off Station Time: 1730

Station Conditions
Water Depth: 6.1m

Vessel GPS
North: 5393930.69
East: 424642.82

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1619	1619
Logging Period (s)	60	60
Temperature (C)	17.367	17.195
Conductivity (mS/cm)	0.127	0.428
Data File Name	Trident_EV064_091719.dat	

Porewater Sensor Checks

Sample Volume (ml)	160ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1633	1651			
Logging Period (s)	60	60			
Temperature (C)	17.183	17.191			
Conductivity (mS/cm)	0.425	0.419			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	360
Sample Time	1601	1614
Temperature (C)	17.2	18.7
Conductivity (uS/cm)	143.5	434.4
TDS (ppm)	92.06	291.3
pH	7.96	7.23
ORP (mV)	228	-116
DO (mg/L)	NA	2.34

Porewater Water Quality Checks

Sample Volume (ml)	160ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1635	1650			
Temperature (C)	18.6	18.3			
Conductivity (uS/cm)	426	410.7			
TDS (ppm)	285.5	274.7			
pH	7.22	7.23			
ORP (mV)	-137	-123			
DO (mg/L)	1.69	2.39			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV065

Date: 9/23/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 900
Off Station Time: 1400

Station Conditions
Water Depth: 23.3m

Vessel GPS
North: 5393916.01
East: 424462.56

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1225	1225
Logging Period (s)	30	30
Temperature (C)	17.098	16.891
Conductivity (mS/cm)	0.153	0.213
Data File Name	Trident_EV065_092319.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1318	1338			
Logging Period (s)	30	30			
Temperature (C)	16.93	16.922			
Conductivity (mS/cm)	0.219	0.212			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1213	1223
Temperature (C)	17.1	17.8
Conductivity (uS/cm)	149.1	177.5
TDS (ppm)	95.69	114.9
pH	8.11	9.13
ORP (mV)	215	162
DO (mg/L)	NA	3.85

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1315	1336			
Temperature (C)	17.8	17.8			
Conductivity (uS/cm)	177	203.3			
TDS (ppm)	114.5	132.5			
pH	9.15	8.96			
ORP (mV)	173	181			
DO (mg/L)	3.62	3.65			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV066

Date: 9/26/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1030
Off Station Time: 1232

Station Conditions
Water Depth: 23.5m

Vessel GPS
North: 5393993.73
East: 424473.46

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1127	1127
Logging Period (s)	30	30
Temperature (C)	16.626	16.482
Conductivity (mS/cm)	0.148	0.203
Data File Name	Trident_EV066_092619.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1208	1223			
Logging Period (s)	30	30			
Temperature (C)	16.438	16.429			
Conductivity (mS/cm)	0.205	0.205			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1108	1126
Temperature (C)	18.9	19.2
Conductivity (uS/cm)	152.9	168.5
TDS (ppm)	98.27	108.6
pH	7.66	7.5
ORP (mV)	221	197
DO (mg/L)	NA	4.89

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1206	1222			
Temperature (C)	19.8	19.2			
Conductivity (uS/cm)	192.6	207.5			
TDS (ppm)	125.2	135.5			
pH	7.34	7.09			
ORP (mV)	212	234			
DO (mg/L)	3.36	2.41			

Camera File Name	

Recorded By: BC

Comments/Observations:

Field dup for TOC

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV069

Date: 9/26/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 800
Off Station Time: 1015

Station Conditions
Water Depth: 24.2m

Vessel GPS
North: 5394124.64
East: 424427.6

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	859	859
Logging Period (s)	30	30
Temperature (C)	16.638	16.464
Conductivity (mS/cm)	0.147	0.177
Data File Name	Trident_EV069_092619.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	941	955			
Logging Period (s)	30	30			
Temperature (C)	16.479	16.482			
Conductivity (mS/cm)	0.173	0.172			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	847	857
Temperature (C)	15.3	15.8
Conductivity (uS/cm)	148.6	161
TDS (ppm)	94.67	103.6
pH	8.17	8.06
ORP (mV)	224	232
DO (mg/L)	NA	4.44

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	940	954			
Temperature (C)	16.7	17.1			
Conductivity (uS/cm)	159.1	167.9			
TDS (ppm)	102.3	108.2			
pH	7.82	7.19			
ORP (mV)	230	239			
DO (mg/L)	4.28	3.71			

Camera File Name	2019-09-26 08-32-35.mp4

Recorded By: BC

Comments/Observations:

Field dup for DOC

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV071

Date: 10/1/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 815
Off Station Time: 1038

Station Conditions
Water Depth: 26.3m

Vessel GPS
North: 5394266.33
East: 424434.19

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	924	924
Logging Period (s)	30	30
Temperature (C)	14.496	14.489
Conductivity (mS/cm)	0.137	0.308
Data File Name	Trident_EV071_100119.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1013	1025			
Logging Period (s)	30	30			
Temperature (C)	14.635	14.662			
Conductivity (mS/cm)	0.197	0.199			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	916	923
Temperature (C)	8.8	10
Conductivity (uS/cm)	151.6	224.7
TDS (ppm)	97.26	147.2
pH	7.64	7.37
ORP (mV)	248	201
DO (mg/L)	NA	5.45

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1014	1028			
Temperature (C)	11.1	11.5			
Conductivity (uS/cm)	261.4	206.9			
TDS (ppm)	170.9	135.1			
pH	7.28	7.85			
ORP (mV)	219	211			
DO (mg/L)	5.35	3.32			

Camera File Name	2019-10-01 08-54-59.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV072

Date: 9/30/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1336
Off Station Time: 1616

Station Conditions
Water Depth: 24.4m

Vessel GPS
North: 5394306.77
East: 424379.4

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1408	1408
Logging Period (s)	30	30
Temperature (C)	15.179	15.131
Conductivity (mS/cm)	0.143	0.223
Data File Name	Trident_EV072_093019.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1505	1520			
Logging Period (s)	30	30			
Temperature (C)	15.204	15.209			
Conductivity (mS/cm)	0.226	0.226			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1400	1410
Temperature (C)	13.7	15.6
Conductivity (uS/cm)	148.2	187.5
TDS (ppm)	95.1	121.7
pH	8.15	8.87
ORP (mV)	202	145
DO (mg/L)	NA	4.63

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1505	1519			
Temperature (C)	16.1	16.6			
Conductivity (uS/cm)	195.8	183.7			
TDS (ppm)	127.4	119.1			
pH	8.65	8.12			
ORP (mV)	161	177			
DO (mg/L)	4.06	4.25			

Camera File Name	2019-09-30 13-45-27.mp4

Recorded By: jm

Comments/Observations:

Field dup for TOC

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: EV075

Date: 9/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1320
Off Station Time: 1600

Station Conditions
Water Depth: 23.5m

Vessel GPS
North: 5394451.9
East: 424383.01

Vessel: Yeti

Trident System
Pneumatic-Drive Frame
1 Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	107	2006
Sensor Depth (in)	12	4.5
Start Logging Time	1432	1432
Logging Period (s)	30	30
Temperature (C)	16.833	16.849
Conductivity (mS/cm)	0.128	0.174
Data File Name	Trident_EV075_091819.dat	

Porewater Sensor Checks

Sample Volume (ml)	210ml	Post			
Sensor Number	2006	2006			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1510	1526			
Logging Period (s)	30	30			
Temperature (C)	16.781	16.767			
Conductivity (mS/cm)	0.175	0.175			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	600
Sample Time	1455	1455
Temperature (C)	15.8	17.3
Conductivity (uS/cm)	145.1	177.4
TDS (ppm)	93.09	114.8
pH	7.69	8.54
ORP (mV)	209	164
DO (mg/L)	NA	3.2

Porewater Water Quality Checks

Sample Volume (ml)	210ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1514	1526			
Temperature (C)	21	21.6			
Conductivity (uS/cm)	180.5	182.4			
TDS (ppm)	116.9	118.3			
pH	8.49	8.34			
ORP (mV)	167	135			
DO (mg/L)	NA	NA			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide.....duplicate ~~takem~~ taken for alkalinity, chloride, sulfate.....Start sample (1455)..End sample (1524)

JAP 2-24-20

China Bend AOI

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: 3-R7-2019

Date: 10/17/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 840
Off Station Time: 1120

Station Conditions
Water Depth: 20.2m

Vessel GPS
North: 5407149.84
East: 430298.28

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1028	1028
Logging Period (s)	30	30
Temperature (C)	10.504	10.702
Conductivity (mS/cm)	0.148	0.143
Data File Name	Trident_3-R7-2019_101719.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1051	1106			
Logging Period (s)	30	30			
Temperature (C)	10.703	10.698			
Conductivity (mS/cm)	0.143	0.143			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	953	1027
Temperature (C)	12.7	17.9
Conductivity (uS/cm)	152.5	149.3
TDS (ppm)	97.95	95.87
pH	8.05	8.07
ORP (mV)	158	238
DO (mg/L)	NA	8.6

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1050	1106			
Temperature (C)	18.1	18.8			
Conductivity (uS/cm)	149.2	149.3			
TDS (ppm)	95.75	95.82			
pH	8.09	8.08			
ORP (mV)	240	248			
DO (mg/L)	8.64	8.55			

Camera File Name	3-R7-2019 101719.mp4

Recorded By: BC

Comments/Observations:

Parameter were similar to surface water so we pushed in further but no change. Probe was clearly in bottom from video. So we proceeded with sampling with EPA concurrence.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: 3-R8-2019

Date: 10/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1351
Off Station Time: 1630

Station Conditions
Water Depth: 41.5

Vessel GPS
North: 5407286.3
East: 429441.44

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1452	1452
Logging Period (s)	30	30
Temperature (C)	10.326	10.326
Conductivity (mS/cm)	0.146	0.142
Data File Name	Trident_3-R8-2019_101919.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1517	1538			
Logging Period (s)	30	30			
Temperature (C)	10.331	10.331			
Conductivity (mS/cm)	0.141	0.141			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	400	400
Sample Time	1445	1451
Temperature (C)	12.2	18
Conductivity (uS/cm)	148.4	148.9
TDS (ppm)	95.21	95.65
pH	7.91	8.15
ORP (mV)	213	230
DO (mg/L)	NA	8.98

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1516	1537			
Temperature (C)	18.6	18.7			
Conductivity (uS/cm)	148.2	148.1			
TDS (ppm)	95.12	95.05			
pH	8.16	8.15			
ORP (mV)	248	254			
DO (mg/L)	9.33	9.12			

Camera File Name	

Recorded By: BC

Comments/Observations:

PW parameters close to SW. Verfied full insertion with video in mixed coarse bottom.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB002

Date: 10/16/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1505
Off Station Time: 1625

Station Conditions
Water Depth: 12.8m

Vessel GPS
North: 5407451.73
East: 429475.36

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1530	1530
Logging Period (s)	30	30
Temperature (C)	10.429	10.706
Conductivity (mS/cm)	0.15	0.128
Data File Name	Trident_CB002_101619.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1557	1613			
Logging Period (s)	30	30			
Temperature (C)	10.737	10.736			
Conductivity (mS/cm)	0.133	0.135			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1524	1529
Temperature (C)	14.1	18.2
Conductivity (uS/cm)	153.8	155.7
TDS (ppm)	98.81	100.1
pH	8.11	9.43
ORP (mV)	183	143
DO (mg/L)	NA	3.93

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1556	1611			
Temperature (C)	18.9	19.4			
Conductivity (uS/cm)	134.9	137.6			
TDS (ppm)	86.59	88.31			
pH	9.9	9.99			
ORP (mV)	114	101			
DO (mg/L)	3	2.65			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB005

Date: 10/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1050
Off Station Time: 1330

Station Conditions
Water Depth: 40.1 meters

J.A.P. 2-24-20

Vessel GPS
North: 5407338.98
East: 429468.44

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1154	1154
Logging Period (s)	30	30
Temperature (C)	10.306	10.417
Conductivity (mS/cm)	0.147	0.146
Data File Name	Trident_CB005_101919.dat	

Porewater Sensor Checks

Sample Volume (ml)	180ml	340ml	Post		
Sensor Number	2005	2005	2005		
Sensor Depth (in)	4.5	4.5	4.5		
Start Logging Time	1230	1249	1302		
Logging Period (s)	30	30	30		
Temperature (C)	10.41	10.399	10.389		
Conductivity (mS/cm)	0.145	0.144	0.144		
Data File Name	Same	Same	Same		

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	400	400
Sample Time	1147	1153
Temperature (C)	10.4	15.2
Conductivity (uS/cm)	148.9	152.8
TDS (ppm)	95.56	98.58
pH	7.87	8.11
ORP (mV)	225	236
DO (mg/L)	NA	7.9

Porewater Water Quality Checks

Sample Volume (ml)	180ml	340ml	Post		
Sample Depth (in)	4.5	4.5	4.5		
Purge Volme (ml)	NA	NA	NA		
Sample Time	1229	1249	1301		
Temperature (C)	16.7	17.4	17.6		
Conductivity (uS/cm)	151.9	151.5	150.9		
TDS (ppm)	97.58	97.27	96.91		
pH	8.07	8.14	8.17		
ORP (mV)	258	260	259		
DO (mg/L)	8.33	8.36	8.39		

Camera File Name	

Recorded By: BC

Comments/Observations: PW parameters close to SW. Verfied full insertion with video in mixed coarse bottom. EPA split and EPA dup for metals.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB006

Date: 10/10/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 955
Off Station Time: 1155

Station Conditions
Water Depth: 15.8m

Vessel GPS
North: 5407415.57
East: 429538.86

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1037	1037
Logging Period (s)	30	30
Temperature (C)	11.505	11.603
Conductivity (mS/cm)	0.146	0.131
Data File Name	Trident_CB006_101019.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1118	1137			
Logging Period (s)	30	30			
Temperature (C)	11.845	11.909			
Conductivity (mS/cm)	0.133	0.134			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1034	1037
Temperature (C)	4.4	11.4
Conductivity (uS/cm)	148.6	139.4
TDS (ppm)	95.35	89.3
pH	7.93	8.75
ORP (mV)	241	212
DO (mg/L)	NA	4.87

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1119	1138			
Temperature (C)	15.4	16.4			
Conductivity (uS/cm)	138.1	137.5			
TDS (ppm)	88.64	88.24			
pH	8.32	8.92			
ORP (mV)	179	171			
DO (mg/L)	3.73	3.03			

Camera File Name	2019-10-10 10-11-35.mp4 2019-10-10 10-07-04.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB007

Date: 10/11/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1442
Off Station Time: 1639

Station Conditions
Water Depth: 8.0m

Vessel GPS
North: 5407458.23
East: 429560.08

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1531	1531
Logging Period (s)	30	30
Temperature (C)	11.035	11.312
Conductivity (mS/cm)	0.147	0.175
Data File Name	Trident_CB007_101119.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1602	1619			
Logging Period (s)	30	30			
Temperature (C)	11.318	11.322			
Conductivity (mS/cm)	0.175	0.173			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1515	1530
Temperature (C)	18.5	18.9
Conductivity (uS/cm)	155	189.6
TDS (ppm)	99.8	123.2
pH	8.04	7.27
ORP (mV)	195	45
DO (mg/L)	NA	3.51

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1603	1621			
Temperature (C)	17.9	17.8			
Conductivity (uS/cm)	164.6	163.6			
TDS (ppm)	105.9	105.3			
pH	7.51	7.42			
ORP (mV)	16	23			
DO (mg/L)	3.12	3.07			

Camera File Name	2019-10-11 14-52-34.mp4

Recorded By: jm

Comments/Observations:

Use third trident.dat PRE file. Possible sensor fault on first two files.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB009

Date: 10/14/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1355
Off Station Time: 1630

Station Conditions
Water Depth: 14.6m

Vessel GPS
North: 5407433.37
East: 429612.77

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1509	1509
Logging Period (s)	30	30
Temperature (C)	10.592	10.756
Conductivity (mS/cm)	0.149	0.174
Data File Name	Trident_CB009_101419.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1531	1547			
Logging Period (s)	30	30			
Temperature (C)	10.744	10.725			
Conductivity (mS/cm)	0.171	0.169			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1450	1508
Temperature (C)	19.7	21.1
Conductivity (uS/cm)	150	173.2
TDS (ppm)	96.2	112
pH	8.17	7.59
ORP (mV)	185	218
DO (mg/L)	NA	4.97

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1530	1546			
Temperature (C)	20.2	19.9			
Conductivity (uS/cm)	169.9	166.5			
TDS (ppm)	109.6	107.2			
pH	7.53	7.59			
ORP (mV)	245	237			
DO (mg/L)	4.78	4.71			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: CB010 Date: 10/14/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1143
Off Station Time: 1350

Station Conditions
Water Depth: 21.1m

Vessel GPS
North: 5407419.22
East: 429620.88

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1226	1226
Logging Period (s)	30	30
Temperature (C)	10.578	10.876
Conductivity (mS/cm)	0.148	0.436
Data File Name	Trident_CB010_101419.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1320	1334			
Logging Period (s)	30	30			
Temperature (C)	10.906	10.882			
Conductivity (mS/cm)	0.208	0.208			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1213	1225
Temperature (C)	15.2	18.9
Conductivity (uS/cm)	150.7	225.4
TDS (ppm)	96.81	147.7
pH	8.05	8.65
ORP (mV)	202	176
DO (mg/L)	NA	4.05

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1318	1333			
Temperature (C)	21.5	21.7			
Conductivity (uS/cm)	216.6	222.3			
TDS (ppm)	141.6	145.5			
pH	8.52	8.71			
ORP (mV)	192	163			
DO (mg/L)	4.81	3.2			

Camera File Name	

Recorded By: BC

Comments/Observations:

Dup for DOC

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB012

Date: 10/10/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1210
Off Station Time: 1425

Station Conditions
Water Depth: 21.1m

Vessel GPS
North: 5407389.45
East: 429601.41

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1256	1256
Logging Period (s)	30	30
Temperature (C)	11.484	11.728
Conductivity (mS/cm)	0.148	0.179
Data File Name	Trident_CB012_101019.dat	

Porewater Sensor Checks

Sample Volume (ml)	265ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1348	1405			
Logging Period (s)	30	30			
Temperature (C)	12.003	12.043			
Conductivity (mS/cm)	0.188	0.186			
Data File Name	Same	Same	~~Same~~		

J.A.P. 2-24-20

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1253	1258
Temperature (C)	13.7	16.8
Conductivity (uS/cm)	153.5	159.4
TDS (ppm)	98.55	102.5
pH	8.05	8.09
ORP (mV)	190	221
DO (mg/L)	NA	6.99

Porewater Water Quality Checks

Sample Volume (ml)	265ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1349	1406			
Temperature (C)	17.8	18			
Conductivity (uS/cm)	171.9	171.2			
TDS (ppm)	110.9	110.5			
pH	8.03	7.92			
ORP (mV)	216	218			
DO (mg/L)	3.51	3.03			

Camera File Name	2019-10-10 12-32-52.mp4 2019-10-10 12-34-20.mp4

Recorded By: jm

Comments/Observations:

EPA split - metals

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB014

Date: 10/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 820
Off Station Time: 1030

Station Conditions
Water Depth: 37.8m

Vessel GPS
North: 5407342.37
East: 429614.2

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	923	923
Logging Period (s)	30	30
Temperature (C)	10.339	10.617
Conductivity (mS/cm)	0.147	0.116
Data File Name	Trident_CB014_101919.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	951	1014			
Logging Period (s)	30	30			
Temperature (C)	10.654	10.658			
Conductivity (mS/cm)	0.115	0.115			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	400	400
Sample Time	915	922
Temperature (C)	8.9	14.6
Conductivity (uS/cm)	148.4	124.5
TDS (ppm)	95.18	79.97
pH	8.03	8.18
ORP (mV)	215	223
DO (mg/L)	NA	6.1

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	950	1013			
Temperature (C)	16.5	17			
Conductivity (uS/cm)	120.6	119.5			
TDS (ppm)	77.43	76.69			
pH	8.18	8.21			
ORP (mV)	237	233			
DO (mg/L)	5.55	4.44			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB016

Date: 10/12/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1220
Off Station Time: 1500

Station Conditions
Water Depth: 21.9m

Vessel GPS
North: 5407400.49
East: 429675.36

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1312	1312
Logging Period (s)	30	30
Temperature (C)	10.884	11.150
Conductivity (mS/cm)	0.145	0.167
Data File Name	Trident_CB016_101219.dat	

Porewater Sensor Checks

Sample Volume (ml)	265ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1357	1418			
Logging Period (s)	30	30			
Temperature (C)	11.292	11.24			
Conductivity (mS/cm)	0.156	0.151			
Data File Name	Same	Same	~~Same~~ J.A.P. 2-24-20		

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1310	1313
Temperature (C)	13.2	16.7
Conductivity (uS/cm)	149.4	130.1
TDS (ppm)	95.75	83.57
pH	7.93	8.39
ORP (mV)	184	188
DO (mg/L)	NA	5.77

Porewater Water Quality Checks

Sample Volume (ml)	265ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1358	1416			
Temperature (C)	16.6	17.1			
Conductivity (uS/cm)	158.9	176			
TDS (ppm)	102.2	113.9			
pH	8.21	7.86			
ORP (mV)	196	199			
DO (mg/L)	3.24	2.75			

Camera File Name	2019-10-12 12-51-14.mp4 2019-10-12 12-53-36.mp4

Recorded By: jm

Comments/Observations:

EPA split - metals

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB018

Date: 10/10/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1445
Off Station Time: 1625

Station Conditions
Water Depth: 19.9m

Vessel GPS
North: 5407377.43
East: 429709.35

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1517	1517
Logging Period (s)	30	30
Temperature (C)	11.504	11.895
Conductivity (mS/cm)	0.147	0.099
Data File Name	Trident_CB018_101019.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1556	1615			
Logging Period (s)	30	30			
Temperature (C)	11.96	12.02			
Conductivity (mS/cm)	0.105	0.113			
Data File Name	Same	Same	~~Same~~ 2.24.20 JAP		

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1513	1518
Temperature (C)	13.2	17.6
Conductivity (uS/cm)	149.2	106.7
TDS (ppm)	95.7	68.49
pH	8	9.3
ORP (mV)	196	149
DO (mg/L)	NA	3.77

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1557	1616			
Temperature (C)	17.7	18.7			
Conductivity (uS/cm)	104.2	110.8			
TDS (ppm)	66.87	71.16			
pH	9.93	10.15			
ORP (mV)	111	82			
DO (mg/L)	3.7	3.9			

Camera File Name	2019-10-10 14-53-28.mp4 2019-10-10 14-50-43.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB020

Date: 10/15/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 840
Off Station Time: 1050

Station Conditions
Water Depth: 20.9m

Vessel GPS
North: 5407363.18
East: 429733.38

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	948	948
Logging Period (s)	30	30
Temperature (C)	10.452	10.68
Conductivity (mS/cm)	0.15	0.106
Data File Name	Trident_CB020_101519.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1015	1032			
Logging Period (s)	30	30			
Temperature (C)	10.804	10.8			
Conductivity (mS/cm)	0.119	0.123			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	940	947
Temperature (C)	7.2	12.9
Conductivity (uS/cm)	151.9	108.7
TDS (ppm)	97.56	69.8
pH	8.18	9.86
ORP (mV)	195	144
DO (mg/L)	NA	4.4

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1014	1031			
Temperature (C)	14.4	15.4			
Conductivity (uS/cm)	116.1	121.3			
TDS (ppm)	74.54	77.82			
pH	10.11	10.25			
ORP (mV)	133	118			
DO (mg/L)	3.8	3.58			

Camera File Name

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB021

Date: 10/16/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 830
Off Station Time: 1020

Station Conditions
Water Depth: 12.5m

Vessel GPS
North: 5407363.62
East: 429788.37

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	917	917
Logging Period (s)	30	30
Temperature (C)	10.403	10.51
Conductivity (mS/cm)	0.147	0.213
Data File Name	Trident_CB021_101619.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	946	1001			
Logging Period (s)	30	30			
Temperature (C)	10.674	10.711			
Conductivity (mS/cm)	0.209	0.212			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	909	916
Temperature (C)	8.5	12.5
Conductivity (uS/cm)	152.1	212.2
TDS (ppm)	97.68	138.7
pH	8.07	8.66
ORP (mV)	174	186
DO (mg/L)	NA	4.41

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	945	1004			
Temperature (C)	14.5	15.9			
Conductivity (uS/cm)	217.8	216.3			
TDS (ppm)	142.5	141.4			
pH	8.87	8.94			
ORP (mV)	175	155			
DO (mg/L)	3.48	3.35			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB024

Date: 10/15/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1303
Off Station Time: 1450

Station Conditions
Water Depth: 17.7m

Vessel GPS
North: 5407333.52
East: 429797.45

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1403	1403
Logging Period (s)	30	30
Temperature (C)	10.481	10.62
Conductivity (mS/cm)	0.15	0.131
Data File Name	Trident_CB024_101519.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1421	1437			
Logging Period (s)	30	30			
Temperature (C)	10.658	10.659			
Conductivity (mS/cm)	0.134	0.137			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1350	1356
Temperature (C)	11	16.6
Conductivity (uS/cm)	155.4	134.1
TDS (ppm)	99.89	86.12
pH	6.9	9.04
ORP (mV)	248	180
DO (mg/L)	NA	3.83

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1419	1436			
Temperature (C)	17.5	17.7			
Conductivity (uS/cm)	136.6	138.8			
TDS (ppm)	87.68	89.03			
pH	9.23	9.36			
ORP (mV)	185	177			
DO (mg/L)	2.93	2.7			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB027

Date: 10/15/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1121
Off Station Time: 1210

Station Conditions
Water Depth: 21.8m

Vessel GPS
North: 5407318.59
East: 429794.35

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1205	1205
Logging Period (s)	30	30
Temperature (C)	10.456	10.596
Conductivity (mS/cm)	0.15	0.163
Data File Name	Trident_CB027_101519.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1232	1249			
Logging Period (s)	30	30			
Temperature (C)	10.669	10.667			
Conductivity (mS/cm)	0.166	0.165			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1204	1201
Temperature (C)	9.9	15.2
Conductivity (uS/cm)	151.4	162.4
TDS (ppm)	97.18	104.7
pH	8.23	7.84
ORP (mV)	180	152
DO (mg/L)	NA	3.95

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1230	1247			
Temperature (C)	16.5	17.6			
Conductivity (uS/cm)	163.1	163			
TDS (ppm)	105	105			
pH	9.47	9.41			
ORP (mV)	179	160			
DO (mg/L)	2.82	2.75			

Camera File Name

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB029

Date: 10/16/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1039
Off Station Time: 1220

Station Conditions
Water Depth: 13.9m

Vessel GPS
North: 5407309.49
East: 429820.94

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1121	1121
Logging Period (s)	30	30
Temperature (C)	10.385	10.606
Conductivity (mS/cm)	0.148	0.177
Data File Name	Trident_CB029_101619.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1148	1205			
Logging Period (s)	30	30			
Temperature (C)	10.068	10.667			
Conductivity (mS/cm)	0.185	0.188			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1123	1120
Temperature (C)	10.5	14.4
Conductivity (uS/cm)	150	168.1
TDS (ppm)	96.21	108.4
pH	8.35	9.35
ORP (mV)	179	145
DO (mg/L)	NA	3.71

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1147	1203			
Temperature (C)	16.8	17.7			
Conductivity (uS/cm)	172.5	174			
TDS (ppm)	111.5	112.4			
pH	9.44	9.47			
ORP (mV)	174	134			
DO (mg/L)	3.16	2.8			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB035

Date: 10/17/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1149
Off Station Time: 1330

Station Conditions
Water Depth: 20.2

Vessel GPS
North: 5407157.41
East: 430355.36

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1227	1227
Logging Period (s)	30	30
Temperature (C)	10.512	10.727
Conductivity (mS/cm)	0.148	0.171
Data File Name	Trident_CB035_101719.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1257	1313			
Logging Period (s)	30	30			
Temperature (C)	10.73	10.727			
Conductivity (mS/cm)	0.166	0.163			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1216	1226
Temperature (C)	15.5	19.4
Conductivity (uS/cm)	149.5	164.7
TDS (ppm)	95.96	106.2
pH	8.14	8.03
ORP (mV)	205	229
DO (mg/L)	NA	5.93

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1257	1314			
Temperature (C)	18.6	19.1			
Conductivity (uS/cm)	161.7	164.5			
TDS (ppm)	104	106			
pH	8.02	7.52			
ORP (mV)	232	224			
DO (mg/L)	5.7	5.87			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB036

Date: 10/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 830
Off Station Time: 1045

Station Conditions
Water Depth: 20.9m

Vessel GPS
North: 5407139.35
East: 430402.56

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	943	943
Logging Period (s)	30	30
Temperature (C)	10.534	10.635
Conductivity (mS/cm)	0.147	0.146
Data File Name	Trident_CB036_101819.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1012	1030			
Logging Period (s)	30	30			
Temperature (C)	10.634	10.623			
Conductivity (mS/cm)	0.146	0.146			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	928	942
Temperature (C)	10.3	15.3
Conductivity (uS/cm)	150.7	152.6
TDS (ppm)	96.79	98.2
pH	7.8	8.01
ORP (mV)	213	236
DO (mg/L)	NA	8.66

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1011	1029			
Temperature (C)	17.6	18.7			
Conductivity (uS/cm)	151.9	152.7			
TDS (ppm)	97.59	98.16			
pH	8.11	8.07			
ORP (mV)	250	248			
DO (mg/L)	8.61	8.34			

Camera File Name	CB036_101819.mp4

Recorded By: BC

Comments/Observations:

PW parameters close so SW. Verified full insertion with video.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB039

Date: 10/14/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 900
Off Station Time: 1120

Station Conditions
Water Depth: 19.3 m

Vessel GPS
North: 5407204.21
East: 430645.66

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1003	1003
Logging Period (s)	30	30
Temperature (C)	10.58	10.645
Conductivity (mS/cm)	0.148	0.154
Data File Name	Trident_CB039_101419.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1031	1050			
Logging Period (s)	30	30			
Temperature (C)	10.712	10.703			
Conductivity (mS/cm)	0.157	0.158			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	956	1002
Temperature (C)	8	12.3
Conductivity (uS/cm)	152.1	156.8
TDS (ppm)	97.7	100.9
pH	7.98	8.07
ORP (mV)	184	237
DO (mg/L)	NA	8.61

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1030	1048			
Temperature (C)	15.8	17.5			
Conductivity (uS/cm)	158.3	159.1			
TDS (ppm)	101.8	102.3			
pH	7.83	7.8			
ORP (mV)	233	231			
DO (mg/L)	8.75	8.04			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB040

Date: 10/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 830
Off Station Time: 1030

Station Conditions
Water Depth: 21.3m

Vessel GPS
North: 5407248.57
East: 430618.67

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	941	941
Logging Period (s)	30	30
Temperature (C)	10.09	10.028
Conductivity (mS/cm)	0.147	0.166
Data File Name	Trident_CB040_102119.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1007	1025			
Logging Period (s)	30	30			
Temperature (C)	10.093	10.112			
Conductivity (mS/cm)	0.162	0.161			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	932	940
Temperature (C)	7.8	12.5
Conductivity (uS/cm)	151.5	174.2
TDS (ppm)	97.31	112.6
pH	8.22	7.34
ORP (mV)	186	215
DO (mg/L)	NA	7.6

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1006	1023			
Temperature (C)	12.8	13.2			
Conductivity (uS/cm)	168.3	183.7			
TDS (ppm)	108.5	119			
pH	7.73	7.25			
ORP (mV)	205	226			
DO (mg/L)	7.11	7.04			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: CB041 Date: 10/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1113
Off Station Time: 1310

Station Conditions
Water Depth: 18.2m

Vessel GPS
North: 5407130.11
East: 430770.67

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1156	1156
Logging Period (s)	30	30
Temperature (C)	10.127	10.08
Conductivity (mS/cm)	0.147	0.143
Data File Name	Trident_CB041_102119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1228	1249			
Logging Period (s)	30	30			
Temperature (C)	10.105	10.112			
Conductivity (mS/cm)	0.143	0.142			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1145	1155
Temperature (C)	8.3	13.9
Conductivity (uS/cm)	149.7	160.5
TDS (ppm)	96.04	103.3
pH	7.42	7.66
ORP (mV)	235	242
DO (mg/L)	NA	9.45

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1227	1248			
Temperature (C)	13.6	13.9			
Conductivity (uS/cm)	166.7	177.8			
TDS (ppm)	107.5	115.1			
pH	7.39	7.45			
ORP (mV)	248	248			
DO (mg/L)	9.55	9.25			

Camera File Name	

Recorded By: BC

Comments/Observations:

PW parameters close to SW. Verified full insertion with video in coarse bottom. EPA split for metals.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB043

Date: 10/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1330
Off Station Time: 1540

Station Conditions
Water Depth: 19.4m

Vessel GPS
North: 5407261.39
East: 430661.04

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1424	1424
Logging Period (s)	30	30
Temperature (C)	10.099	10.151
Conductivity (mS/cm)	0.147	0.194
Data File Name	Trident_CB043_102119.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1457	1518			
Logging Period (s)	30	30			
Temperature (C)	10.162	10.168			
Conductivity (mS/cm)	0.195	0.197			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1402	1423
Temperature (C)	8.4	13.6
Conductivity (uS/cm)	153.3	212.2
TDS (ppm)	98.51	138.7
pH	8.13	8.18
ORP (mV)	193	249
DO (mg/L)	NA	9.71

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1456	1517			
Temperature (C)	14.1	14.2			
Conductivity (uS/cm)	215.9	183.6			
TDS (ppm)	141.2	118.5			
pH	7.02	5.2			
ORP (mV)	251	303			
DO (mg/L)	9	8.77			

Camera File Name	

Recorded By: BC

Comments/Observations:

Dup for sulfate

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB044

Date: 10/16/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1300
Off Station Time: 1440

Station Conditions
Water Depth: 12.4m

Vessel GPS
North: 5407349.12
East: 430666.53

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1342	1342
Logging Period (s)	30	30
Temperature (C)	10.417	10.635
Conductivity (mS/cm)	0.149	0.34
Data File Name	Trident_CB044_101619.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1407	1424			
Logging Period (s)	30	30			
Temperature (C)	10.684	10.676			
Conductivity (mS/cm)	0.337	0.335			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1334	1342
Temperature (C)	12.4	16.7
Conductivity (uS/cm)	150.8	345.8
TDS (ppm)	96.81	230.5
pH	8.2	8.48
ORP (mV)	190	180
DO (mg/L)	NA	3.53

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1406	1423			
Temperature (C)	17.6	18.5			
Conductivity (uS/cm)	362.9	359.8			
TDS (ppm)	242.3	240.2			
pH	8.55	8.47			
ORP (mV)	145	138			
DO (mg/L)	2.7	2.48			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: CB046 Date: 10/17/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1410
Off Station Time: 1545

Station Conditions
Water Depth: 18.4m

Vessel GPS
North: 5407321
East: 430800.08

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1446	1446
Logging Period (s)	30	30
Temperature (C)	10.542	10.753
Conductivity (mS/cm)	0.148	0.191
Data File Name	Trident_CB046_101719.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1514	1529			
Logging Period (s)	30	30			
Temperature (C)	10.754	10.753			
Conductivity (mS/cm)	0.181	0.178			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1439	1445
Temperature (C)	14.6	19.2
Conductivity (uS/cm)	155.4	174.6
TDS (ppm)	99.99	113
pH	8.06	8.35
ORP (mV)	203	194
DO (mg/L)	NA	5.09

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1513	1530			
Temperature (C)	20.9	21.6			
Conductivity (uS/cm)	173.7	170.6			
TDS (ppm)	112.3	110.1			
pH	8.54	8.66			
ORP (mV)	202	196			
DO (mg/L)	3.97	3.81			

Camera File Name

Recorded By: BC

Comments/Observations:

Dup for sulfate

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: CB047 Date: 10/12/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 905
Off Station Time: 1149

Station Conditions
Water Depth: 15.6m

Vessel GPS
North: 5407414.53
East: 431014.55

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1027	1027
Logging Period (s)	30	30
Temperature (C)	10.844	11.108
Conductivity (mS/cm)	0.145	0.182
Data File Name	Trident_CB047_101219.dat	

Porewater Sensor Checks

Sample Volume (ml)	265ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1117	1130			
Logging Period (s)	30	30			
Temperature (C)	11.124	11.121			
Conductivity (mS/cm)	0.175	0.172			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1020	1029
Temperature (C)	8.2	14.4
Conductivity (uS/cm)	151	171
TDS (ppm)	96.9	110.4
pH	7.89	7.85
ORP (mV)	192	210
DO (mg/L)	NA	6.18

Porewater Water Quality Checks

Sample Volume (ml)	265ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1115	1131			
Temperature (C)	18	18.5			
Conductivity (uS/cm)	172.8	176			
TDS (ppm)	111.7	114			
pH	7.7	7.85			
ORP (mV)	202	225			
DO (mg/L)	5.09	5.01			

Camera File Name	2019-10-12 09-47-32.mp4 2019-10-12 09-58-12.mp4 2019-10-12 10-03-26.mp4

Recorded By: jm

Comments/Observations:

EPA split - metals

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB048

Date: 10/22/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 815
Off Station Time: 1050

Station Conditions
Water Depth: 16.8

Vessel GPS
North: 5407419.52
East: 431088.41

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	946	946
Logging Period (s)	30	30
Temperature (C)	10.18	10.152
Conductivity (mS/cm)	0.147	0.143
Data File Name	Trident_CB048_102219.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1014	1034			
Logging Period (s)	30	30			
Temperature (C)	10.173	10.177			
Conductivity (mS/cm)	0.143	0.143			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	936	945
Temperature (C)	9.4	14.9
Conductivity (uS/cm)	148.1	149.5
TDS (ppm)	94.98	95.99
pH	8.17	8.15
ORP (mV)	214	244
DO (mg/L)	NA	9.65

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1012	1033			
Temperature (C)	15.4	16			
Conductivity (uS/cm)	149.1	149			
TDS (ppm)	95.69	95.62			
pH	8.16	8.16			
ORP (mV)	237	259			
DO (mg/L)	9.53	9.42			

Camera File Name	CB048_102219.mp4

Recorded By: BC

Comments/Observations:

Moved once to obtain better insertion and seal.

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: CB049 Date: 10/22/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1118
Off Station Time: 1350

Station Conditions
Water Depth: 15.3m

Vessel GPS
North: 5407330.77
East: 431241.05

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1255	1255
Logging Period (s)	30	30
Temperature (C)	10.211	10.199
Conductivity (mS/cm)	0.147	0.143
Data File Name	Trident_CB049_102219.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1317	1334			
Logging Period (s)	30	30			
Temperature (C)	10.204	10.207			
Conductivity (mS/cm)	0.143	0.143			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1233	1252
Temperature (C)	16.5	20.1
Conductivity (uS/cm)	148	149.9
TDS (ppm)	94.75	96.15
pH	8.21	8.17
ORP (mV)	216	249
DO (mg/L)	NA	8.39

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1316	1332			
Temperature (C)	19.5	19.3			
Conductivity (uS/cm)	149.3	149.3			
TDS (ppm)	95.77	95.79			
pH	8.15	8.19			
ORP (mV)	242	246			
DO (mg/L)	8.31	7.9			

Camera File Name	CB049_102219.mp4

Recorded By: BC

Comments/Observations:

After multiple attempts were able to get full insertion.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB052

Date: 10/22/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1414
Off Station Time: 1615

Station Conditions
Water Depth: 20.8m

Vessel GPS
North: 5407515.8
East: 431594.44

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1506	1506
Logging Period (s)	30	30
Temperature (C)	10.227	10.291
Conductivity (mS/cm)	0.148	0.144
Data File Name	Trident_CB052_102219.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1551	1552			
Logging Period (s)	30	30			
Temperature (C)	10.282	10.285			
Conductivity (mS/cm)	0.143	0.143			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1453	1505
Temperature (C)	17.7	19.8
Conductivity (uS/cm)	149.5	149.6
TDS (ppm)	95.68	95.99
pH	8.18	8.2
ORP (mV)	227	249
DO (mg/L)	NA	8.45

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1530	1551			
Temperature (C)	19.5	19.6			
Conductivity (uS/cm)	149.9	150			
TDS (ppm)	96.17	96.27			
pH	8.17	8.17			
ORP (mV)	242	255			
DO (mg/L)	8.58	8.71			

Camera File Name	CB052_102219.mp4

Recorded By: BC

Comments/Observations:

Full drive insertion on first attempt.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB055

Date: 10/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1319
Off Station Time: 1530

Station Conditions
Water Depth: 17.7m

Vessel GPS
North: 5407692.9
East: 431789.59

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1358	1358
Logging Period (s)	30	30
Temperature (C)	10.526	10.57
Conductivity (mS/cm)	0.145	0.145
Data File Name	Trident_CB055_101819.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1446	1439			
Logging Period (s)	30	30			
Temperature (C)	10.579	10.584			
Conductivity (mS/cm)	0.146	0.145			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1351	1357
Temperature (C)	14.9	19.6
Conductivity (uS/cm)	148.9	151.3
TDS (ppm)	95.53	97.2
pH	8.14	8.13
ORP (mV)	211	225
DO (mg/L)	NA	7.03

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1425	1441			
Temperature (C)	19.7	19.9			
Conductivity (uS/cm)	149.7	149.5			
TDS (ppm)	96.07	95.95			
pH	8.17	8.18			
ORP (mV)	228	236			
DO (mg/L)	7.77	7.64			

Camera File Name	CB055_101819.mp4

Recorded By: BC

Comments/Observations:

PW parameters close to SW parameters. Verified full push with video in coarse material.

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: CB056

Date: 10/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1121
Off Station Time: 1255

Station Conditions
Water Depth: 10.9m

Vessel GPS
North: 5407672.09
East: 432089.3

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1155	1155
Logging Period (s)	30	30
Temperature (C)	10.535	10.669
Conductivity (mS/cm)	0.147	0.169
Data File Name	Trident_CB056_101819.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1218	1232			
Logging Period (s)	30	30			
Temperature (C)	10.676	10.674			
Conductivity (mS/cm)	0.172	0.166			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1145	1154
Temperature (C)	15.2	21
Conductivity (uS/cm)	155.5	170
TDS (ppm)	100.2	109.8
pH	7.53	7.74
ORP (mV)	238	177
DO (mg/L)	NA	6.08

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1217	1233			
Temperature (C)	21	21.3			
Conductivity (uS/cm)	171.4	169.4			
TDS (ppm)	110.8	109.3			
pH	7.45	7.7			
ORP (mV)	158	164			
DO (mg/L)	3.9	3.71			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: JS001 Date: 10/11/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 900
Off Station Time: 1116

Station Conditions
Water Depth: 14.1m

Vessel GPS
North: 5407514.3
East: 430961.74

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	952	952
Logging Period (s)	30	30
Temperature (C)	10.892	11.048
Conductivity (mS/cm)	0.146	0.125
Data File Name	Trident_JS001_101119.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1039	1054			
Logging Period (s)	30	30			
Temperature (C)	11.321	11.365			
Conductivity (mS/cm)	0.134	0.138			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	946	951
Temperature (C)	6.6	12
Conductivity (uS/cm)	148.1	131.5
TDS (ppm)	95.02	84.41
pH	8.11	9.39
ORP (mV)	219	161
DO (mg/L)	NA	4.29

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1037	1056			
Temperature (C)	16.2	17.7			
Conductivity (uS/cm)	136.8	137.5			
TDS (ppm)	87.68	88.19			
pH	9.68	9.8			
ORP (mV)	110	101			
DO (mg/L)	2.92	2.56			

Camera File Name	2019-10-11 09-24-06.mp4 2019-10-11 09-25-33.mp4

Recorded By: jm

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: JS002

Date: 10/11/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1200
Off Station Time: 1405

Station Conditions
Water Depth: 11.3m

Vessel GPS
North: 5407577.35
East: 431068.65

Vessel: Yeti

Trident System
2 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlackTape	2005
Sensor Depth (in)	12	4.5
Start Logging Time	1250	1250
Logging Period (s)	30	30
Temperature (C)	11.016	11.537
Conductivity (mS/cm)	0.147	0.203
Data File Name	Trident_JS002_101119.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2005	2005			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1327	1345			
Logging Period (s)	30	30			
Temperature (C)	11.595	11.616			
Conductivity (mS/cm)	0.206	0.207			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1230	1252
Temperature (C)	12.1	18.1
Conductivity (uS/cm)	152.8	178.3
TDS (ppm)	98.2	115.5
pH	7.99	7.91
ORP (mV)	191	204
DO (mg/L)	NA	3.76

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1328	1346			
Temperature (C)	18.5	17.2			
Conductivity (uS/cm)	181.1	181.1			
TDS (ppm)	117.3	117.3			
pH	7.4	7.87			
ORP (mV)	200	165			
DO (mg/L)	2.8	2.39			

Camera File Name	2019-10-11 12-11-39.mp4 2019-10-11 12-06-00.mp4

Recorded By: jm

Comments/Observations:

Dead Man's Eddy AOI

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: 1-B5-NRT

Date: 10/15/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1055
Off Station Time: 1242

Station Conditions
Water Depth: 1m

Vessel GPS
North: 5421109.99
East: 446376.6

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1124	1124
Logging Period (s)	30	30
Temperature (C)	10.386	10.2
Conductivity (mS/cm)	0.153	0.61
Data File Name	Trident_1-B5-NRT_101519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1145	1201			
Logging Period (s)	30	30			
Temperature (C)	10.366	10.445			
Conductivity (mS/cm)	0.617	0.635			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1115	1122
Temperature (C)	10.5	11
Conductivity (uS/cm)	154	573.6
TDS (ppm)	98.93	388.2
pH	7.5	7.15
ORP (mV)	203	-56
DO (mg/L)	NA	2.6

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1148	1203			
Temperature (C)	12.3	12.4			
Conductivity (uS/cm)	573.8	581.7			
TDS (ppm)	388.5	393.9			
pH	7.19	7.24			
ORP (mV)	-79	-104			
DO (mg/L)	2.46	2.11			

Camera File Name	1-B5-NRT_101519.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1132 End 1201 no sulfide Vegetation on bottom

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: 1-B6-NRT

Date: 10/15/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1304
Off Station Time: 1420

Station Conditions
Water Depth: 0.5m

Vessel GPS
North: 5421022.38
East: 446335.34

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1327	1327
Logging Period (s)	30	30
Temperature (C)	10.501	11.161
Conductivity (mS/cm)	0.15	0.261
Data File Name	Trident_1-B6-NRT_101519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1348	1402			
Logging Period (s)	30	30			
Temperature (C)	11.333	11.421			
Conductivity (mS/cm)	0.26	0.26			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1321	1327
Temperature (C)	12.9	12.2
Conductivity (uS/cm)	151	205.5
TDS (ppm)	96.96	134.1
pH	7.06	7.28
ORP (mV)	211	111
DO (mg/L)	NA	3.79

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1352	1406			
Temperature (C)	11.8	12			
Conductivity (uS/cm)	202	209			
TDS (ppm)	132.4	136.4			
pH	7.93	8.1			
ORP (mV)	121	137			
DO (mg/L)	3.96	3.31			

Camera File Name	1-B6-NRT_101519.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1337 End 1402 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM002

Date: 10/10/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1123
Off Station Time: 1245

Station Conditions
Water Depth: 10.3m

Vessel GPS
North: 5421235.6
East: 445983.4

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1148	1148
Logging Period (s)	30	30
Temperature (C)	11.235	11.084
Conductivity (mS/cm)	0.152	0.098
Data File Name	Trident_DM002_101019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1210	1221			
Logging Period (s)	30	30			
Temperature (C)	11.361	11.424			
Conductivity (mS/cm)	0.106	0.114			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1139	1147
Temperature (C)	10.1	10.8
Conductivity (uS/cm)	152	108.8
TDS (ppm)	97.58	69.77
pH	7.51	8.54
ORP (mV)	222	183
DO (mg/L)	NA	5.09

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)					
Sample Time	1213	1224			
Temperature (C)	11.7	12.2			
Conductivity (uS/cm)	108.8	114.5			
TDS (ppm)	69.79	73.5			
pH	9.44	9.78			
ORP (mV)	125	133			
DO (mg/L)	3.76	3.65			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1155 End 1221 no sulfide

Field logbook notes purge Volume of 300 mL.
JA.P. 2-24-20

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM007

Date: 10/16/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1006
Off Station Time: 1212

Station Conditions
Water Depth: 8.8m

Vessel GPS
North: 5421191.98
East: 446085.39

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1049	1049
Logging Period (s)	30	30
Temperature (C)	10.419	10.484
Conductivity (mS/cm)	0.151	0.136
Data File Name	Trident_DM007_101619.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1110	1133
Logging Period (s)	30	30
Temperature (C)	10.574	10.612
Conductivity (mS/cm)	0.135	0.135
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1042	1045
Temperature (C)	9.6	9.7
Conductivity (uS/cm)	153.3	142.2
TDS (ppm)	98.55	91.18
pH	7.53	8.06
ORP (mV)	189	183
DO (mg/L)	NA	5.62

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1113	1136
Temperature (C)	9.2	9.3
Conductivity (uS/cm)	182.6	138.7
TDS (ppm)	118.4	88.98
pH	7.83	7.85
ORP (mV)	145	212
DO (mg/L)	6.35	4.47

Camera File Name	DM007_101619.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1057 End 1130 no sulfide 10-15 degree slope

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM008

Date: 9/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1135
Off Station Time: 1451

Station Conditions
Water Depth: 5.5m

Vessel GPS
North: 5421203.7
East: 446070.22

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1246	1246
Logging Period (s)	30	30
Temperature (C)	17.009	16.951
Conductivity (mS/cm)	0.14	0.208
Data File Name	Trident_DM008_091919.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1328	1346			
Logging Period (s)	30	30			
Temperature (C)	16.829	16.911			
Conductivity (mS/cm)	0.205	0.204			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1245	1240
Temperature (C)	24.6	24.8
Conductivity (uS/cm)	144.4	160.4
TDS (ppm)	92.5	102.9
pH	7.79	7.19
ORP (mV)	183	177
DO (mg/L)	NA	4.66

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1326	1345			
Temperature (C)	27.4	26.2			
Conductivity (uS/cm)	157.5	164.3			
TDS (ppm)	101.3	105.9			
pH	7.73	7.02			
ORP (mV)	199	252			
DO (mg/L)	4.87	4.96			

Camera File Name	

Recorded By: JM

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM010

Date: 9/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 943
Off Station Time: 1205

Station Conditions
Water Depth: 0.8m

Vessel GPS
North: 5421212.46
East: 446113.59

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1021	1021
Logging Period (s)	30	30
Temperature (C)	16.721	16.596
Conductivity (mS/cm)	0.139	0.216
Data File Name	Trident_DM010_092119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1052	1105			
Logging Period (s)	30	30			
Temperature (C)	16.69	16.716			
Conductivity (mS/cm)	0.214	0.212			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1010	1019
Temperature (C)	15.2	15.5
Conductivity (uS/cm)	144.1	162.8
TDS (ppm)	92.46	104.8
pH	7.26	6.46
ORP (mV)	244	248
DO (mg/L)	NA	3.54

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1050	1108			
Temperature (C)	17.2	18			
Conductivity (uS/cm)	161.3	156.6			
TDS (ppm)	103.8	100.7			
pH	7.12	6.96			
ORP (mV)	228	233			
DO (mg/L)	3.81	3			

Camera File Name	

Recorded By: JM

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM015

Date: 9/20/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 851
Off Station Time: 1140

Station Conditions
Water Depth: 1.5m

Vessel GPS
North: 5421231.67
East: 446157.61

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	934	934
Logging Period (s)	30	30
Temperature (C)	16.464	16.269
Conductivity (mS/cm)	0.137	0.135
Data File Name	Trident_DM015_092019.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1006	1024			
Logging Period (s)	30	30			
Temperature (C)	16.436	16.508			
Conductivity (mS/cm)	0.139	0.139			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	936	936
Temperature (C)	15.5	15.3
Conductivity (uS/cm)	141.5	151
TDS (ppm)	90.66	97.03
pH	8.4	9.33
ORP (mV)	173	132
DO (mg/L)	NA	4.03

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1008	1026			
Temperature (C)	16	16.9			
Conductivity (uS/cm)	176.1	161.3			
TDS (ppm)	113.8	103.8			
pH	8.54	8.78			
ORP (mV)	151	155			
DO (mg/L)	4.61	3.94			

Camera File Name	

Recorded By: JM

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM016

Date: 9/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1226
Off Station Time: 1426

Station Conditions
Water Depth: 4.3m

Vessel GPS
North: 5421158.45
East: 446171.01

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1259	1259
Logging Period (s)	30	30
Temperature (C)	16.961	16.702
Conductivity (mS/cm)	0.139	0.122
Data File Name	Trident_DM016_092119.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1326	1342			
Logging Period (s)	30	30			
Temperature (C)	16.7	16.714			
Conductivity (mS/cm)	0.124	0.126			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1248	1257
Temperature (C)	21.7	24.3
Conductivity (uS/cm)	152.3	120.2
TDS (ppm)	97.53	77.52
pH	7.06	7.01
ORP (mV)	198	200
DO (mg/L)	NA	2.23

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1323	1341			
Temperature (C)	25.4	25.3			
Conductivity (uS/cm)	129.2	124.1			
TDS (ppm)	83.92	79.93			
pH	7.14	7.21			
ORP (mV)	201	279			
DO (mg/L)	1.76	1.49			

Camera File Name	2019-09-21 12-34-27.mp4

Recorded By: JM

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM018

Date: 9/20/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1257
Off Station Time: 1527

Station Conditions
Water Depth: 1.8m

Vessel GPS
North: 5421136
East: 446210.49

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	5
Start Logging Time	1330	1330
Logging Period (s)	30	30
Temperature (C)	17.182	16.734
Conductivity (mS/cm)	0.142	0.39
Data File Name	Trident_DM018_092019.dat	

Porewater Sensor Checks

Sample Volume (ml)	140ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	5	5			
Start Logging Time	1356	1412			
Logging Period (s)	30	30			
Temperature (C)	16.695	16.67			
Conductivity (mS/cm)	0.39	0.352			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	5
Purge Volme (ml)	300	300
Sample Time	1322	1331
Temperature (C)	26.8	26.3
Conductivity (uS/cm)	187.5	209.6
TDS (ppm)	137.5	136.6
pH	7.05	6.84
ORP (mV)	194	206
DO (mg/L)	NA	2.22

Porewater Water Quality Checks

Sample Volume (ml)	140ml	Post			
Sample Depth (in)	5	5			
Purge Volme (ml)	NA	NA			
Sample Time	1357	1413			
Temperature (C)	22.2	19.3			
Conductivity (uS/cm)	179.8	197			
TDS (ppm)	116.3	128.1			
pH	7.12	6.74			
ORP (mV)	209	239			
DO (mg/L)	1.68	1.34			

Camera File Name

Recorded By: JM

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM019

Date: 10/12/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1528
Off Station Time: 1700

Station Conditions
Water Depth: 1.8m

Vessel GPS
North: 5421190.86
East: 446207.4

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1554	1554
Logging Period (s)	30	30
Temperature (C)	10.765	11.007
Conductivity (mS/cm)	0.152	0.235
Data File Name	Trident_DM019_101219.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1623	1628			
Logging Period (s)	30	30			
Temperature (C)	11.04	11.04			
Conductivity (mS/cm)	0.225	0.224			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1539	1552
Temperature (C)	14.7	14.1
Conductivity (uS/cm)	151.5	257.9
TDS (ppm)	97.34	168.6
pH	7.29	7.24
ORP (mV)	259	244
DO (mg/L)	NA	3.81

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1621	1631			
Temperature (C)	15	14.9			
Conductivity (uS/cm)	258.1	248.1			
TDS (ppm)	168.9	162.3			
pH	7.96	7.98			
ORP (mV)	108	65			
DO (mg/L)	3.55	3.07			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1600 End 1627 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM020

Date: 10/14/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1427
Off Station Time: 1610

Station Conditions
Water Depth: 4.8m

Vessel GPS
North: 5421209.74
East: 446226.87

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1456	1456
Logging Period (s)	30	30
Temperature (C)	10.598	10.745
Conductivity (mS/cm)	0.154	0.158
Data File Name	Trident_DM020_101419.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1525	1540			
Logging Period (s)	30	30			
Temperature (C)	10.763	10.772			
Conductivity (mS/cm)	0.138	0.136			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1447	1454
Temperature (C)	17.1	18.9
Conductivity (uS/cm)	156.1	158.7
TDS (ppm)	100.2	102
pH	7.84	8.02
ORP (mV)	225	220
DO (mg/L)	NA	5.06

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1528	1543			
Temperature (C)	20.7	21.7			
Conductivity (uS/cm)	151.3	149.5			
TDS (ppm)	97.19	96			
pH	8.14	8.254			
ORP (mV)	187	195			
DO (mg/L)	3.77	2.64			

Camera File Name	DM020_101419.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1507 End 1539 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM022

Date: 9/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1023
Off Station Time: 1534

Station Conditions
Water Depth: 0.9m

Vessel GPS
North: 5421157.9
East: 446232.5

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1219	1219
Logging Period (s)	30	30
Temperature (C)	16.699	16.5
Conductivity (mS/cm)	0.137	0.183
Data File Name	Trident_DM022_091819.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1319	1331			
Logging Period (s)	30	30			
Temperature (C)	16.565	16.586			
Conductivity (mS/cm)	0.221	0.231			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1210	1216
Temperature (C)	13.8	14.6
Conductivity (uS/cm)	146.2	144.5
TDS (ppm)	93.8	92.69
pH	6.98	9.04
ORP (mV)	253	155
DO (mg/L)	NA	4.57

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1317	1333			
Temperature (C)	15.6	15.5			
Conductivity (uS/cm)	166	172.5			
TDS (ppm)	107	111.4			
pH	9.87	9.39			
ORP (mV)	95	80			
DO (mg/L)	3.31	2.97			

Camera File Name

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM023

Date: 9/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 825
Off Station Time: 1128

Station Conditions
Water Depth: 0.9m

Vessel GPS
North: 5421167.06
East: 446259.24

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	924	924
Logging Period (s)	30	30
Temperature (C)	16.136	15.957
Conductivity (mS/cm)	0.134	0.223
Data File Name	Trident_DM023_091919.dat	

Porewater Sensor Checks

Sample Volume (ml)	220ml	Post			
Sensor Number	BlueTape	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1005	1023			
Logging Period (s)	30	30			
Temperature (C)	16.13	16.186			
Conductivity (mS/cm)	0.225	0.23			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	915	920
Temperature (C)	15.2	15.3
Conductivity (uS/cm)	139.6	171.7
TDS (ppm)	89.61	110.9
pH	7.03	6.72
ORP (mV)	204	287
DO (mg/L)	NA	4.52

Porewater Water Quality Checks

Sample Volume (ml)	220ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1010	1028			
Temperature (C)	16.7	17.2			
Conductivity (uS/cm)	173.5	172			
TDS (ppm)	112.8	111.1			
pH	7.07	6.79			
ORP (mV)	295	306			
DO (mg/L)	2.68	2.32			

Camera File Name

Recorded By: JM

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM024

Date: 10/15/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1430
Off Station Time: 1625

Station Conditions
Water Depth: 2.0m

Vessel GPS
North: 5421105.07
East: 446252.98

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1519	1519
Logging Period (s)	30	30
Temperature (C)	10.528	10.66
Conductivity (mS/cm)	0.15	0.237
Data File Name	Trident_DM024_101519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1542	1602
Logging Period (s)	30	30
Temperature (C)	10.696	10.702
Conductivity (mS/cm)	0.234	0.231
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1511	1517
Temperature (C)	12.5	12.1
Conductivity (uS/cm)	155.9	198.6
TDS (ppm)	100.3	129.3
pH	7.41	7.46
ORP (mV)	238	245
DO (mg/L)	NA	4.43

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1546	1606
Temperature (C)	11.3	11.3
Conductivity (uS/cm)	194.7	205.3
TDS (ppm)	126.6	133.9
pH	8.08	8.16
ORP (mV)	197	175
DO (mg/L)	4.36	4.16

Camera File Name	DM024_101519.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1525 End 1603 no sulfide DUPE DOC AND TOC

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM25

Date: 10/14/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1127
Off Station Time: 1400

Station Conditions
Water Depth: 2.8m

Vessel GPS
North: 5421098.91
East: 446314.19

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1225	1225
Logging Period (s)	30	30
Temperature (C)	10.53	10.597
Conductivity (mS/cm)	0.152	0.13
Data File Name	Trident_DM025_101419.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1243	1259
Logging Period (s)	30	30
Temperature (C)	10.715	10.741
Conductivity (mS/cm)	0.128	0.133
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1212	1220
Temperature (C)	14.6	12.9
Conductivity (uS/cm)	153.5	139.6
TDS (ppm)	99.39	89.54
pH	7.84	7.8
ORP (mV)	229	235
DO (mg/L)	NA	7.15

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1247	1301
Temperature (C)	13.2	13.3
Conductivity (uS/cm)	135.2	138.1
TDS (ppm)	86.74	88.62
pH	8.64	9.06
ORP (mV)	213	197
DO (mg/L)	6.39	6.39

Camera File Name	DM025_101419.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1232 End 1258 no sulfide Building Fire .5miles some noticable smell

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM026

Date: 9/17/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1400
Off Station Time: 1811

Station Conditions
Water Depth: 0.8m

Vessel GPS
North: 5421074.17
East: 446292.15

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Samplable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	BlueTape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1617	1617
Logging Period (s)	30	30
Temperature (C)	15.992	16.031
Conductivity (mS/cm)	0.136	0.088
Data File Name	Trident_DM026_091719.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	BlueTape	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1714	1730			
Logging Period (s)	30	30			
Temperature (C)	16.05	16.048			
Conductivity (mS/cm)	0.098	0.101			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1549	1608
Temperature (C)	17.1	17.6
Conductivity (uS/cm)	155.6	87.71
TDS (ppm)	99.95	55.12
pH	6.9	5.9
ORP (mV)	240	252
DO (mg/L)	NA	2.86

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1715	1734			
Temperature (C)	17.7	17.1			
Conductivity (uS/cm)	91.95	88.27			
TDS (ppm)	59.08	56.71			
pH	6.72	6.53			
ORP (mV)	218	314			
DO (mg/L)	3.1	2.21			

Camera File Name	

Recorded By: BC

Comments/Observations:

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM027

Date: 10/12/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1056
Off Station Time: 1245

Station Conditions
Water Depth: 4.5m

Vessel GPS
East 5421058.35
North 446314.68

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1121	1121
Logging Period (s)	30	30
Temperature (C)	10.721	10.076
Conductivity (mS/cm)	0.15	0.21
Data File Name	Trident_DM027_101219.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1152	1202			
Logging Period (s)	30	30			
Temperature (C)	10.385	10.481			
Conductivity (mS/cm)	0.215	0.215			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1111	1120
Temperature (C)	9.4	9.2
Conductivity (uS/cm)	149.9	188.4
TDS (ppm)	96.24	122.4
pH	7.23	7.08
ORP (mV)	244	260
DO (mg/L)	NA	6.9

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1150	1201			
Temperature (C)	10.3	10.7			
Conductivity (uS/cm)	191.7	206			
TDS (ppm)	124.6	134.3			
pH	8.19	8.38			
ORP (mV)	200	202			
DO (mg/L)	6.66	6.71			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1130 End 1157 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM030

Date: 10/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1448
Off Station Time: 1640

Station Conditions
Water Depth: 5.0m

Vessel GPS
North: 5420839.41
East: 446548.03

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1520	1520
Logging Period (s)	30	30
Temperature (C)	10.419	10.472
Conductivity (mS/cm)	0.149	0.151
Data File Name	Trident_DM030_101819.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1540	1555			
Logging Period (s)	30	30			
Temperature (C)	10.463	10.46			
Conductivity (mS/cm)	0.152	0.15			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1516	1519
Temperature (C)	14	14.2
Conductivity (uS/cm)	157.5	149.3
TDS (ppm)	101.3	95.84
pH	7.53	8.02
ORP (mV)	222	228
DO (mg/L)	NA	9.06

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1543	1559			
Temperature (C)	13.8	13.8			
Conductivity (uS/cm)	149.3	149.2			
TDS (ppm)	95.83	95.72			
pH	8.06	8.17			
ORP (mV)	226	232			
DO (mg/L)	9.34	9.3			

Camera File Name	DM030_101819.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1527 End 1555 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM036

Date: 10/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1320
Off Station Time: 1510

Station Conditions
Water Depth: 11.8m

Vessel GPS
North: 5420445.26
East: 446704.95

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1356	1356
Logging Period (s)	30	30
Temperature (C)	10.262	10.262
Conductivity (mS/cm)	0.148	0.148
Data File Name	Trident_DM036_102119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1415	1433			
Logging Period (s)	30	30			
Temperature (C)	10.304	10.312			
Conductivity (mS/cm)	0.147	0.146			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1351	1355
Temperature (C)	8.5	8.8
Conductivity (uS/cm)	153.9	166.6
TDS (ppm)	98.99	107.3
pH	7.13	7.93
ORP (mV)	218	212
DO (mg/L)	NA	9.81

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1418	1436			
Temperature (C)	8.6	8.2			
Conductivity (uS/cm)	156.7	150.6			
TDS (ppm)	100.7	96.62			
pH	7.9	8.19			
ORP (mV)	208	210			
DO (mg/L)	9.63	9.51			

Camera File Name	DM036_102119.mp4

Recorded By: AJS

Comments/Observations:

Sample Start 1403 End Sample 1433

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM038

Date: 10/21/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1050
Off Station Time: 1255

Station Conditions
Water Depth: 8.0m

Vessel GPS
North: 5420452.77
East: 446763.25

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1137	1137
Logging Period (s)	30	30
Temperature (C)	10.239	10.227
Conductivity (mS/cm)	0.148	0.149
Data File Name	Trident_DM038_102119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1158	1218			
Logging Period (s)	30	30			
Temperature (C)	10.269	10.29			
Conductivity (mS/cm)	0.149	0.148			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1128	1131
Temperature (C)	6.9	7.7
Conductivity (uS/cm)	152	149.9
TDS (ppm)	97.63	96.24
pH	7.56	7.96
ORP (mV)	171	177
DO (mg/L)	NA	9.37

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1203	1220			
Temperature (C)	8	7.9			
Conductivity (uS/cm)	153.8	150.3			
TDS (ppm)	98.87	96.44			
pH	7.81	8.06			
ORP (mV)	202	212			
DO (mg/L)	9.32	9.26			

Camera File Name	DM038_102119.mp4

Recorded By: AJS

Comments/Observations:

Sample Start 1145 End Sample 1220

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM039

Date: 10/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1030
Off Station Time: 1230

Station Conditions
Water Depth: 6.7m

Vessel GPS
North: 5420451.47
East: 446780.76

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1104	1104
Logging Period (s)	30	30
Temperature (C)	10.372	10.431
Conductivity (mS/cm)	0.15	0.154
Data File Name	Trident_DM039_101819.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1124	1139			
Logging Period (s)	30	30			
Temperature (C)	10.453	10.462			
Conductivity (mS/cm)	0.154	0.152			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1055	1102
Temperature (C)	11.4	11.3
Conductivity (uS/cm)	150.2	150.4
TDS (ppm)	96.4	96.56
pH	7.79	7.88
ORP (mV)	189	200
DO (mg/L)	NA	9.25

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1127	1142			
Temperature (C)	11.4	12			
Conductivity (uS/cm)	149.8	149.6			
TDS (ppm)	96.15	96.06			
pH	7.79	8.08			
ORP (mV)	213	216			
DO (mg/L)	9.3	9.36			

Camera File Name	DM039_101819.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1109 End 1138 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM043

Date: 10/18/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1241
Off Station Time: 1430

Station Conditions
Water Depth: 6.2m

Vessel GPS
North: 5420318.93
East: 446767.87

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1314	1314
Logging Period (s)	30	30
Temperature (C)	10.421	10.559
Conductivity (mS/cm)	0.151	0.172
Data File Name	Trident_DM043_101819.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1333	1349			
Logging Period (s)	30	30			
Temperature (C)	10.542	10.548			
Conductivity (mS/cm)	0.17	0.169			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1308	1312
Temperature (C)	14.3	15.2
Conductivity (uS/cm)	158.8	155.4
TDS (ppm)	102	99.9
pH	7.52	8.08
ORP (mV)	212	221
DO (mg/L)	NA	8.71

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1336	1353			
Temperature (C)	15.2	15.2			
Conductivity (uS/cm)	155.3	154.8			
TDS (ppm)	99.8	99.48			
pH	8.08	8.11			
ORP (mV)	214	218			
DO (mg/L)	8.9	9.1			

Camera File Name	DM043_101819.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1320 End 1349 no sulfide Some sediment in the purge. Yellow color

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM044

Date: 10/11/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1053
Off Station Time: 1300

Station Conditions
Water Depth: 4.2m

Vessel GPS
North: 5420321.36
East: 446811.01

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1133	1133
Logging Period (s)	30	30
Temperature (C)	10.923	10.753
Conductivity (mS/cm)	0.147	0.533
Data File Name	Trident_DM044_101119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1150	1209			
Logging Period (s)	30	30			
Temperature (C)	10.882	10.996			
Conductivity (mS/cm)	0.527	0.525			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1110	1121
Temperature (C)	7.7	9.2
Conductivity (uS/cm)	148.1	530.9
TDS (ppm)	95.03	358.6
pH	7.31	7.41
ORP (mV)	228	-73
DO (mg/L)	NA	4.19

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1155	1211			
Temperature (C)	10.1	11.8			
Conductivity (uS/cm)	534.3	570.4			
TDS (ppm)	361.1	386.2			
pH	7.47	7.66			
ORP (mV)	-97	-133			
DO (mg/L)	3.85	3.02			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample Start time 1132 End 1207 no sulfide duplicate dissolved metals

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM045

Date: 10/10/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1320
Off Station Time: 1443

Station Conditions
Water Depth: 5.8m

Vessel GPS
North: 5420285.42
East: 446834.05
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1347	1347
Logging Period (s)	30	30
Temperature (C)	11.286	11.34
Conductivity (mS/cm)	0.153	0.506
Data File Name	Trident_DM045_101019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1409	1422			
Logging Period (s)	30	30			
Temperature (C)	11.411	11.431			
Conductivity (mS/cm)	0.487	0.479			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1334	1345
Temperature (C)	11.1	10.8
Conductivity (uS/cm)	152.6	474.3
TDS (ppm)	98	319.3
pH	7.2	7.25
ORP (mV)	240	-50
DO (mg/L)	NA	3.22

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1413	1425			
Temperature (C)	11.8	12.4			
Conductivity (uS/cm)	470.7	472.6			
TDS (ppm)	316.8	318.1			
pH	7.55	7.61			
ORP (mV)	-107	-126			
DO (mg/L)	3.53	3.17			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1354 End 1421 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM046

Date: 10/9/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1123
Off Station Time: 1300

Station Conditions
Water Depth: 4.8m

Vessel GPS
North: 5420280.78
East: 446850.5
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1158	1158
Logging Period (s)	30	30
Temperature (C)	11.702	11.372
Conductivity (mS/cm)	0.152	0.299
Data File Name	Trident_DM046_100919.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1218	1236			
Logging Period (s)	30	30			
Temperature (C)	11.659	11.762			
Conductivity (mS/cm)	0.295	0.302			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1148	1156
Temperature (C)	10.7	11.4
Conductivity (uS/cm)	151.4	319.2
TDS (ppm)	97.2	211.5
pH	7.46	7.29
ORP (mV)	213	10
DO (mg/L)	NA	5.27

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1222	1236			
Temperature (C)	12.6	12			
Conductivity (uS/cm)	310.9	317.1			
TDS (ppm)	205.6	209.9			
pH	7.57	7.72			
ORP (mV)	-42	-78			
DO (mg/L)	4.1	3.99			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample Start time 1202 End 1232 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM047

Date: 10/19/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1150
Off Station Time: 1420

Station Conditions
Water Depth: 4.9m

Vessel GPS
North: 5420453.52
East: 446818.38

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1258	1258
Logging Period (s)	30	30
Temperature (C)	10.225	10.307
Conductivity (mS/cm)	0.149	0.156
Data File Name	Trident_DM047_101919.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1327	1342
Logging Period (s)	30	30
Temperature (C)	10.344	10.357
Conductivity (mS/cm)	0.198	0.223
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1254	1302
Temperature (C)	13	12.7
Conductivity (uS/cm)	153.1	150.9
TDS (ppm)	98.42	96.84
pH	7.7	7.87
ORP (mV)	160	177
DO (mg/L)	NA	9.15

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1330	1347
Temperature (C)	12.8	12.4
Conductivity (uS/cm)	186.6	195.2
TDS (ppm)	121.1	127
pH	7.64	8
ORP (mV)	192	200
DO (mg/L)	8.95	8.71

Camera File Name	DM047_101919.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1309 End 1342 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: DM050 Date: 10/8/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1025
Off Station Time: 1230

Station Conditions
Water Depth: 6.1m

Vessel GPS
North: 5420309.19
East: 446902.9
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1114	1114
Logging Period (s)	30	30
Temperature (C)	12.391	12.427
Conductivity (mS/cm)	0.162	0.35
Data File Name	Trident_DM050_100819.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1143	1152			
Logging Period (s)	30	30			
Temperature (C)	12.546	12.565			
Conductivity (mS/cm)	0.324	0.326			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1101	1113
Temperature (C)	9.7	10.8
Conductivity (uS/cm)	145.7	243.7
TDS (ppm)	93.45	228.8
pH	7.13	7.27
ORP (mV)	211	32
DO (mg/L)	NA	5.59

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1142	1155			
Temperature (C)	12.7	13.3			
Conductivity (uS/cm)	332.7	335.9			
TDS (ppm)	221	223.2			
pH	7.95	7.85			
ORP (mV)	-11	44			
DO (mg/L)	5.77	5.42			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1124 End 1151 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM059

Date: 10/16/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1326
Off Station Time: 1500

Station Conditions
Water Depth: 5.4m

Vessel GPS
North: 5420602.52
East: 447028.92

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1357	1357
Logging Period (s)	30	30
Temperature (C)	10.478	10.513
Conductivity (mS/cm)	0.151	0.136
Data File Name	Trident_DM059_101619.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1418	1433			
Logging Period (s)	30	30			
Temperature (C)	10.531	10.542			
Conductivity (mS/cm)	0.141	0.144			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1350	1355
Temperature (C)	11.5	12.2
Conductivity (uS/cm)	151	152.8
TDS (ppm)	96.98	97.95
pH	7.2	7.93
ORP (mV)	258	232
DO (mg/L)	NA	9.09

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1422	1437			
Temperature (C)	12.5	12.8			
Conductivity (uS/cm)	153.8	151.6			
TDS (ppm)	98.82	97.25			
pH	7.95	8.12			
ORP (mV)	215	213			
DO (mg/L)	9.63	10.23			

Camera File Name	DM059_101619.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1400 End 1435 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: DM061 Date: 10/11/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1455
Off Station Time: 1620

Station Conditions
Water Depth: 2.20m

Vessel GPS
North: 5420648.26
East: 447096.95
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sampleable sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1523	1523
Logging Period (s)	30	30
Temperature (C)	11.147	11.289
Conductivity (mS/cm)	0.148	0.283
Data File Name	Trident_DM061_101119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1543	1550			
Logging Period (s)	30	30			
Temperature (C)	11.313	11.316			
Conductivity (mS/cm)	0.371	0.373			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1517	1514
Temperature (C)	19	18.1
Conductivity (uS/cm)	146.8	250.2
TDS (ppm)	94.17	163.5
pH	8.05	7.61
ORP (mV)	260	115
DO (mg/L)	NA	6.5

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1542	1551			
Temperature (C)	17.3	17.5			
Conductivity (uS/cm)	291.4	355			
TDS (ppm)	191.9	236.7			
pH	7.59	7.62			
ORP (mV)	69	47			
DO (mg/L)	5.89	5.63			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1522 End 1550 no sulfide This station is the relocated station from the original DM061

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: DM063

Date: 10/17/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1050
Off Station Time: 1300

Station Conditions
Water Depth: 2.5m

Vessel GPS
North: 5420971.39
East: 447334.1

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep:

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1152	1152
Logging Period (s)	30	30
Temperature (C)	10.583	10.629
Conductivity (mS/cm)	0.147	0.144
Data File Name	Trident_DM063_101719.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1204	1219
Logging Period (s)	30	30
Temperature (C)	10.643	10.657
Conductivity (mS/cm)	0.143	0.142
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1137	1148
Temperature (C)	13	12
Conductivity (uS/cm)	152.4	149.7
TDS (ppm)	98.7	96.08
pH	7.35	7.42
ORP (mV)	161	188
DO (mg/L)	NA	8.81

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1207	1222
Temperature (C)	12	12.7
Conductivity (uS/cm)	148	159.9
TDS (ppm)	94.95	102.9
pH	7.94	7.89
ORP (mV)	192	200
DO (mg/L)	8.8	8.9

Camera File Name	~~DB063~~ 101719.mp4

Recorded By: AJS

Comments/Observations:

DM063 JAP 2-24-20

Sample start time 1152 End 1219 no sulfide Very fast current, large cobbles/ boulders

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: DM064 Date: 10/17/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1328
Off Station Time: 1515

Station Conditions
Water Depth: 6.2m

Vessel GPS
North: 5421163.98
East: 447286.31
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Coarse
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1409	1409
Logging Period (s)	30	30
Temperature (C)	10.713	10.758
Conductivity (mS/cm)	0.146	0.143
Data File Name	Trident_DM064_101719.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1426	1442
Logging Period (s)	30	30
Temperature (C)	10.761	10.753
Conductivity (mS/cm)	0.144	0.143
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1358	1410
Temperature (C)	16.5	16
Conductivity (uS/cm)	146.3	151.7
TDS (ppm)	93.84	98.86
pH	7.99	8.11
ORP (mV)	231	246
DO (mg/L)	NA	9.85

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1430	1445
Temperature (C)	15.1	14.2
Conductivity (uS/cm)	146.2	146.4
TDS (ppm)	93.82	93.92
pH	7.95	8.17
ORP (mV)	233	234
DO (mg/L)	9.98	10.24

Camera File Name	DM064_101719.mp4

Recorded By: AJS

Comments/Observations:

Sample start time 1413 End 1442 no sulfide fast current smaller boulders

Reference AOI

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: REF001 Date: 9/27/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1245
Off Station Time: 1445

Station Conditions
Water Depth: 6.4m

Vessel GPS
North: 5445987.18
East: 447483.04
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1333	1333
Logging Period (s)	30	30
Temperature (C)	15.556	15.531
Conductivity (mS/cm)	0.129	0.181
Data File Name	Trident_REF001_092719.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1357	1413			
Logging Period (s)	30	30			
Temperature (C)	15.548	15.553			
Conductivity (mS/cm)	0.179	0.177			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1322	1333
Temperature (C)	12.1	12.2
Conductivity (uS/cm)	136.5	147.2
TDS (ppm)	87.72	94.5
pH	7.22	6.7
ORP (mV)	237	268
DO (mg/L)	NA	5.94

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1401	1418			
Temperature (C)	12.7	12.6			
Conductivity (uS/cm)	143.7	144.2			
TDS (ppm)	92.21	92.5			
pH	7.34	7.51			
ORP (mV)	214	222			
DO (mg/L)	5.76	5.71			

Camera File Name	

Recorded By: CFS

Comments/Observations:

sample start time 1340 sample end time 1413 no sulfide Duplicate on DOC

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF002

Date: 9/27/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1010
Off Station Time: 1215

Station Conditions
Water Depth: 0.85m

Vessel GPS
North: 5446069.32
East: 447491.69

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1056	1056
Logging Period (s)	30	30
Temperature (C)	15.466	14.894
Conductivity (mS/cm)	0.13	0.147
Data File Name	Trident_REF002_092719.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1112	1126			
Logging Period (s)	30	30			
Temperature (C)	14.929	14.937			
Conductivity (mS/cm)	0.147	0.147			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1034	1054
Temperature (C)	11.1	11.2
Conductivity (uS/cm)	135.9	130.8
TDS (ppm)	87.22	83.95
pH	7.1	6.62
ORP (mV)	326	300
DO (mg/L)	NA	5.33

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1117	1131			
Temperature (C)	11.9	11.6			
Conductivity (uS/cm)	148.7	138.4			
TDS (ppm)	95.52	88.8			
pH	7.04	7.08			
ORP (mV)	249	236			
DO (mg/L)	4.98	4.72			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1056 sample end time 1124 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF003

Date: 9/28/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1040
Off Station Time: 1251

Station Conditions
Water Depth: 0.76m

Vessel GPS
North: 5446885.35
East: 447864.56

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1131	1131
Logging Period (s)	30	30
Temperature (C)	14.873	14.541
Conductivity (mS/cm)	0.127	0.179
Data File Name	Trident_REF003_092819.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1143	1154			
Logging Period (s)	30	30			
Temperature (C)	14.508	14.586			
Conductivity (mS/cm)	0.178	0.179			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1104	1111
Temperature (C)	8.5	9.3
Conductivity (uS/cm)	134.3	144.5
TDS (ppm)	86.11	92.69
pH	7.39	6.73
ORP (mV)	306	271
DO (mg/L)	NA	6.92

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1140	1200			
Temperature (C)	9.3	9.3			
Conductivity (uS/cm)	145.9	148			
TDS (ppm)	93.57	94.89			
pH	6.95	6.32			
ORP (mV)	258	282			
DO (mg/L)	6.9	6.94			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start 1121 end 1153 no sulfide EPA split on dissolved metals

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF004

Date: 9/28/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1318
Off Station Time: 1530

Station Conditions
Water Depth: 0.6m

Vessel GPS
North: 5446937.86
East: 447850.55

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1418	1418
Logging Period (s)	30	30
Temperature (C)	14.86	14.697
Conductivity (mS/cm)	0.128	0.155
Data File Name	Trident_REF004_092819.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1443	1449			
Logging Period (s)	30	30			
Temperature (C)	14.601	14.596			
Conductivity (mS/cm)	0.153	0.153			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1400	1408
Temperature (C)	7.3	8.1
Conductivity (uS/cm)	140.2	140.4
TDS (ppm)	90.24	90.05
pH	7.73	7.79
ORP (mV)	245	238
DO (mg/L)	NA	8.48

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1443	1453			
Temperature (C)	8.1	7.9			
Conductivity (uS/cm)	146.9	148.6			
TDS (ppm)	101.2	95.34			
pH	7.04	6.84			
ORP (mV)	261	274			
DO (mg/L)	8.54	8.63			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start 1417 end 1448 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF005

Date: 10/1/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1510
Off Station Time: 1640

Station Conditions
Water Depth: 4.73m

Vessel GPS
North: 5450162.93
East: 448589.51

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1532	1532
Logging Period (s)	30	30
Temperature (C)	13.881	13.842
Conductivity (mS/cm)	0.118	0.149
Data File Name	Trident_REF005_100119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1558	1610			
Logging Period (s)	30	30			
Temperature (C)	13.912	13.922			
Conductivity (mS/cm)	0.147	0.147			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1528	1532
Temperature (C)	14.6	14.7
Conductivity (uS/cm)	133.3	131.8
TDS (ppm)	85.57	84.08
pH	7.15	6.92
ORP (mV)	205	213
DO (mg/L)	NA	6.04

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1603	1615			
Temperature (C)	14.5	14			
Conductivity (uS/cm)	129	128.3			
TDS (ppm)	82.88	82.26			
pH	6.81	6.76			
ORP (mV)	274	293			
DO (mg/L)	6.2	6.23			

Camera File Name	

Recorded By: CFS

Comments/Observations:

sample time start 1544 end 1609 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF006

Date: 10/3/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1322
Off Station Time: 1500

Station Conditions
Water Depth: 1.2m

Vessel GPS
North: 5450145.72
East: 448652.54

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed
Deep:

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1413	1413
Logging Period (s)	30	30
Temperature (C)	12.724	13.054
Conductivity (mS/cm)	0.12	1.057*
Data File Name	Trident_REF006_100319.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1429	1432			
Logging Period (s)	30	30			
Temperature (C)	13.129	13.126			
Conductivity (mS/cm)	0.217	0.218			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1343	1351
Temperature (C)	16.2	16.2
Conductivity (uS/cm)	133.4	190.8
TDS (ppm)	85.66	124
pH	7.25	7.01
ORP (mV)	178	166
DO (mg/L)	NA	4.66

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1422	1337			
Temperature (C)	16.2	16.1			
Conductivity (uS/cm)	200.6	199.8			
TDS (ppm)	130.6	130.1			
pH	6.81	6.76			
ORP (mV)	137	131			
DO (mg/L)	2.05	2.03			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1405 End 1431 no sulfide *Sediment in conductivity chamber? Numbers bouncing high to low and back. Readimg 99% of the time 0.217 then blips to over 1,000 and back to 0.217 good log at 1429 and the end at 1431

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF007

Date: 9/30/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1530
Off Station Time: 1730

Station Conditions
Water Depth: 4.4m

Vessel GPS
North: 5450208.67
East: 448723.07

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1632	1632
Logging Period (s)	30	30
Temperature (C)	14.28	14.22
Conductivity (mS/cm)	0.123	0.294
Data File Name	Trident_REF007_093019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1646	1701			
Logging Period (s)	30	30			
Temperature (C)	14.24	14.255			
Conductivity (mS/cm)	0.296	0.295			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1615	1520
Temperature (C)	13.2	13
Conductivity (uS/cm)	134.7	288.2
TDS (ppm)	86.33	189.6
pH	7.43	7
ORP (mV)	218	38
DO (mg/L)	NA	2.82

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1649	1707			
Temperature (C)	12.7	12.5			
Conductivity (uS/cm)	459.5	292			
TDS (ppm)	309	192.3			
pH	7.43	7.38			
ORP (mV)	-39	-51			
DO (mg/L)	2.59	2.56			

Camera File Name	

Recorded By: CFS

Comments/Observations:

sample start time 1632 end 1700 no sulfide SAV organic matter present in area

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF008

Date: 10/1/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1210
Off Station Time: 1450

Station Conditions
Water Depth: 4.7m

Vessel GPS
North: 5450240.99
East: 448615.27
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1300	1300
Logging Period (s)	30	30
Temperature (C)	13.698	13.73
Conductivity (mS/cm)	0.118	0.232
Data File Name	Trident_REF008_100119.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1318	1335			
Logging Period (s)	30	30			
Temperature (C)	13.814	13.857			
Conductivity (mS/cm)	0.205	0.193			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1240	1249
Temperature (C)	16.8	17.5
Conductivity (uS/cm)	136.7	186.2
TDS (ppm)	93.84	120.7
pH	7.01	6.74
ORP (mV)	216	106
DO (mg/L)	NA	3.09

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1317	1334			
Temperature (C)	17.8	17.6			
Conductivity (uS/cm)	178.5	162.5			
TDS (ppm)	117.9	142.4			
pH	6.63	6.59			
ORP (mV)	80	70			
DO (mg/L)	2.47	2.37			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1259 End 1330 Duplicate taken TOC no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: REF009 Date: 9/30/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1316
Off Station Time: 1500

Station Conditions
Water Depth: 2.2m

Vessel GPS
North: 5450311.07
East: 448708.79
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1353	1353
Logging Period (s)	30	30
Temperature (C)	14.178	14.186
Conductivity (mS/cm)	0.122	0.227
Data File Name	Trident_REF009_093019.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1408	1427			
Logging Period (s)	30	30			
Temperature (C)	14.211	14.228			
Conductivity (mS/cm)	0.229	0.23			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1331	1337
Temperature (C)	13.6	12.3
Conductivity (uS/cm)	134.2	250.5
TDS (ppm)	86.29	163.8
pH	7.24	7.06
ORP (mV)	211	221
DO (mg/L)	NA	3.76

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1412	1426			
Temperature (C)	11.8	12.5			
Conductivity (uS/cm)	243.1	220			
TDS (ppm)	160.2	144			
pH	6.91	6.87			
ORP (mV)	222	221			
DO (mg/L)	2.88	2.27			

Camera File Name:

Recorded By: CFS

Comments/Observations:

sample start 1335 end 1422 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF009A

Date: 10/3/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 950
Off Station Time: 1240

Station Conditions
Water Depth: 2.5m

Vessel GPS
North: 5450377.15
East: 448643.49

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1121	1121
Logging Period (s)	30	30
Temperature (C)	12.673	12.812
Conductivity (mS/cm)	0.12	0.247
Data File Name	Trident_REF009A_100319.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1158	1211			
Logging Period (s)	30	30			
Temperature (C)	12.88	12.888			
Conductivity (mS/cm)	0.246	0.245			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1108	1120
Temperature (C)	10.9	11.7
Conductivity (uS/cm)	134.1	228.6
TDS (ppm)	86.06	149.7
pH	7.1	6.91
ORP (mV)	194	-25
DO (mg/L)	NA	4.45

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1156	1215			
Temperature (C)	12.5	12.6			
Conductivity (uS/cm)	226.3	239.8			
TDS (ppm)	148.3	157			
pH	6.87	6.78			
ORP (mV)	-39	-25			
DO (mg/L)	3.24	2.31			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start 1136 End 1210 Duplicate taken on dissolved metals no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF010

Date: 10/4/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 920
Off Station Time: 1115

Station Conditions
Water Depth: 3.1m

Vessel GPS
North: 5450496.09
East: 448686.2

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1005	1005
Logging Period (s)	30	30
Temperature (C)	11.511	11.253
Conductivity (mS/cm)	0.125	0.232
Data File Name	Trident_REF010_100419.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1039	1054			
Logging Period (s)	30	30			
Temperature (C)	11.477	11.551			
Conductivity (mS/cm)	0.23	0.229			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	958	1003
Temperature (C)	8.8	8.7
Conductivity (uS/cm)	135.3	220.6
TDS (ppm)	86.79	144.2
pH	7.49	7.54
ORP (mV)	214	160
DO (mg/L)	NA	5.18

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1045	1058			
Temperature (C)	9.4	10			
Conductivity (uS/cm)	218.1	216.7			
TDS (ppm)	142.5	141.5			
pH	6.78	7.01			
ORP (mV)	165	148			
DO (mg/L)	4.32	3.58			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1021 end 1053 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF011

Date: 10/2/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1040
Off Station Time: 1311

Station Conditions
Water Depth: 1.6m

Vessel GPS
North: 5453268.8
East: 451256.18

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1131	1131
Logging Period (s)	30	30
Temperature (C)	13.6	12.209
Conductivity (mS/cm)	0.117	0.244
Data File Name	Trident_REF011_100219.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	400ml	Post		
Sensor Number	2004	2004	2004		
Sensor Depth (in)	4.5	4.5	4.5		
Start Logging Time	1149	1200	1211		
Logging Period (s)	30	30	30		
Temperature (C)	12.147	12.163	12.259		
Conductivity (mS/cm)	0.246	0.245	0.249		
Data File Name	Same	Same	Same		

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1103	1115
Temperature (C)	9.8	11.6
Conductivity (uS/cm)	151.3	185.5
TDS (ppm)	97.12	120.3
pH	7.18	7.26
ORP (mV)	288	295
DO (mg/L)	NA	7.28

Porewater Water Quality Checks

Sample Volume (ml)	200ml	400ml	Post		
Sample Depth (in)	4.5	4.5	4.5		
Purge Volme (ml)	NA	NA	NA		
Sample Time	1148	1204	1215		
Temperature (C)	13.7	14.1	13.8		
Conductivity (uS/cm)	197.9	242.4	289.1		
TDS (ppm)	128.7	158.6	190.3		
pH	6.98	6.72	6.91		
ORP (mV)	326	246	229		
DO (mg/L)	7.07	6.77	6.48		

Camera File Name	

Recorded By: CFS

Comments/Observations:

Duplicate on sulfate, chloride, alkalinity EPA split on dissolved metals Sample start time 1129 end 1210 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF012

Date: 10/2/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1506
Off Station Time:

Station Conditions
Water Depth: 7.1m

Vessel GPS
North: 5453408.92
East: 451457.32

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Mixed
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1536	1536
Logging Period (s)	30	30
Temperature (C)	13.743	13.313
Conductivity (mS/cm)	0.117	0.257
Data File Name	Trident_REF012_100219.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1553	1606			
Logging Period (s)	30	30			
Temperature (C)	13.237	13.249			
Conductivity (mS/cm)	0.259	0.261			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1521	1526
Temperature (C)	13.4	13.9
Conductivity (uS/cm)	124.7	251.4
TDS (ppm)	80.69	164.5
pH	7.75	7.1
ORP (mV)	204	285
DO (mg/L)	NA	4.72

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1557	1611			
Temperature (C)	13.7	13.7			
Conductivity (uS/cm)	290.1	297.3			
TDS (ppm)	191.1	196.1			
pH	7.01	7.32			
ORP (mV)	250	196			
DO (mg/L)	4.21	4.11			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start time 1537 end 1605 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: REF013 Date: 9/26/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1000
Off Station Time: 1200

Station Conditions
Water Depth: 12.6m

Vessel GPS
North: 546690.13
East: 435360.02
Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand/mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1058	1058
Logging Period (s)	30	30
Temperature (C)	15.578	15.375
Conductivity (mS/cm)	0.107	0.259
Data File Name	Trident_REF013_092619.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1127	1134			
Logging Period (s)	30	30			
Temperature (C)	15.247	15.261			
Conductivity (mS/cm)	0.264	0.263			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1044	1105
Temperature (C)	14.4	14
Conductivity (uS/cm)	121.7	241
TDS (ppm)	77.91	157.8
pH	6.99	7.24
ORP (mV)	250	231
DO (mg/L)	NA	4.21

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1126	1134			
Temperature (C)	15.6	15.5			
Conductivity (uS/cm)	248.6	244.3			
TDS (ppm)	162.4	159.9			
pH	7.3	7.45			
ORP (mV)	215	194			
DO (mg/L)	3.73	3.65			

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide Sample time 1108 sample end 1134

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF014

Date: 9/24/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1305
Off Station Time: 1530

Station Conditions
Water Depth: 15.7m

Vessel GPS
North: 5466530.84
East: 435276.22

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand/mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	3.5
Start Logging Time	1418	1418
Logging Period (s)	30	30
Temperature (C)	12.101	12.393
Conductivity (mS/cm)	0.117	0.254
Data File Name	Trident_REF014_092419.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	3.5	3.5
Start Logging Time	1435	1447
Logging Period (s)	30	30
Temperature (C)	12.38	12.362
Conductivity (mS/cm)	0.26	0.262
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	3.5
Purge Volme (ml)	300	300
Sample Time	1355	1407
Temperature (C)	19.5	21.6
Conductivity (uS/cm)	121.3	200.5
TDS (ppm)	77.87	130.6
pH	6.99	7
ORP (mV)	212	0
DO (mg/L)	NA	6.33

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	3.5	3.5
Purge Volme (ml)	NA	NA
Sample Time	1434	1455
Temperature (C)	21.9	20.5
Conductivity (uS/cm)	224.3	233.7
TDS (ppm)	146.9	153
pH	7.21	7.23
ORP (mV)	-38	-46
DO (mg/L)	5.61	4.72

Camera File Name	

Recorded By: CFS

Comments/Observations:

Duplicate taken Dissolved metals sample start 1418 sample end 1447 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF015

Date: 9/24/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1110
Off Station Time: 1255

Station Conditions
Water Depth: 20.7m

Vessel GPS
North: 5466559.24
East: 435190.69

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand/mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1212	1212
Logging Period (s)	30	30
Temperature (C)	9.374	10.352
Conductivity (mS/cm)	0.118	0.161
Data File Name	Trident_REF015_092419.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1226	1237
Logging Period (s)	30	30
Temperature (C)	9.909	9.747
Conductivity (mS/cm)	0.16	0.161
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1205	1211
Temperature (C)	19.2	18.3
Conductivity (uS/cm)	126.8	132.5
TDS (ppm)	81.4	85.04
pH	7.06	6.78
ORP (mV)	278	42
DO (mg/L)	NA	5.67

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1225	1240
Temperature (C)	18.5	18.2
Conductivity (uS/cm)	131.2	127.8
TDS (ppm)	84.22	82.01
pH	6.83	6.8
ORP (mV)	5	-6
DO (mg/L)	5.96	4.46

Camera File Name	

Recorded By: CFS

Comments/Observations:

no sulfide sample start 1211 sample end 1235

Trident Log Sheet - Two Sampling Levels

Site: UCR Station: REF016 Date: 9/25/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 925
Off Station Time: 1120

Station Conditions
Water Depth: 18.6m

Vessel GPS
North: 5492198.33
East: 418672.76

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand/mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1013	1013
Logging Period (s)	30	30
Temperature (C)	13.239	12.524
Conductivity (mS/cm)	0.109	0.135
Data File Name	Trident_REF016_092519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1052	1057			
Logging Period (s)	30	30			
Temperature (C)	12.887	12.704			
Conductivity (mS/cm)	0.133	0.133			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	958	1012
Temperature (C)	13.1	13.7
Conductivity (uS/cm)	120.7	114.8
TDS (ppm)	77.46	73.69
pH	6.92	6.89
ORP (mV)	231	143
DO (mg/L)	NA	6.58

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1051	1101			
Temperature (C)	15.4	15.3			
Conductivity (uS/cm)	114.5	113.3			
TDS (ppm)	73.48	72.74			
pH	7.25	7.13			
ORP (mV)	124	128			
DO (mg/L)	6.24	6.05			

Camera File Name	

Recorded By: CFS

Comments/Observations:

Sample start 1028 Sample End 1056 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF017

Date: 9/25/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1135
Off Station Time: 1250

Station Conditions
Water Depth: 24.6m

Vessel GPS
North: 5492296.54
East: 418634.2

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand/mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1217	1217
Logging Period (s)	30	30
Temperature (C)	7.162	8.829
Conductivity (mS/cm)	0.122	0.156
Data File Name	Trident_REF017_092519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post
Sensor Number	2004	2004
Sensor Depth (in)	4.5	4.5
Start Logging Time	1241	1251
Logging Period (s)	30	30
Temperature (C)	8.227	8.136
Conductivity (mS/cm)	0.156	0.154
Data File Name	Same	Same

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1154	1210
Temperature (C)	20.1	20.3
Conductivity (uS/cm)	127.7	173.9
TDS (ppm)	81.96	112.1
pH	6.99	7.19
ORP (mV)	238	252
DO (mg/L)	NA	7.21

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post
Sample Depth (in)	4.5	4.5
Purge Volme (ml)	NA	NA
Sample Time	1241	1258
Temperature (C)	23	24.6
Conductivity (uS/cm)	135.3	134
TDS (ppm)	86.8	86.05
pH	7.57	7.55
ORP (mV)	209	212
DO (mg/L)	6.51	6.86

Camera File Name

Recorded By: CFS

Comments/Observations:

Sample time start 1220 end 1250 no sulfide

Trident Log Sheet - Two Sampling Levels

Site: UCR

Station: REF018

Date: 9/25/2019

Trident GPS
Latitude:
Longitude:

Station Time
On Station Time: 1338
Off Station Time: 1600

Station Conditions
Water Depth: 24.6m

Vessel GPS
North: 5492360.11
East: 418597.49

Vessel: Tieton

Trident System
1 Pneumatic-Drive Frame
Vibra-Frame
Push Pole
Release Point

Bottom Type
Shallow: Sand/mud
Deep: NA

Trident Data

Sensor Level	Surface Water	Porewater
Sensor Number	Blue Tape	2004
Sensor Depth (in)	12	4.5
Start Logging Time	1439	1439
Logging Period (s)	30	30
Temperature (C)	7.537	8.524
Conductivity (mS/cm)	0.122	0.1128
Data File Name	Trident_REF018_092519.dat	

Porewater Sensor Checks

Sample Volume (ml)	200ml	Post			
Sensor Number	2004	2004			
Sensor Depth (in)	4.5	4.5			
Start Logging Time	1515	1531			
Logging Period (s)	30	30			
Temperature (C)	8.178	8.071			
Conductivity (mS/cm)	0.123	0.125			
Data File Name	Same	Same			

Water Quality Data

Sample Level	Surface Water	Porewater
Sample Depth (in)	12	4.5
Purge Volme (ml)	300	300
Sample Time	1423	1437
Temperature (C)	24	22.2
Conductivity (uS/cm)	130.5	115.7
TDS (ppm)	83.74	77.01
pH	7.01	6.58
ORP (mV)	238	33
DO (mg/L)	NA	3.41

Porewater Water Quality Checks

Sample Volume (ml)	200ml	Post			
Sample Depth (in)	4.5	4.5			
Purge Volme (ml)	NA	NA			
Sample Time	1512	1530			
Temperature (C)	21.1	20.4			
Conductivity (uS/cm)	101.4	102.9			
TDS (ppm)	65.08	66.09			
pH	6.68	6.75			
ORP (mV)	41	26			
DO (mg/L)	3.91	3.1			

Camera File Name	

Recorded By: CFS

Comments/Observations:

sample start 1442 end 1524 no sulfide EPA split on dissolved metals

In order to obtain optimum performance, the operation of the device must be performed in accordance with these Instructions for Use. Maintenance should be performed only by trained personnel authorized by the manufacturer.

1.2 Intended Use

The AII-3000 Series Oxygen Analyzers are intended to measure and display the concentration of oxygen in compressed breathing air tanks intended for scuba diving, for personnel safety, area monitoring, O2 deficiency in confined spaces, checking breathing air tanks and confirming the O2 levels prior to welding.

1.3 Device Description

The AII-3000 Series Oxygen Analyzers can be positioned on a table top or pole (tripod wire stand and V-mount dovetail attachments are mounted on the back of the device) and are readily portable from one location to another. They provide continuous, fast, reliable and accurate oxygen measurements of up to respiratory care systems.

The devices utilize an electrochemical galvanic fuel cell type oxygen sensor of the type that is extensively used to measure oxygen concentrations from 0% to 100% in gas streams. Oxygen, the fuel for this electrochemical transducer, diffusing into the sensor through a gas permeable membrane reacts chemically at the sensing electrode to produce an electrical current output proportional to the oxygen concentration in the gas phase. The sensor has an absolute zero meaning that when no oxygen is present to be chemically reacted the LCD displays 00.0 oxygen.

The sensor's signal output is linear over the entire range, remains virtually constant over the specified useful life and drops off sharply at the end. The sensor itself requires no maintenance and is simply replaced at the end of its useful life like a battery. Inasmuch as the sensor is a transducer in its own right, its expected life is not affected by whether the analyzer is ON or OFF.

A battery powered state-of-the-art micro-processor converts the sensor's signal output representing the partial pressure of oxygen in the gas stream being analyzed. The resulting oxygen reading is displayed by a large easy to read backlit liquid crystal display (LCD) that has a resolution of 0.1% oxygen. The microprocessor is controlled from a keypad and provides features like system diagnostics, warning indicators, controls and an alarm capability for continuous monitoring that enhance both safety and effectiveness.

Prior to shipment, every device is thoroughly tested at the factory and documented in the form of a Quality Control Certification that is included in the Instructions for Use supplied with every device.

2 Quality Control Certification

Customer: Cleatech LLC Order No. S92696 Date: 5/20/19

Model:
- (✓) AII-3000 A Oxygen Analyzer
- ( ) AII-3000 M Oxygen Analyzer
- ( ) AII-3000 AHC Oxygen Analyzer
- ( ) AII-3000 MHC Oxygen Analyzer

S/N 905947963

Sensor: (✓) AII-11-60 or ( ) AII-11-60-HC S/N 905949934

Electronics: A-1152 PCB Assembly Main Software Version 2.11

Accessories:
AII-3000 A / M: CABL-1006 Cable, Coiled Phone Jack
AII-3000 AHC / MHC: TUBE-1019 7/32" OD Tubing 3 ft.
All units: BATT-1008 Battery, 1.5V AA (Qty 2)
P-0187 Manual, Instructions for Use ..... Included ✓ AR

QC Test:	PASS
LCD display 3-1/2 digits	✓ AR
Battery symbol displays when battery is low	✓ AR
Span adjustment ±10-30% FS with 100% oxygen calibration	✓ AR
Following calibration with 99-100% oxygen and flushing with ambient air, oxygen reading as displayed by LCD 20.9% ±2%	✓ AR
Span adjustment ±10-30% FS with air calibration	✓ AR
Following calibration with air (20.9% oxygen) and exposing to 99-100% oxygen, LCD displays 100% ±2%	✓ AR
Overall inspection for physical defects	✓ AR

Options: See Sec 8.1	Qty

Delivery:

5/20/19

Daily Calibration Checks

Site: EV-064 Boat/Crew #: Yeti Date: 9/17/19

Myron Water Quality Check Myron Handheld # 052

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	3900	3940	1.54
pH	4, 7, 10	4, 7.04, 10.01	0, ~~0~~ 0.6
ORP (mV)	300 ~ 400	302	—

0.0 ☐ Recalibrated ☐ Recalibrated ☐ Reconditioned

0.0, 0.57, 0.1

Trident Sensor Check Trident Sensor #

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	218	~~4.8~~
	229	213	~~7.4~~ 7.42

Pre DC Ref

4.8 ☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	92	90.1	~~2~~

0.88 ☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.2	~~3~~

3.81 ☐ Recalibrated

Comments/Observations:

Recorded By: CS

Daily Calibration Checks

Site: VCR Boat/Crew #: TIATEN / Bart & Joss Date: 9/17/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.5	1%
pH	7.00	6.97	0.4%
ORP (mV)		315	7300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004 P / Blue Tape R

	Parameter	Actual Value	Measured Value	% Difference
SW	Conductivity (uS/cm)	0.229	0.214	6%
PW		0.229	0.244	6%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	92%	95%	3%

☒ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 9964

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.4	

☐ Recalibrated

Comments/Observations: Note Glove Box ~~O2~~ zeroed at 2.8%

Recorded By: BC

Daily Calibration Checks

Site: UCR Boat/Crew #: Tleton / Bart & Joss Date: 9/18/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.7	0.7 %
pH	7.00	7.00	0 %
ORP (mV)		302	7300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004 P/BWetaper R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	0.229	0.244	6.5 %
SW		0.229	0.208	9.1 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	92 %	96.5 %	4.5 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 9964

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.6	3 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: EVANS Boat/Crew #: Yeti Date: 9/18/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	3900	3870	~~0.08~~ 0.8
pH	4, 7, 10	3.99, 7.04, 9.99	~~0.5~~ ~~0.29~~ 0.2
ORP (mV)	300-400	356	NA 0

0.77

0.5, 0.571, 0.2

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # PW 3086
Ref 107

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	223	~~4.4~~ 3.1
	229	210	~~8.2~~ 8.3

PW
Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	92%	92.8	~~0.87~~

0.8

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 4059947963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.4	~~2.86~~

2.86

☐ Recalibrated

Comments/Observations: _____

Recorded By: CFS

Daily Calibration Checks

Site: UCR - DME Boat/Crew #: TITAN Date: 09/19/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.9	0.8 %
pH	7.00	6.99	0.1 %
ORP (mV)		303	7300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 20044 / BLUE TAPE R

Parameter	Actual Value	Measured Value	% Difference
PW Conductivity (uS/cm)	229	245	7 %
SW	229	208	9 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	92	94.2	2 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 9964

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.8	4 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Daily Calibration Checks

Site: EVANS Boat/Crew #: Yeti Date: 9/19/19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	329	329	0
pH	4, 7, 10	3.98, 7.03, 9.98	0.5, 0.43, 0.2
ORP (mV)	300-400	346	—

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	329	320	3.93
	220	207	9.6

Another Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	92.5	93.2	0.76

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.5	2.38

☐ Recalibrated

Comments/Observations:_____

Recorded By: CFJ

Daily Calibration Checks

Site: UCR Boat/Crew #: Tieton / Bart & Josh Date: 9/20/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.2	0.9%
pH	7.00	6.99	0.1%
ORP (mV)		308	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 20048 / Blue Tape R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	0.229	0.237	3.4%
SW		0.229	0.208	9%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95%	~~95.6~~ 96% DMC	0.6

☒ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 9969

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.8	4%

☐ Recalibrated

Comments/Observations: DO correction Used atmospheric pressure from Oxygen meter instead of web site

Recorded By: BC

Daily Calibration Checks

Site: EVANS Boat/Crew #: YETI Date: 9/20/14

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	228.7	0.13
pH	4, 7, 10	3.98, 7.04, 9.97	0.5, 0.6, 0.3
ORP (mV)	300 - 400	384	—

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	220	3.93
	229	210	8.30

PROBE REF

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	92.5	93.0	0.54

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.4	2.9

☐ Recalibrated

Comments/Observations:_____

Recorded By: CFS

Cm

Daily Calibration Checks

Site: UCR

Boat/Crew #: Tiedan / Bart & Josh

Date: 9/20/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.2	0.9%
pH	7.00	6.99	0.1%
ORP (mV)		308	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 20049 / BlueTopeR

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	0.229	0.237	3.4%
SW		0.229	0.208	9%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95%	95.6% DMC	0.6

☒ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 9969

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.8	4%

☐ Recalibrated

Comments/Observations: DO correction Used atmospheric pressure from Oxygen meter instead of web site

Recorded By: BC

Daily Calibration Checks

Site: UCR Boat/Crew #: Tleton / Bart & Joss Date: 9/24/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	232.1	1.3%
pH	7.00	6.99	0.1%
ORP (mV)		320	7300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004 P / Blue Tape R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	229	242	5.6%
SW		229	213	7%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	96.9	0.9%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 9964

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☒ Recalibrated

Comments/Observations: Recal glove box Oxygen
Polished SW refr sensor on trident

Recorded By: BC

Daily Calibration Checks

Site: EVANS Boat/Crew #: YETI Date: 9-21-19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.3	0.1
pH	4, 7, 10	3.99, 7.08, 9.99	0.25, 1.1, 0.1
ORP (mV)	200-400	367	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2006

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	222	3.1
	229	210	8.3

Probe Ref 107

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	94.6	1.5

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 9D5941963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.6	1.9

☐ Recalibrated

Comments/Observations: _____

Recorded By: CFS

Daily Calibration Checks

Site: VCR Boat/Crew #: Yeti / Bart & Joel Date: 9/27/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.8	0.3%
pH	7.00	7.03	0.4%
ORP (mV)		336	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 R / Black Tape R

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	228	0.4%
	229	209	8%

PW
SW

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.5	95.4	0.1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.3	2.8%

☐ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Joel Date: 9/24/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.3	0.6%
pH	7.00	6.99	0.1%
ORP (mV)		358	7300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / Black tape

Parameter	Actual Value	Measured Value	% Difference
PW Conductivity (uS/cm)	229	217	5%
SW	229	220	4%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	95.2	0.8%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: Arrow Lake Boat/Crew #: Tristin Date: 9/24/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.3	0.57
pH	4, 7, 10	4.01, 6.97, 9.92	0.75, 0.43, 0.8
ORP (mV)	200-400	350	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor #

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	252	9.6
	229	211	7.9

Probe Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor #

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95%	96.3	1.37

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.7	1.43

☐ Recalibrated

Comments/Observations:

Recorded By: CFS

Daily Calibration Checks

Site: Arnold Lake Boat/Crew #: Tieton Date: 9/25/19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	329	331.4	1.1
pH	4, 7, 10	3.97, 6.94, 9.97	3.25, 0.86, 0.3
ORP (mV)	300 - 400	361	—

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	329	349	3.7
	329	210	5.3

Probe Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.8	94.7	1.15

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.9	0.5

☐ Recalibrated

Comments/Observations:_____

Recorded By: CFS

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeh / Bart & Joel Date: 9/25/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.8	0.3 %
pH	7.00	7.00	0 %
ORP (mV)		327	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / Black Tape R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	229	213	7 %
SW		229	211	8 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	95.2	0.8 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0 %

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Joel Date: 9/26/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.5	0.2%
pH	7.00	6.99	0.1%
ORP (mV)		355	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 7085 P / Black Tape R

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	223	3%
	229	209	9%

PW
SW

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95%	94%	1%

J.A.P. 2-3-20 per Bart Chadwick

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: Arrow Lake Boat/Crew #: Tietin Date: 9/26/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference	
Conductivity (uS/cm)	1413	~~1395~~ 1419	0.04	☐ Recalibrated
pH	4, 7, 10	3.98, 6.98, 10	0.5, 0.29, 0	☐ Recalibrated
ORP (mV)	100 → 400	348	—	☐ Reconditioned

Trident Sensor Check Trident Sensor #

Parameter	Actual Value	Measured Value	% Difference	
Conductivity (uS/cm)	~~1413~~ 1329	~~1290~~ 208	9.17 9.17	☐ Recalibrated

Ryder ROS

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference	
DO (mg/L)	94.5	95.2	0.31	☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference	
Oxygen (%)	~~20.9~~ 21	20.8	0.95	☐ Recalibrated

Comments/Observations:

Recorded By: CFS

Daily Calibration Checks

Site: Birchbank Lower Boat/Crew #: Tichon Date: 9/27/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.2	0.96
pH	4, 7, 10	3.95, 7.03, 10.03	1.25, 0.4, 0.3
ORP (mV)	300-400	374	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004 Black Tape

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	251	9.6
	229	231	0.87

Probe Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95	94.9	0.1

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.7	1.4

☐ Recalibrated

Comments/Observations:

Recorded By: CES

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Joel Date: 9/27/19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.1	0.4 %
pH	7.00	7.00	0 %
ORP (mV)		328	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / Black Tape R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	229	222	3 %
SW		229	212	7 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # I

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95 %	93.5 %	1.5 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0 %

☒ Recalibrated

Comments/Observations:_____

Recorded By: BC

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Joel Date: 9/28/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.0	
pH	7.00	7.00	0%
ORP (mV)		241	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / BlackTape R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	229	225	2%
SW		229	212	7%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.5%	95.4%	0.1%

☒ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9%	20.6%	1.4%

☐ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: Birchbank Upper Boat/Crew #: Tidon Date: 9/28/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	224	221.3	0.91
pH	4, 7, 10	3.93, 7.01, 10.06	0.5, 0.14, .03
ORP (mV)	300 – 400	334	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # Blue Lake, Hot 2004 Probe

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	224	244	6.55
	224	243	6.11

Probe R&R

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.3	95.5	0.21

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # _____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.2	0.96

☐ Recalibrated

Comments/Observations: Probe changed

Recorded By: CFS

Daily Calibration Checks

Site: EVD48 EVAN1 Boat/Crew #: JG/JM Date: 9/30/19
1300 hrs.

Myron Water Quality Check Myron Handheld # 007

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	228.8	<1 %
pH	7	7.07	<1 %
ORP (mV)	300 +	387	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

	REF	REF	PW	REF	PW	REF	PW
Parameter	Actual	Value		Measured Value		% Difference	
Conductivity (uS/cm)	229	229		0.206	0.219	10	4.4
T °C				12.882	13.114		

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CMA 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	93.5 %	98.5 %	5 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.1	4.4 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Daily Calibration Checks

Site: Benicia Upper Boat/Crew #: Tiger Date: 9/30/19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	334	330.7	0.97
pH	4, 7, 10	4.08, 7.05, 10	2, 0.71, 0
ORP (mV)	300 - 400	311	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # ~~Blue Tape 20014~~

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	334	250	9.17
	3207	314	6.56

Probe Mal

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.8	95.7	0.10

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.4	1.90

☐ Recalibrated

Comments/Observations:_____

Recorded By: CDG

Daily Calibration Checks

Site: EVANS Boat/Crew #: JM / JG Date: 10/01/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229	0 %
pH	7	7.03	< 1 %
ORP (mV)	300	348	> 300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value REF	Measured Value PW	% Difference REF	% Difference PW
Conductivity (uS/cm)	229	209	247	8.7 %	7.8 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CMA 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96 %	98.5	2.5 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.1	1 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Daily Calibration Checks

Site: Genelle Upper Boat/Crew #: Tieton Date: 10-1-19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.3	
pH	4, 7, 10	4, 7.06, 10.08	0.57
ORP (mV)			

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	274	9.60
	294	274	6.55

Pine Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	94.6	1.46

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.7	3.33

☐ Recalibrated

Comments/Observations:_____

Recorded By: CPS

Cm

Daily Calibration Checks

Site: Upstream of Gitxsan Boat/Crew #: Tieton Date: 10/2/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.2	0.96
pH	4, 7, 10	4, 7.05, 10.09	0, 0.71, 0.4
ORP (mV)	300-400	311	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # Blue Tape + 200 #

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	250	9.17
	229	242	5.68

Probe Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96%	96.3	0.31

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.2	0.95

☐ Recalibrated

Comments/Observations:

Recorded By: CFS

Daily Calibration Checks

Site: EVANS Boat/Crew #: JM / JG Date: 10/02/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.6	<1 %
pH	7	7.07	<1 %
ORP (mV)	300	381	<300 mV

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value REF	Measured Value PW	% Difference REF	% Difference PW
Conductivity (uS/cm)	229	210	239	8.3 %	4.3 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CMA 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.5	98	2.5 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.0	4 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Cm

Daily Calibration Checks

Site: Granite Upper Boat/Crew #: Tieton Date: 10/3/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.1	0.92
pH	4, 7, 10	3.97, 7.01, 10	0.75, 0.14, 0
ORP (mV)	300-400	337	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # Blue tape & 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	250	9.17
Probe Ref	229	246	7.43

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor #

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.5	95	0.52

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.2	0.95

☐ Recalibrated

Comments/Observations:

Recorded By: CPS

Daily Calibration Checks

Site: EVANS - UCR Boat/Crew #: JG/SM Date: 10/03/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.7	< 1 %
pH	7	7.06	< 1 %
ORP (mV)	300	353	> 300 mV

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value REF	Measured Value PW	% Difference REF	% Difference PW
Conductivity (uS/cm)	229	211	217	7.8 %	5.2 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # EMA #1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95	99	4 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.0	< 1 %

☐ Recalibrated

Comments/Observations:

Recorded By: JG

Cm

Daily Calibration Checks

Site: Granite Upper Boat/Crew #: Tieton Date: 10/4/19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	224.9	0.39
pH	4, 7, 10	3.97, 6.03, 10.02	0.75, 0.43, 0.2
ORP (mV)	300 - 400	309	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # Blue Tape, 2224

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	250	9.17
	229	241	5.24

Probe Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.3	96.2	0.94

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21 %	21.2	0.95

☐ Recalibrated

Comments/Observations:_____

Recorded By: CFS

Daily Calibration Checks

Site: UCR - EVANS. Boat/Crew #: JG/SM Date: 10/04/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230	< 1%
pH	7	7.08	< 1%
ORP (mV)	300	353	✗ 300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value REF	Measured Value PW	% Difference REF	% Difference PW
Conductivity (uS/cm)	229	211	213	7.8%	6.9%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CMA #1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95	99	4%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7962

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.1	< 1%

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Cm

Daily Calibration Checks

Site: DME Boat/Crew #: Tieton Date: 10-8-19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	232.3	1.4
pH	4, 7, 10	4.03, 7.09, 10.05	0.75, 1.29, 0.5
ORP (mV)	300-400	301	—

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # ~~Blue Tape~~ 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	232	1.31
	229	2.10	8.30

Probe Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	94.5	96.0	1.59

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.1	0.48

☐ Recalibrated

Comments/Observations:

Recorded By: CFS

Cm

Daily Calibration Checks

Site: Dead Man's Eddy Boat/Crew #: Tieton Date: 10-9-19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.8	0.78
pH	4, 7, 10	4.04, 7.09, 10.09	1.0
ORP (mV)	300-400	310	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor #_____

Probe Ref

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	240	4.80
	329	311	7.36

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96.3	96.8	0.52

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.5	2.38

☐ Recalibrated

Comments/Observations:_____

Recorded By: CFS

Daily Calibration Checks

Site: UCR – EVANS Boat/Crew #: CA / JM Date: 10/9/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	232	1.3%
pH	7	7.04	<1%
ORP (mV)	300	373	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value (REF)	Measured Value (PW)	% Difference (REF)	% Difference (PW)
Conductivity (uS/cm)	229	227	232	<1%	1.3%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CMA #1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	99	3%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.1	<1%

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Daily Calibration Checks

Site: DEAD MANS Eddy Boat/Crew #: Tieton Date: 10/10/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.4	1.05
pH	4 7 10	4.04, 6.98, 9.95	0.25, 0.29, 0.5
ORP (mV)	300-400	312	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # ~~Blue Sapphire~~, 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	245	6.99
Probe Ref	229	220	3.93

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	97.5	98.8	1.33

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21%	21	0

☐ Recalibrated

Comments/Observations:

Recorded By: CFS

Daily Calibration Checks

Site: UCR - CHINA BENS Boat/Crew #: CP / JM Date: 10/10/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	232.4	1.4 %
pH	7	7.04	<1 %
ORP (mV)	300	328	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value REF	Measured Value PW	% Difference REF	% Difference PW
Conductivity (uS/cm)	229	230	238	<1 %	4 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CMA #1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	99	3 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.1	<1 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Cm

Daily Calibration Checks

Site: DEAD MANS EDDY Boat/Crew #: Tieton Date: 10-11-19

Myron Water Quality Check Myron Handheld # 665

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.1	0.92
pH	4, 7, 10	4.04, 7.09, 10	1, 1.29, 0
ORP (mV)	200-400	345	—

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # ~~Blue Magic~~ 20804

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	~~250~~ 246	7.43
	229	228	0.44

Probe Ref

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	97.1	96.9	0.21

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # _____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.4	1.90

☐ Recalibrated

Comments/Observations: _____

Recorded By: CFE

Daily Calibration Checks

Site: UCR - CHINA BEND Boat/Crew #: CP / JM YSI Date: 10/11/2019

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	227.5	< 1 %
pH	7	7.03	< 1 %
ORP (mV)	300	306	> 300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value REF	Measured Value PW	% Difference REF	% Difference PW
Conductivity (uS/cm)	229	212	217	7.4 %	5.2 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CMA #1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95.5	99	3.5 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.2	1.4 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Daily Calibration Checks

Site: DEAD MANS EDDY Boat/Crew #: Tieton Date: 10-12-19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	2249	231.6	1.14
pH	4 7 10	4.04, 7.09, 10.09	1, 1, 1.29, 0.9
ORP (mV)	300-400	359	-

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # Blue tape 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	329	346	7.43
	329	311	7.86

Probe Rep

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96.1	96.0	0.1

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21	0

☐ Recalibrated

Comments/Observations:

Recorded By: CFS

Daily Calibration Checks

Site: UCR CHINA BEND Boat/Crew #: SP/JM Date: 10/12/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	226.7	1 %
pH	7	7.06	< 1 %
ORP (mV)	300	335	> 300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005

Parameter	Actual Value	Measured Value REF	Measured Value PKW	% Difference REF	% Difference PKW
Conductivity (uS/cm)	229	219	222	4.3 %	3 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # CM4 #1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	98.5	2.5 %

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	21.2	< 1 %

☐ Recalibrated

Comments/Observations: _____

Recorded By: JM

Daily Calibration Checks

Site: PM Boat/Crew #: Tieton Date: 10/14

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	242	5 %
pH	7.00	7.04	1 %
ORP (mV)	350	361	3%

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	243	6 %
Ref Blue Tape	229	215	6 %

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	~~100~~ 96	~~4%~~

☑ ~~Recalibrated~~

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.4	2 %

☐ Recalibrated

Comments/Observations:

Recorded By: AS

Daily Calibration Checks

Site: UCR

Boat/Crew #: Yeti / Brent & Chris P

Date: 10/14/19

Myron Water Quality Check Myron Handheld # 007

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	228.5	0.2%
pH	7.00	7.05	0.7%
ORP (mV)		315	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005P / Black Type R

Parameter	Actual Value	Measured Value	% Difference
PW Conductivity (uS/cm)	229	217	6%
SCW	229	208	5%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96%	96.8%	0.8%

☒ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☐ Recalibrated

Comments/Observations:

Recorded By: BC

Daily Calibration Checks

Site: DM Boat/Crew #: Triton Date: 10/15

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	232.7	1.6%
pH	7	7.03	.4%
ORP (mV)	300-400	325	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	~~229~~ 236	3%
Ref	229	208	9%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	96.3	1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.3	1.4%

☐ Recalibrated

Comments/Observations: Had to clean the Trident Sensor

Recorded By: AJS

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Chris P Date: 10/15/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229	0%
pH	7.00	7.00	0%
ORP (mV)		328	7300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / Black Tape K

	Parameter	Actual Value	Measured Value	% Difference
FW	Conductivity (uS/cm)	229	223	3%
SW		229	211	8%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96 %	96.5 %	0.5%

☒ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9 %	20.8 %	0 %

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: UCR

Boat/Crew #: Yeti / Bart & Chris P

Date: 10/16/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.6	0.3%
pH	7.00	7.02	0.2%
ORP (mV)		340	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / Black Tape R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	229	221	3%
SW		229	211	8%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95%	94%	1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: DME Boat/Crew #: Tieton Date: 10/16/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	233.1	2%
pH	7	7.05	1%
ORP (mV)	300-400	364	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	240	5%
Ref IBT	229	228	0.4%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95	95	—

☑ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.1	0.5%

☐ Recalibrated

Comments/Observations:

Recorded By: AJS

Daily Calibration Checks

Site: DME Boat/Crew #: Teton Date: 10/17/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	24.3	6%
pH	7	7.01	.1%
ORP (mV)	300-400	345	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	234	2.1%
Ref BT	229	234	2.1%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	94	94	—

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	20.9	0.5%

☐ Recalibrated

Comments/Observations:

Recorded By: ASS

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Chris P Date: 10/17/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.2	0.5%
pH	7.00	7.05	0.7%
ORP (mV)		304	~300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P/ Blackstape R

PW
SW

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	218	5%
	229	213	7%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	94%	93.6%	0.4%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: DM Boat/Crew #: Teton Date: 10/18/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	232.2	1.4%
pH	7	7.02	0.3%
ORP (mV)	300-400	335	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229	0
Ref Blue Tape	229	224	2.1%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	94	90.9	3.1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.1	0.5%

☐ Recalibrated

Comments/Observations:

Recorded By: AS

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Boat & Crew SP Date: 10/18/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229.8	0.3%
pH	7.00	7.03	0.4%
ORP (mV)		326	? 300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / Black Tape R

Parameter	Actual Value	Measured Value	% Difference
PW Conductivity (uS/cm)	229	222	3%
SW	229	231	0.9%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	95%	94%	1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9%	20.9%	0%

☒ Recalibrated

Comments/Observations: _____

Recorded By: EC

Cm

Daily Calibration Checks

Site: DM Boat/Crew #: Triton Date: 10/19/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	240.2	5%
pH	7	7.06	1%
ORP (mV)	300 - 402	308	—

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	228	.5%
Ref BT	229	225	2%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	94.8	94.2	—

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # _____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21	—

☐ Recalibrated

Comments/Observations: _____ Recorded By: AS

Daily Calibration Checks

Site: VCR Boat/Crew #: Yeti / Bart & Chris F Date: 10/19/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	230.7	0.7%
pH	7.00	7.04	0.6%
ORP (mV)		343	~300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 R / BlackTape R

Parameter	Actual Value	Measured Value	% Difference
PW Conductivity (uS/cm)	229	217	5%
SW	229	232	1%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	94%	93.9%	0.1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7863

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Cm

Daily Calibration Checks

Site: DMF Boat/Crew #: Tieton Date: 10/21/19

Myron Water Quality Check Myron Handheld #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	244	6.5
pH	7	6.99	.1
ORP (mV)	300-400	359	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	243	6.1
ReP BT	229	227	.9

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	91.5	5

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #_____

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.3	1.4

☐ Recalibrated

Comments/Observations:_____ Recorded By: AS

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Jael Date: 10/21/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	231.6	1%
pH	7.00	7.05	0.7%
ORP (mV)		320	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P / Blackstage R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	229	~~227~~	0.9%
SW		229	233	2%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96%	96.1%	0.1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Joel Date: 10/22/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	228.3	0.3%
pH	7.00	7.05	0.7%
ORP (mV)		342	7300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 P/B Black Tape R

	Parameter	Actual Value	Measured Value	% Difference
PW	Conductivity (uS/cm)	229	231	1%
SW		229	224	2%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96%	95.3%	0.7%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

☒ Recalibrated

Comments/Observations: _____

Recorded By: BC

Cm

Daily Calibration Checks

Site: Evans Boat/Crew #: Triton Date: 10/22/19

Myron Water Quality Check Myron Handheld # 615

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	233	1.7
pH	7	7.01	.1
ORP (mV)	300-480	301	

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2004

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	233	1.7
Ref BT	229	229	0

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 2

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	96	96.8	.8

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor #

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	21	21.1	.5

☐ Recalibrated

Comments/Observations:

Recorded By: AS

Daily Calibration Checks

Site: UCR Boat/Crew #: Yeti / Bart & Joel Date: 10/23/19

Myron Water Quality Check Myron Handheld # 002

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	228.4	0.3%
pH	7.00	7.08	1%
ORP (mV)		335	>300

☐ Recalibrated
☐ Recalibrated
☐ Reconditioned

Trident Sensor Check Trident Sensor # 2005 / Black Tape

Parameter	Actual Value	Measured Value	% Difference
Conductivity (uS/cm)	229	229	0%
	229	222	3%

☐ Recalibrated

YSI Pro ODO Sensor Check YSI Sensor # 1

Parameter	Actual Value	Measured Value	% Difference
DO (mg/L)	97%	96.9%	0.1%

☐ Recalibrated

Glove Box Sensor Check Oxygen Sensor # 7963

Parameter	Actual Value	Measured Value	% Difference
Oxygen (%)	20.9	20.9	0%

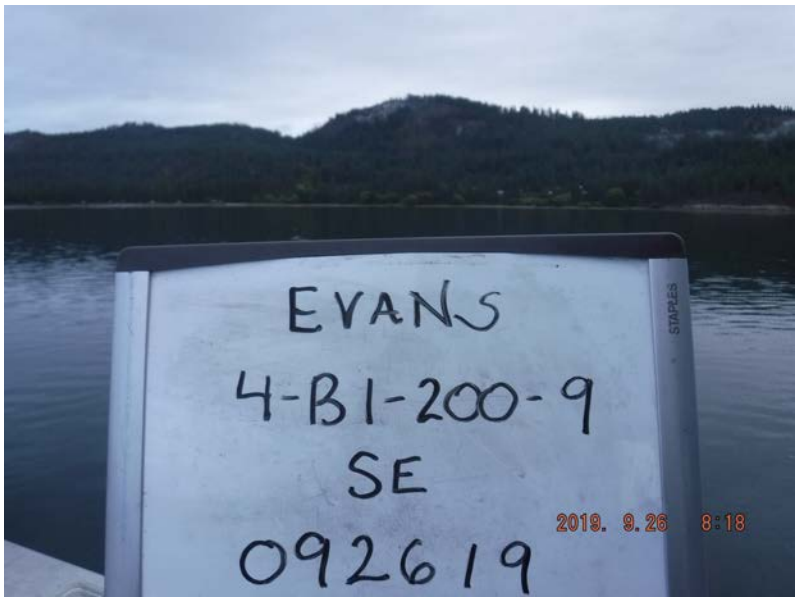
☒ Recalibrated

Comments/Observations: _____

Recorded By: BL

Appendix H

Photo Logs



Original Photo Name: DSCF0001.jpg

Photo No.

4-B1-2019.1

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.jpg

Photo No.

4-B1-2019.2

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0006.jpg

Photo No.

4-B1-2019.3

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0005.jpg

Photo No.

4-B1-2019.4

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0004.jpg

Photo No.

4-B1-2019.5

Photo Taken: 9/26/2019

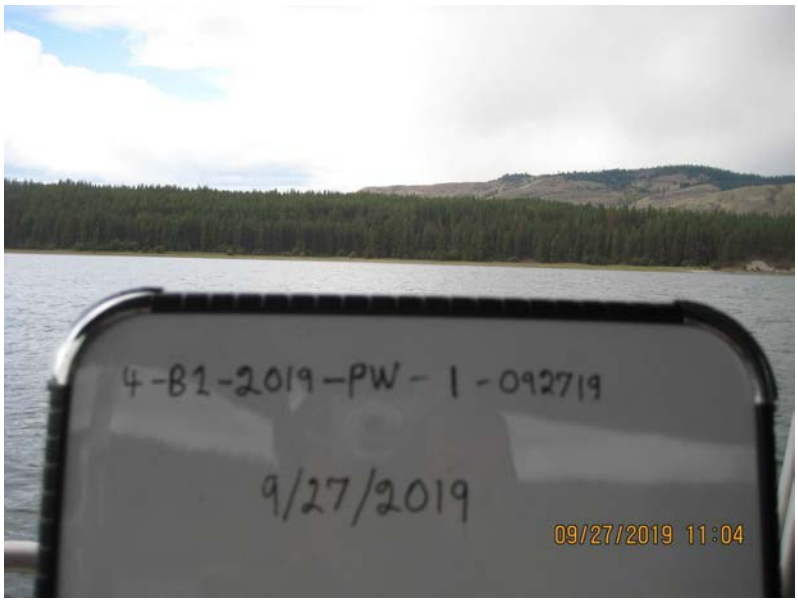
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A



Original Photo Name: IMG_0498.jpg

Photo No.

4-B1-2019.6

Photo Taken: 9/27/2019

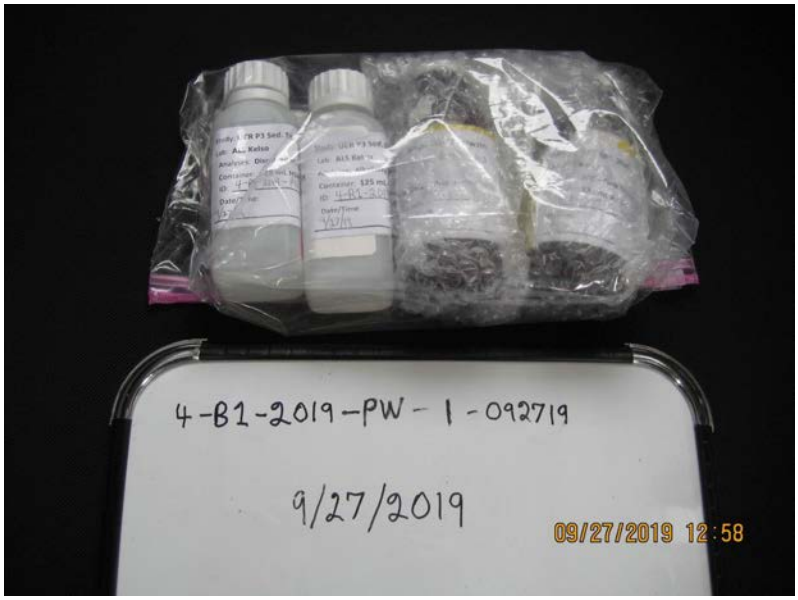
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0501.jpg

Photo No.

4-B1-2019.7

Photo Taken: 9/27/2019

Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0007.jpg

Photo No.

4-B6-2019.1

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0009.jpg

Photo No.

4-B6-2019.2

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0008.jpg

Photo No.

4-B6-2019.3

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0013.jpg

Photo No.

4-B6-2019.4

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0011.jpg

Photo No.

4-B6-2019.5

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0012.jpg

Photo No.

4-B6-2019.6

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0010.jpg

Photo No.

4-B6-2019.7

Photo Taken: 9/26/2019

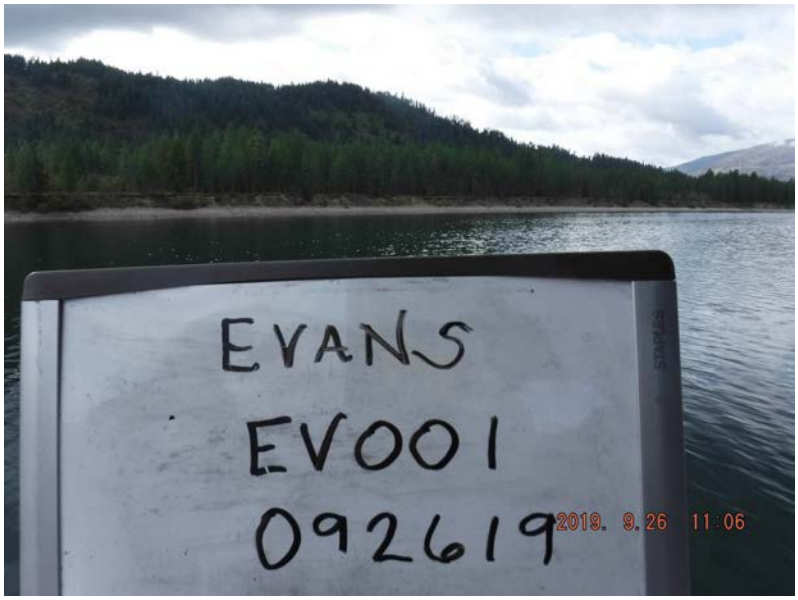
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A



Original Photo Name: DSCF0014.jpg

Photo No.

EV001.1

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0015.jpg

Photo No.

EV001.2

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Photo No.

EV001.3

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0020.jpg

Photo No.

EV001.4

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0017.jpg

Photo No.

EV001.5

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0019.jpg

Photo No.

EV001.6

Photo Taken: 9/26/2019

Vessel: Ingalls

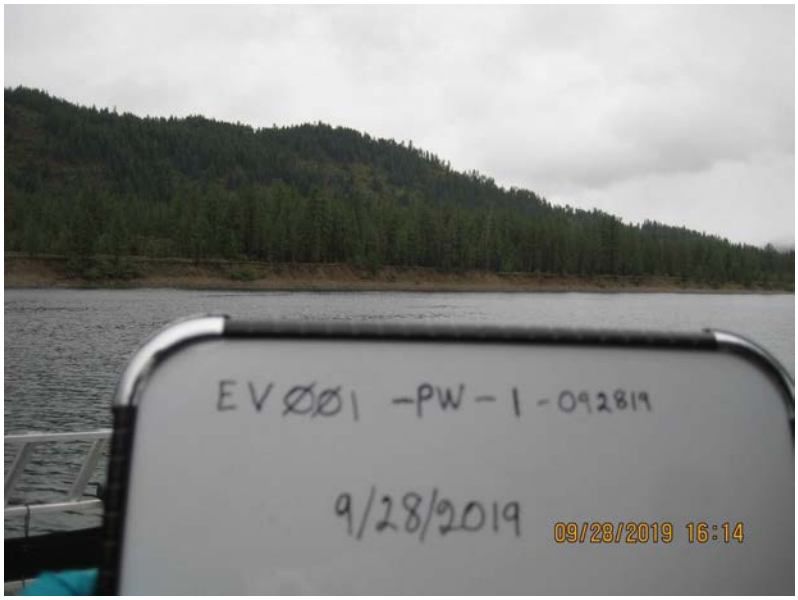
Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0016.jpg



Original Photo Name: IMG_0516.jpg

Photo No.

EV001.7

Photo Taken: 9/28/2019

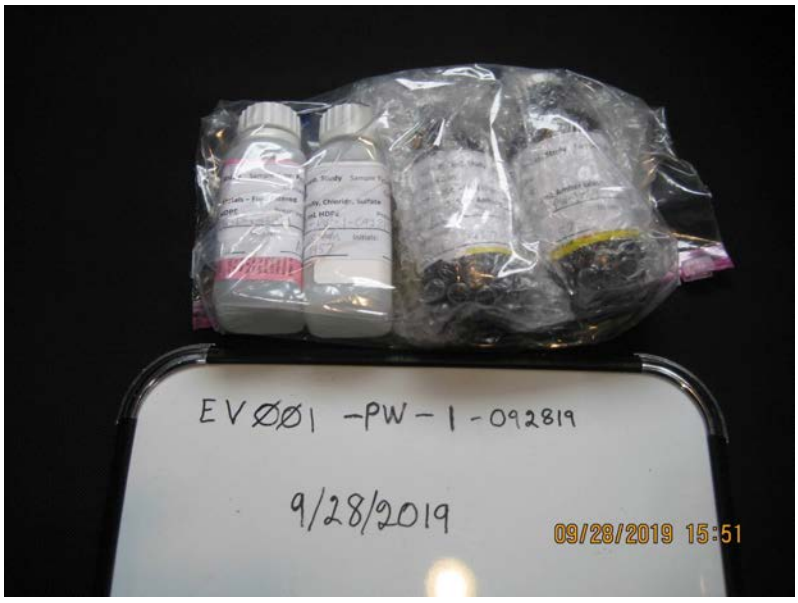
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0515.jpg

Photo No.

EV001.8

Photo Taken: 9/28/2019

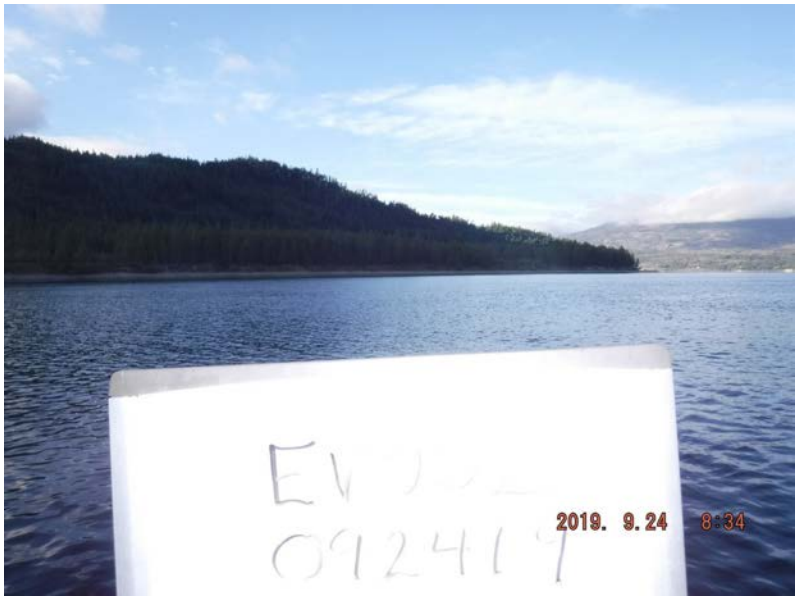
Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF3001.jpg

Photo No.

EV002.1

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF3002.jpg

Photo No.

EV002.2

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF3006.jpg

Photo No.

EV002.3

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF3005.jpg

Photo No.

EV002.4

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV002.5

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF3004.jpg

Photo No.

EV003.1

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.jpg

Original Photo Name: DSCF0004.jpg

Photo No.

EV003.2

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0005.jpg

Photo No.

EV003.3

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0006.jpg

Photo No.

EV003.4

Photo Taken: 9/20/2019

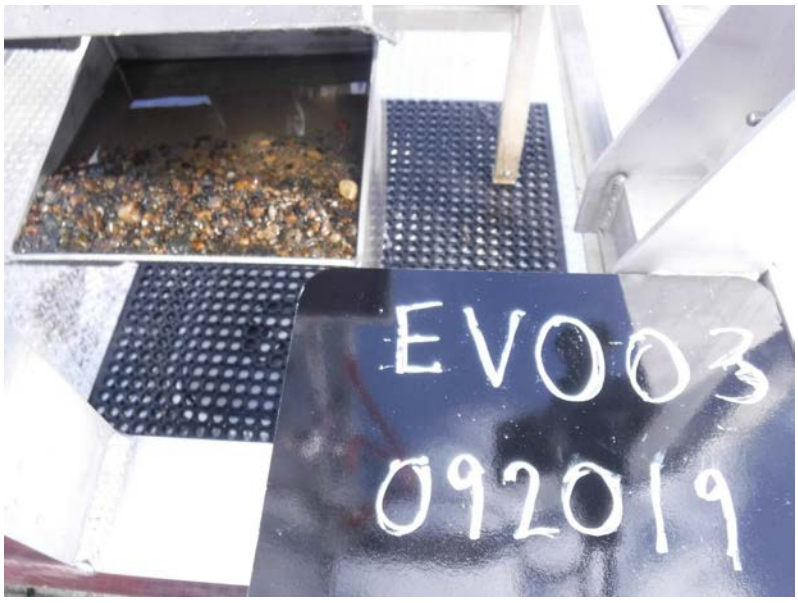
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon



Original Photo Name: DSCF0008.jpg

Photo No.

EV003.5

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Photo No.

EV003.6

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0009.jpg

Photo No.

EV003.7

Photo Taken: 9/20/2019

Vessel: Ingalls

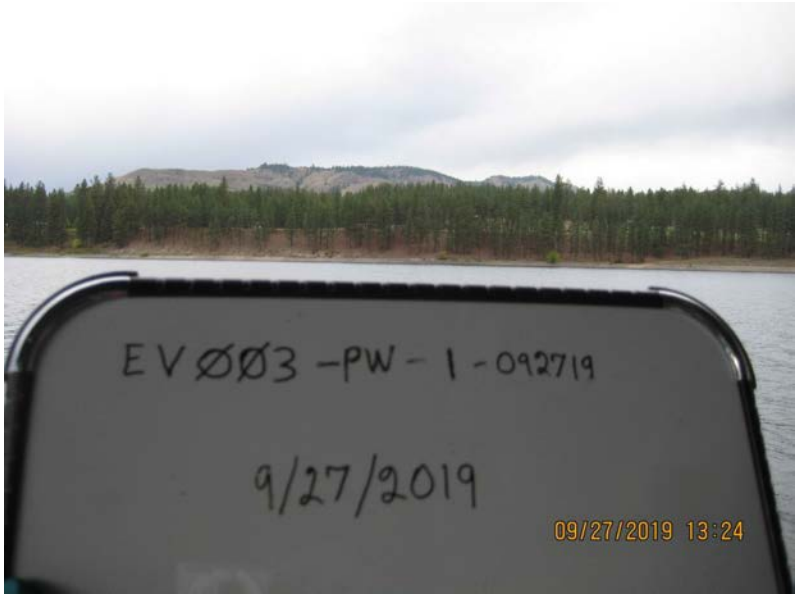
Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0007.jpg



Original Photo Name: IMG_0502.jpg

Photo No.

EV003.8

Photo Taken: 9/27/2019

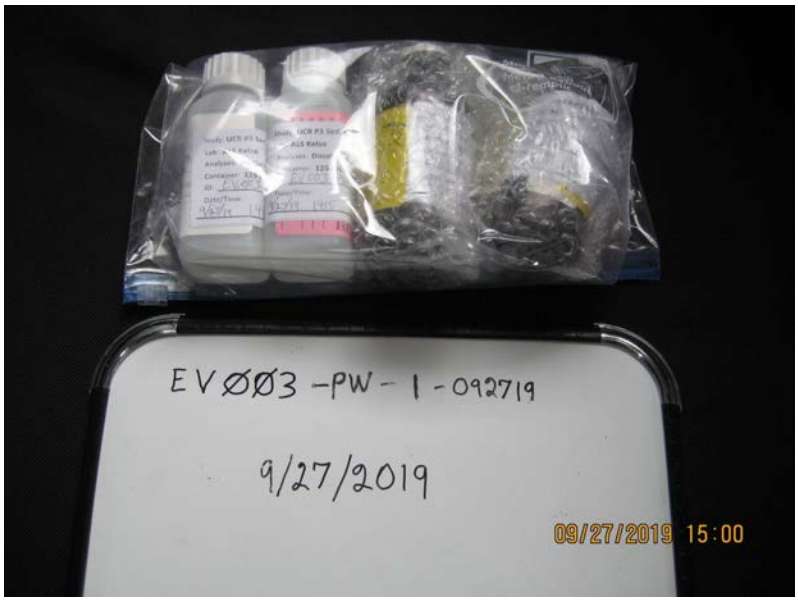
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0506.jpg

Photo No.

EV003.9

Photo Taken: 9/27/2019

Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF1395.JPG

Photo No.

EV005.1

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1312.JPG

Photo No.

EV005.2

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1396.JPG

Photo No.

EV005.3

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF1397.JPG

Photo No.

EV005.4

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Original Photo Name: DSCF1313.JPG

Photo No.

EV005.5

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF1314.JPG

Photo No.

EV005.6

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

BMI Sample

Notes:

In Bucket

Photo No.

EV005.7

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF1398.JPG

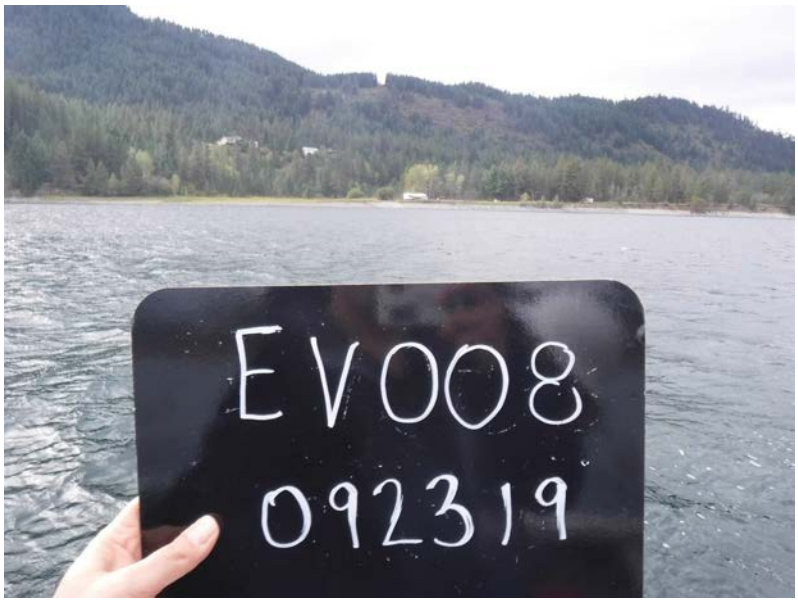


Photo No.

EV008.1

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Original Photo Name: DSCF0003.jpg

Photo No.

EV008.2

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0009.jpg

Photo No.

EV008.3

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0005.jpg

Photo No.

EV008.4

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0008.jpg

Photo No.

EV008.5

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Photo No.

EV008.6

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0004.jpg

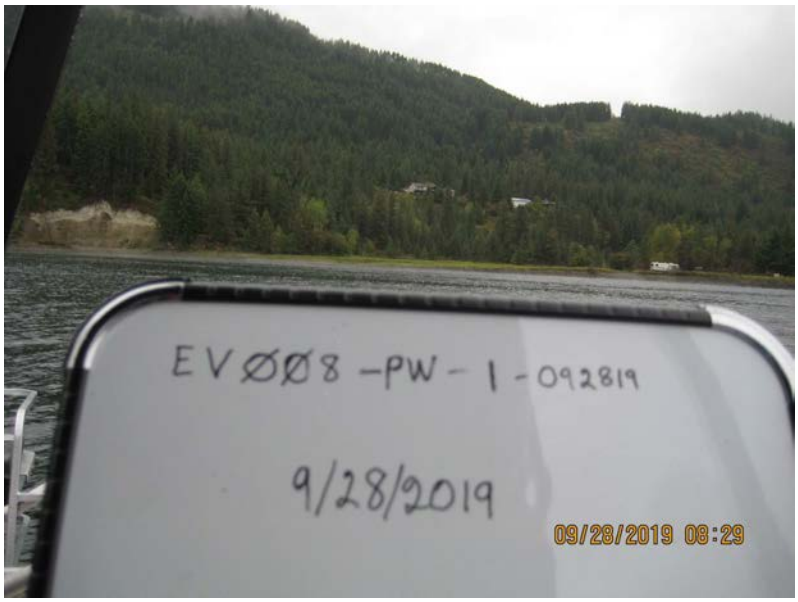


Photo No.

EV008.7

Photo Taken: 9/28/2019

Vessel: Yeti

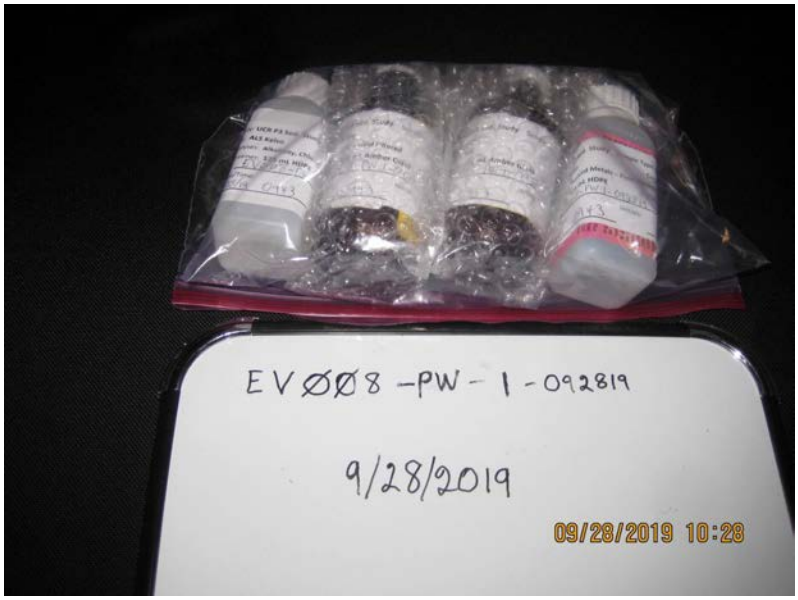
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0508.jpg



Original Photo Name: IMG_0509.jpg

Photo No.

EV008.8

Photo Taken: 9/28/2019

Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF1315.JPG

Photo No.

EV010.1

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1316.JPG

Photo No.

EV010.2

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF1317.JPG

Photo No.

EV010.3

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF1318.JPG

Photo No.

EV010.4

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF1319.JPG

Photo No.

EV010.5

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Rejected

Original Photo Name: DSCF1320.JPG

Photo No.

EV010.6

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Van Veen

Original Photo Name: DSCF1321.JPG

Photo No.

EV010.7

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Van Veen

Original Photo Name: DSCF0018.jpg

Photo No.

EV011.1

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.jpg

Photo No.

EV011.2

Photo Taken: 10/1/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0019.jpg

Photo No.

EV011.3

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0021.jpg

Photo No.

EV011.4

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Fines in Bowl

Original Photo Name: DSCF0022.jpg

Photo No.

EV011.5

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF0004.jpg

Photo No.

EV011.6

Photo Taken: 10/1/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

Freeze Grab

Original Photo Name: DSCF0006.jpg

Photo No.

EV011.7

Photo Taken: 10/1/2019

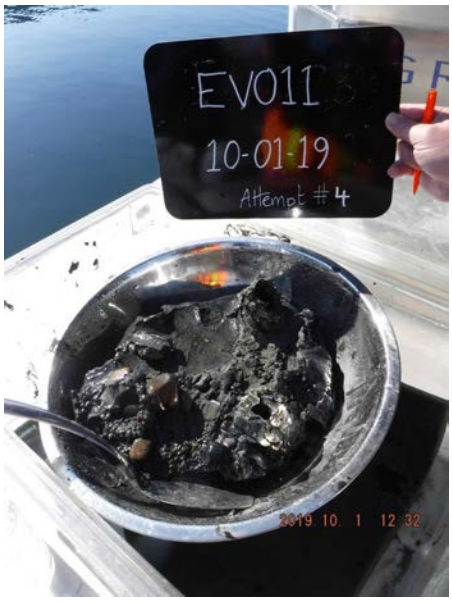
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Lexan Tub



Original Photo Name: DSCF0007.jpg

Photo No.

EV011.8

Photo Taken: 10/1/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Lexan Tub

Original Photo Name: DSCF0001.JPG

Photo No.

EV012.1

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.JPG

Photo No.

EV012.2

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0005.JPG

Photo No.

EV012.3

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0006.JPG

Photo No.

EV012.4

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0007.JPG

Photo No.

EV012.5

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Van Veen

Original Photo Name: DSCF0008.JPG

Photo No.

EV012.6

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Van Veen

Original Photo Name: DSCF0009.JPG

Photo No.

EV012.7

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Van Veen

Original Photo Name: DSCF0010.JPG

Photo No.

EV012.8

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Van Veen Sponge & Muscle going into BMI Bucket

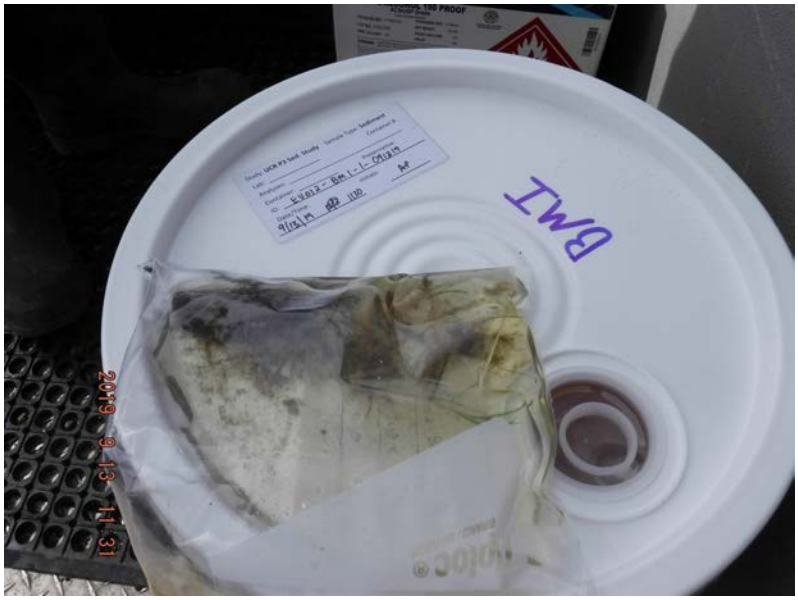


Photo No.

EV012.9

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

BMI Bucket & Fresh Water Sponge

Notes:

In Bucket

Original Photo Name: DSCF0012.JPG

Photo No.

EV012.10

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0011.JPG

Original Photo Name: DSCF0013.JPG

Photo No.

EV013.1

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0014.JPG

Photo No.

EV013.2

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0015.JPG

Photo No.

EV013.3

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0016.JPG

Photo No.

EV013.4

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0017.JPG

Photo No.

EV013.5

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Van Veen

Original Photo Name: DSCF0019.JPG

Photo No.

EV013.6

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

BMI Sample- Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0020.JPG

Photo No.

EV013.7

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0018.JPG

Photo No.

EV013.8

Photo Taken: 9/13/2019

Vessel: Tieton

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Photo No.

EV014.1

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

Rejected

Original Photo Name: DSCF0002.jpg

Photo No.

EV014.2

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Photo No.

EV014.3

Photo Taken: 10/23/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV014_20191023_1600_Strata.jpg

Photo No.

EV015.1

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Original Photo Name: DSCF0004.jpg

Photo No.

EV015.2

Photo Taken: 9/28/2019

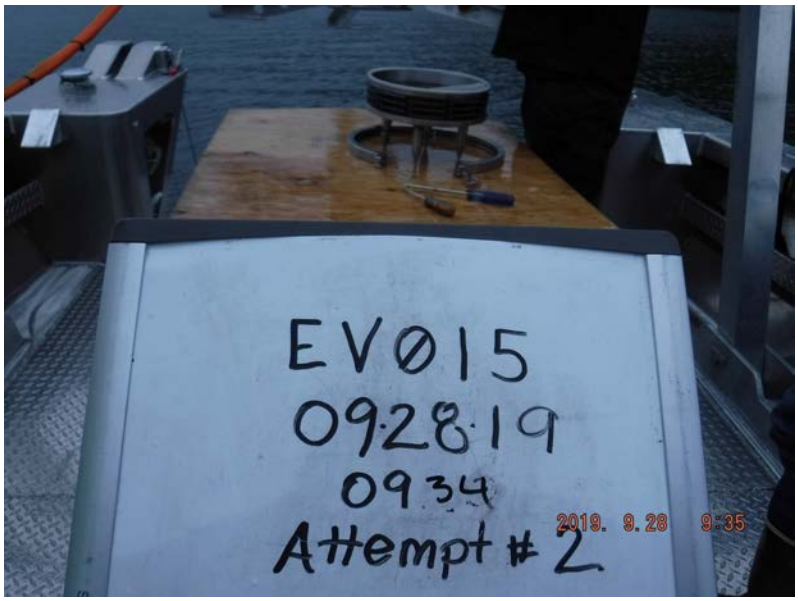
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DSCF0006.jpg

Photo No.

EV015.3

Photo Taken: 9/28/2019

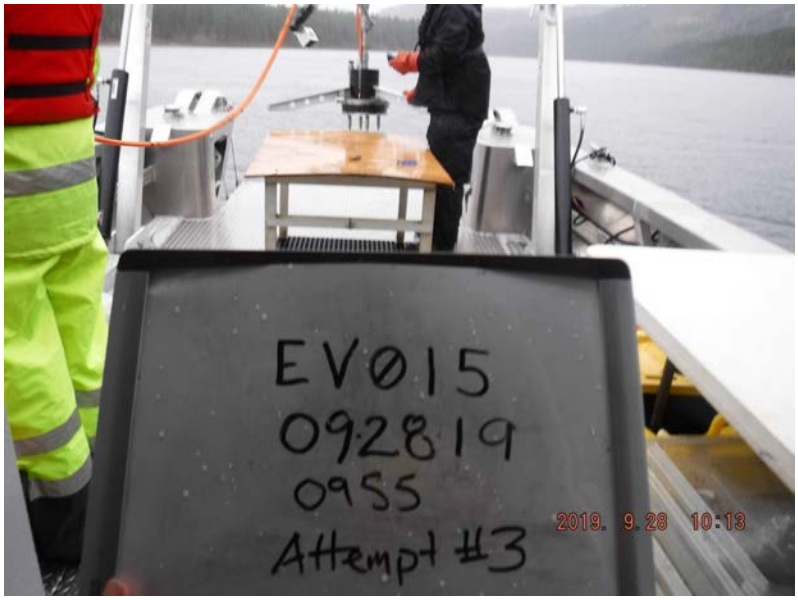
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected



Original Photo Name: DSCF0010.jpg

Photo No.

EV015.4

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: P1020144.jpg

Photo No.

EV015.5

Photo Taken: 10/9/2019

Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.jpg

Photo No.

EV015.6

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

Original Photo Name: DSCF0014.jpg

Photo No.

EV016.1

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0014.jpg

Photo No.

EV016.2

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0015.jpg

Photo No.

EV016.3

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

N/A

Original Photo Name: DSCF0016.jpg

Photo No.

EV016.4

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

N/A

Original Photo Name: EV016_Ingalls_20190928_1324_Strata.jpg

Photo No.

EV016.5

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0005.jpg

Photo No.

EV020.1

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0006.jpg

Photo No.

EV020.2

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

N/A

Original Photo Name: DSCF0007.jpg

Photo No.

EV020.3

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

N/A

Original Photo Name: DSCF0008.jpg

Photo No.

EV020.4

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

N/A

Original Photo Name: DSCF0009.jpg

Photo No.

EV020.5

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

N/A

Original Photo Name: DSCF0010.jpg

Photo No.

EV020.6

Photo Taken: 10/2/2019

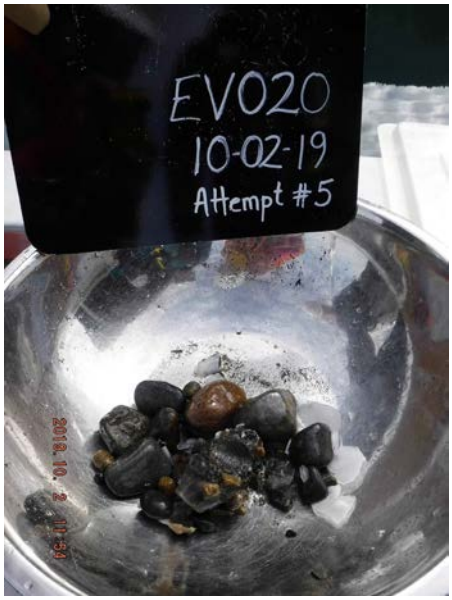
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

N/A



Original Photo Name: DSCF0011.jpg

Photo No.

EV020.7

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

N/A

Original Photo Name: DSCF0012.jpg

Photo No.

EV020.8

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempts

Notes:

N/A

Original Photo Name: DSCF0013.jpg

Photo No.

EV020.9

Photo Taken: 10/2/2019

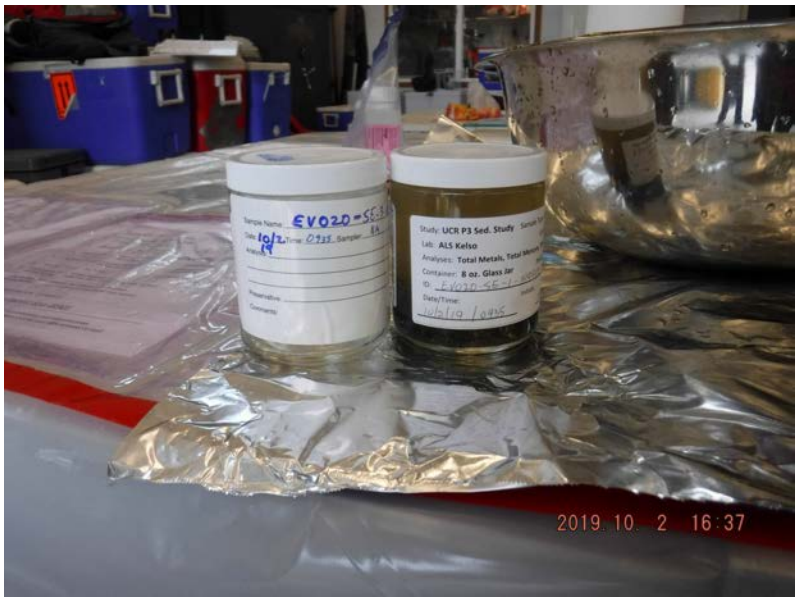
Vessel: Ingalls

Media Description:

Preparing Sample for Weighing

Notes:

N/A



Original Photo Name: DSCF0018.jpg

Photo No.

EV020.10

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

EPA Split - Filled Sample Jars

Notes:

N/A

Photo No.

EV020.11

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

EPA Split - Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF0019.jpg

Photo No.

EV020.12

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

EPA Split - Homogenizing Sample

Notes:

N/A

Original Photo Name: DSCF0020.jpg

Photo No.

EV020.13

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

EPA Split - Homogenizing Sample

Notes:

N/A

Original Photo Name: DSCF0021.jpg

Photo No.

EV020.14

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

EPA Split - Dividing Sample and weighing

Notes:

N/A

Original Photo Name: DSCF0022.jpg

Photo No.

EV020.15

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

EPA Split - Dividing Sample in two jars

Notes:

N/A

Original Photo Name: DSCF0025.jpg

Photo No.

EV022.1

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0011.jpg

Original Photo Name: DSCF0015.jpg

Photo No.

EV022.2

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0016.jpg

Photo No.

EV022.3

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0017.jpg

Photo No.

EV022.4

Photo Taken: 9/28/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF0005.jpg

Photo No.

EV022.5

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0009.jpg

Photo No.

EV022.6

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Freeze Grab

Original Photo Name: DSCF0011.jpg

Photo No.

EV022.7

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Freeze Grab

Original Photo Name: DSCF0012.jpg

Photo No.

EV022.8

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Freeze Grab

Original Photo Name: DSCF0014.jpg

Photo No.

EV022.9

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #6

Notes:

Freeze Grab

Original Photo Name: DSCF0016.jpg

Photo No.

EV022.10

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #7

Notes:

Freeze Grab

Original Photo Name: DSCF0017.jpg

Photo No.

EV022.11

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Photo No.

EV023.1

Photo Taken: 10/4/2019

Vessel: Yeti

Media Description:

Porewater Sample Attempt

Notes:

N/A

Original Photo Name: DSCF0001.jpg

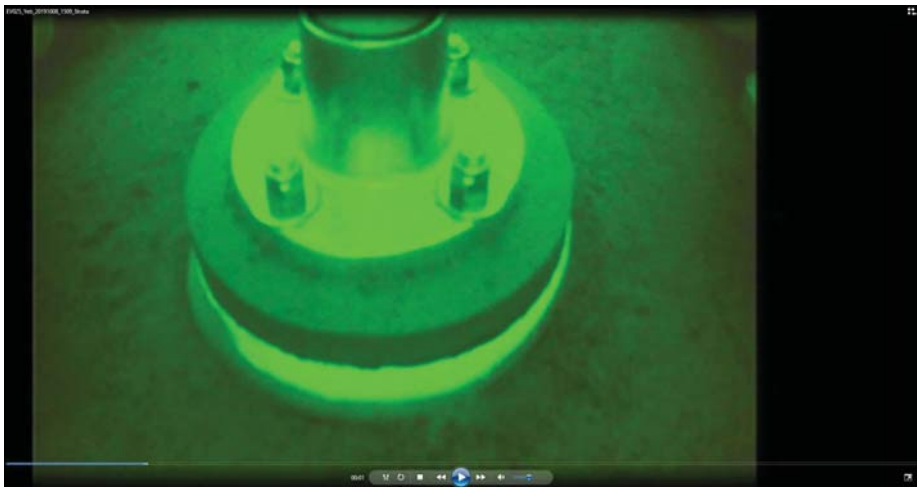


Photo No.

EV025.1

Photo Taken: 9/27/2019

Vessel: Yeti

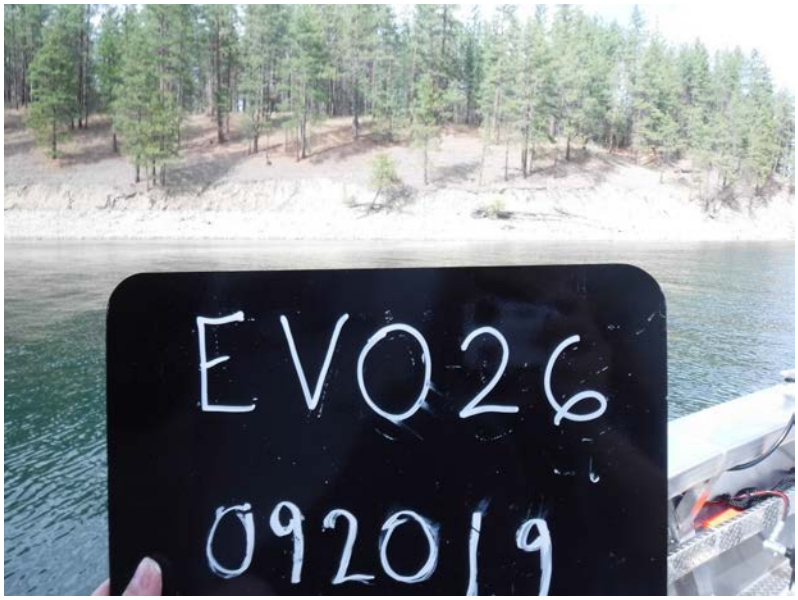
Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV025_Yeti_20191008_1509_Strata.JPG



Original Photo Name: DSCF0010.jpg

Photo No.

EV026.1

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0012.jpg

Photo No.

EV026.2

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Photo No.

EV026.3

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0014.jpg

Photo No.

EV026.4

Photo Taken: 9/20/2019

Vessel: Ingalls

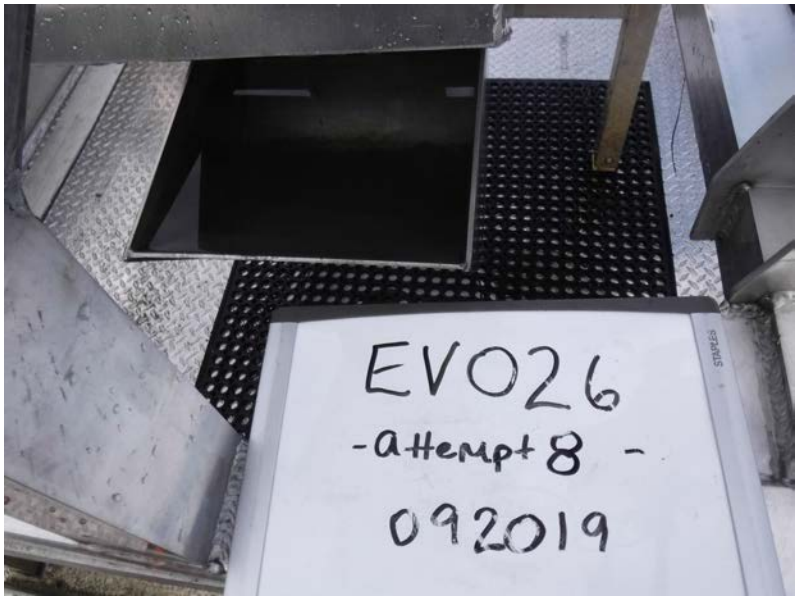
Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0015.jpg



Original Photo Name: DSCF0018.jpg

Photo No.

EV026.5

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #8

Notes:

Rejected

Original Photo Name: DSCF0020.jpg

Photo No.

EV026.6

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #9

Notes:

In Hamon

Original Photo Name: DSCF0021.jpg

Photo No.

EV026.7

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #9

Notes:

Gravels Removed

Original Photo Name: DSCF0019.jpg

Photo No.

EV026.8

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #9

Notes:

In Hamon

Original Photo Name: DSCF0026.jpg

Photo No.

EV026.9

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0023.jpg

Photo No.

EV026.10

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #10

Notes:

Rejected

Photo No.

EV026.11

Photo Taken: 9/20/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0025.jpg

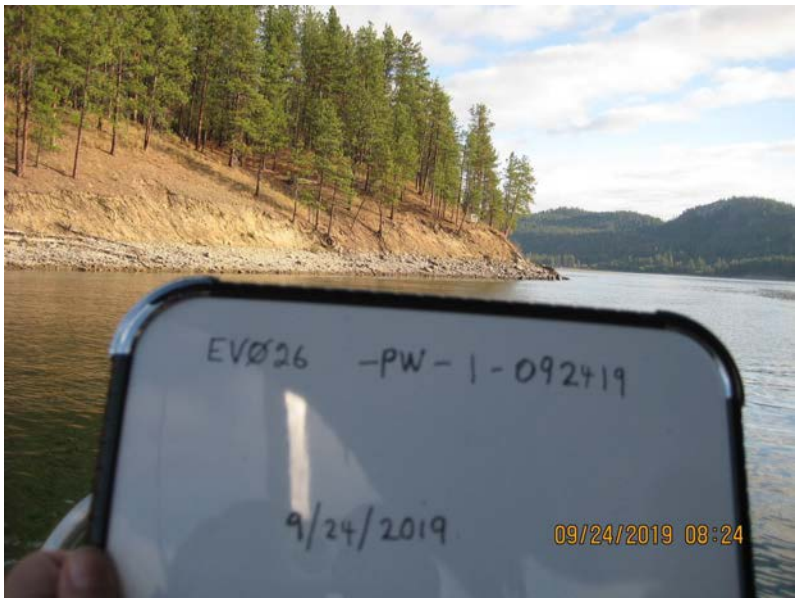


Photo No.

EV026.12

Photo Taken: 9/24/2019

Vessel: Yeti

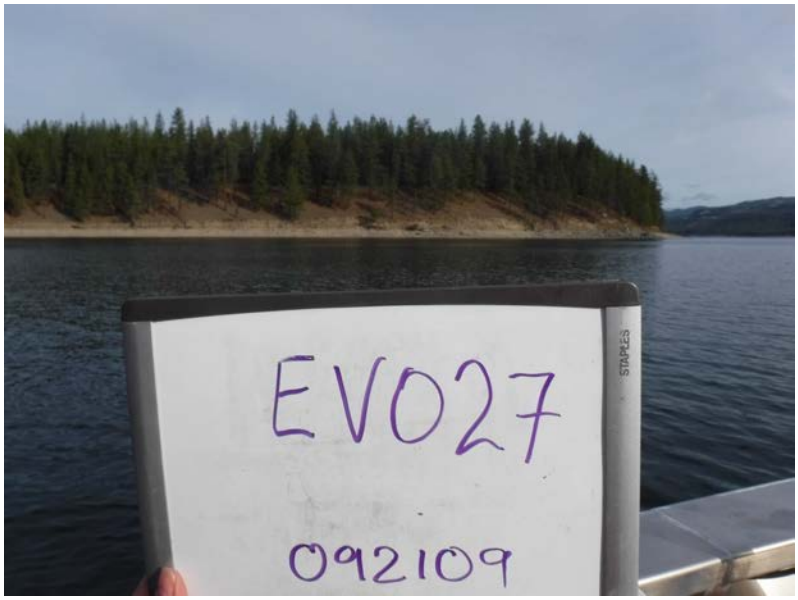
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0464.jpg



Original Photo Name: DSCF0001.jpg

Photo No.

EV027.1

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0004.jpg

Photo No.

EV027.2

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Photo No.

EV027.3

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0003.jpg

Photo No.

EV027.4

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0005.jpg

Original Photo Name: DSCF0006.jpg

Photo No.

EV027.5

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0007.jpg

Photo No.

EV027.6

Photo Taken: 9/21/2019

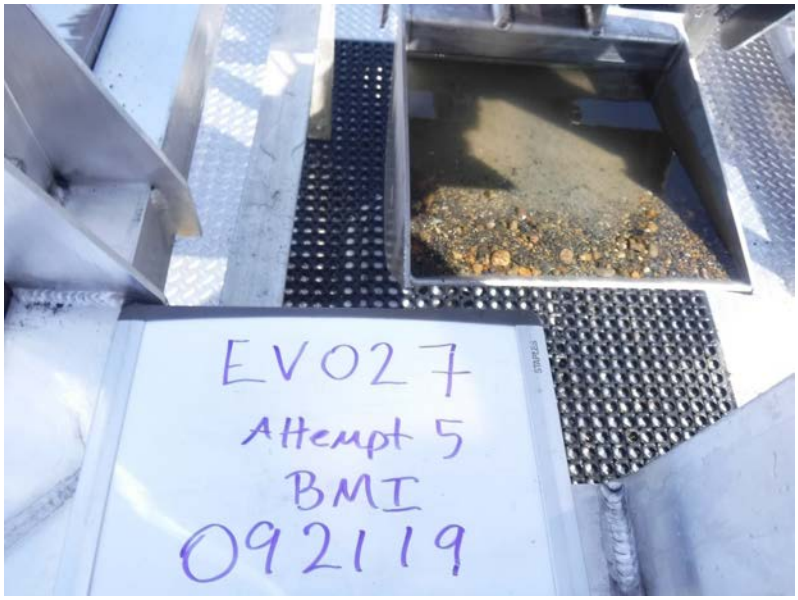
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon



Original Photo Name: DSCF0010.jpg

Photo No.

EV027.7

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

Rejected

Original Photo Name: DSCF0011.jpg

Photo No.

EV027.8

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon

Photo No.

EV027.9

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

N/A

Original Photo Name: DSCF0012.jpg

Photo No.

EV027.10

Photo Taken: 9/21/2019

Vessel: Ingalls

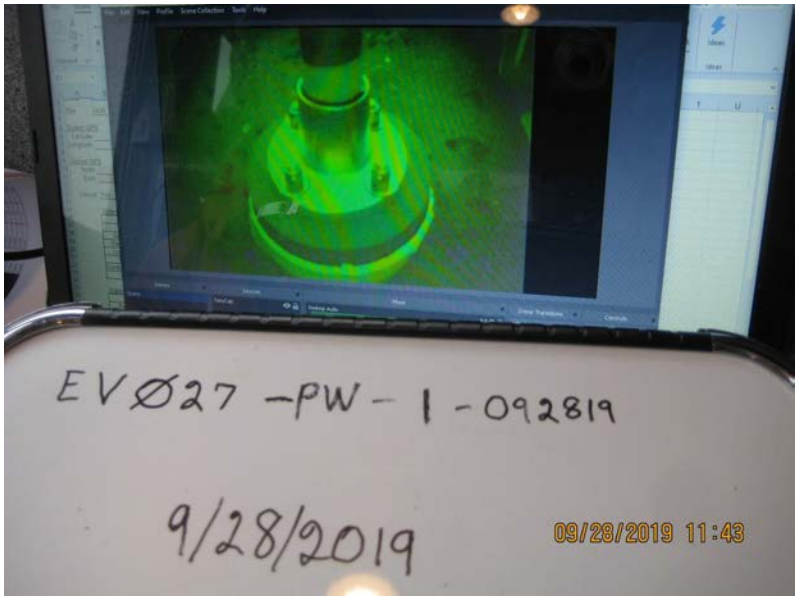
Media Description:

Total Gravels

Notes:

In Lexan Tub

Original Photo Name: DSCF0008.jpg



Original Photo Name: IMG_0510.jpg

Photo No.

EV027.11

Photo Taken: 9/28/2019

Vessel: Yeti

Media Description:

Video Survey

Notes:

PW Sampling Equipment

Original Photo Name: DSCF0009.jpg

Photo No.

EV027.12

Photo Taken: 9/21/2019

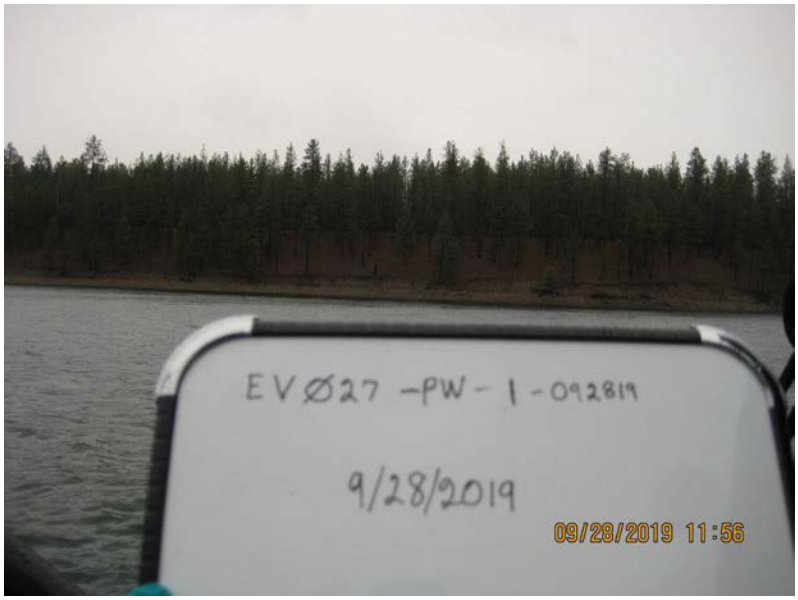
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A



Original Photo Name: IMG_0512.jpg

Photo No.

EV027.13

Photo Taken: 9/28/2019

Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0514.jpg

Photo No.

EV027.14

Photo Taken: 9/28/2019

Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0004.jpg

Photo No.

EV028.1

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0014.jpg

Photo No.

EV028.2

Photo Taken: 10/1/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

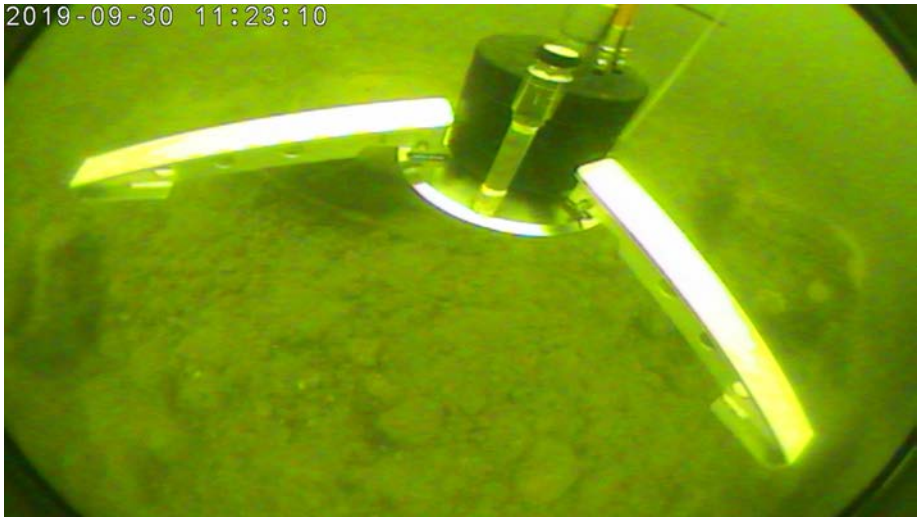


Photo No.

EV028.3

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV028_Ingalls_20190930_1123_Strata.jpg

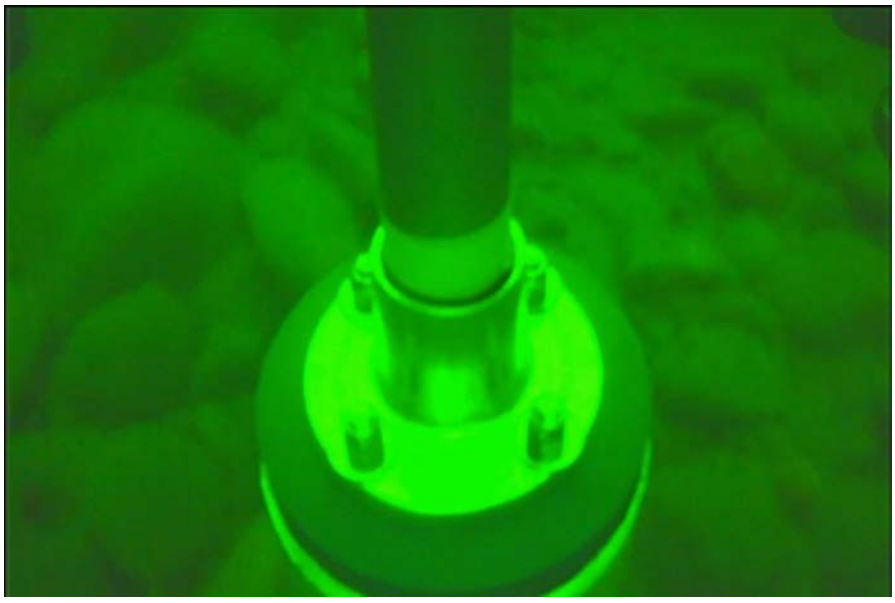


Photo No.

EV029.1

Photo Taken: 10/4/2019

Vessel: Yeti

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV029_20191004.JPG

Original Photo Name: DSCF0003.jpg

Photo No.

EV031.1

Photo Taken: 9/30/2019

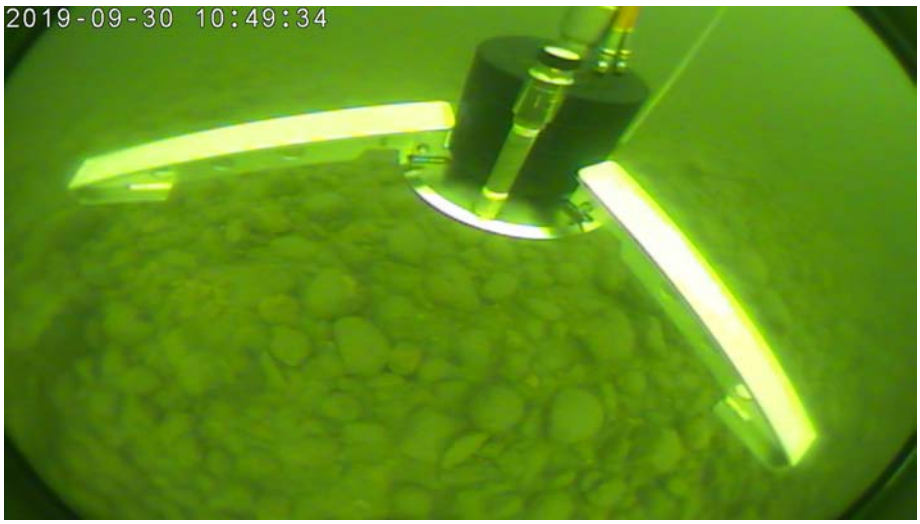
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: EV031_Ingalls_20190930_1049_Strata.jpg

Photo No.

EV031.2

Photo Taken: 9/30/2019

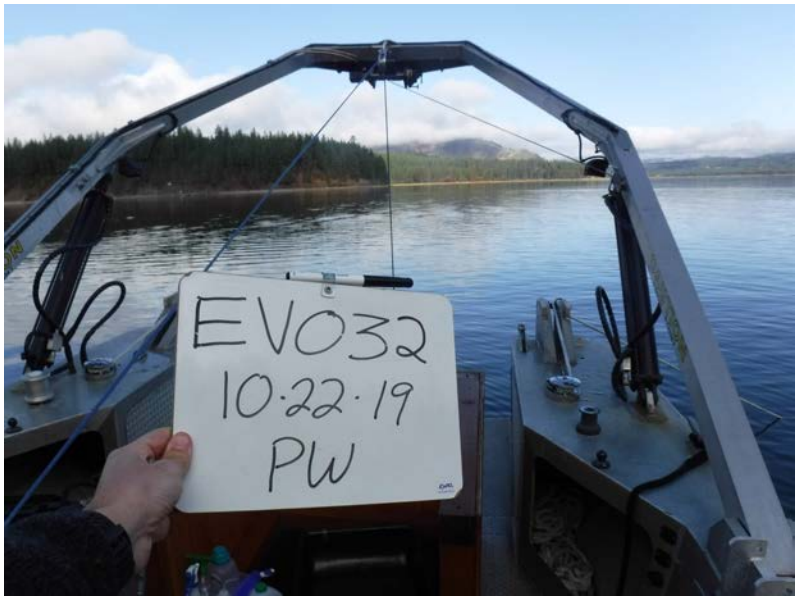
Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A



Original Photo Name: DSCF0005.JPG

Photo No.

EV032.1

Photo Taken: 10/22/2019

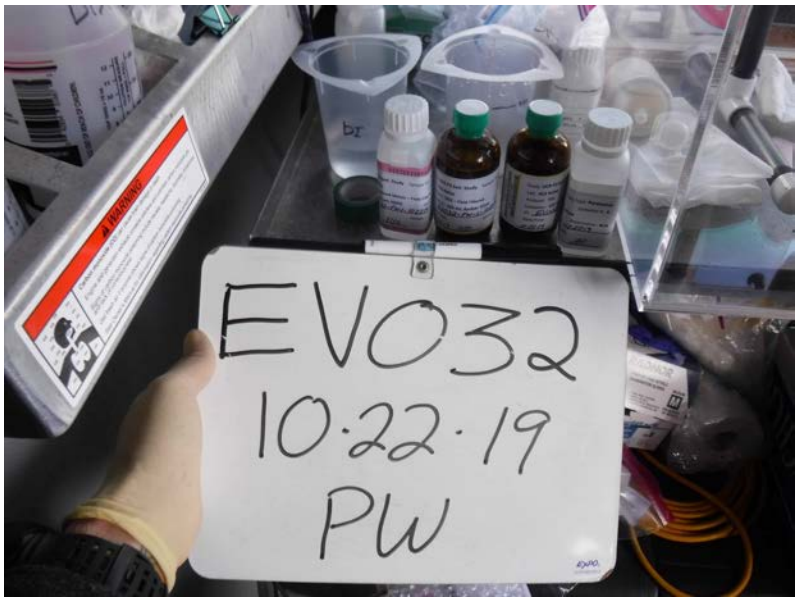
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0006.JPG

Photo No.

EV032.2

Photo Taken: 10/22/2019

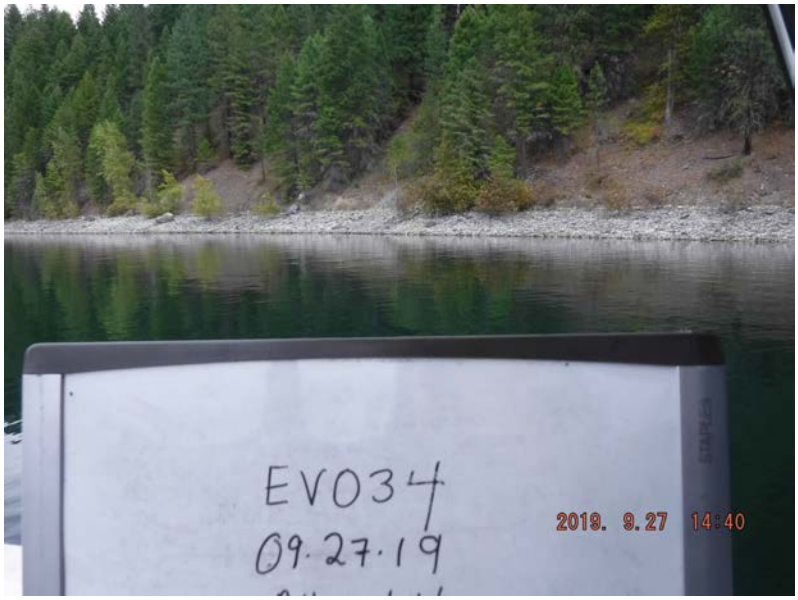
Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF0015.jpg

Photo No.

EV034.1

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0018.jpg

Photo No.

EV034.2

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: EV034_20190927.jpg

Photo No.

EV034.3

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0002.jpg

Photo No.

EV036.1

Photo Taken: 9/30/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1005.JPG

Photo No.

EV036.2

Photo Taken: 9/14/2019

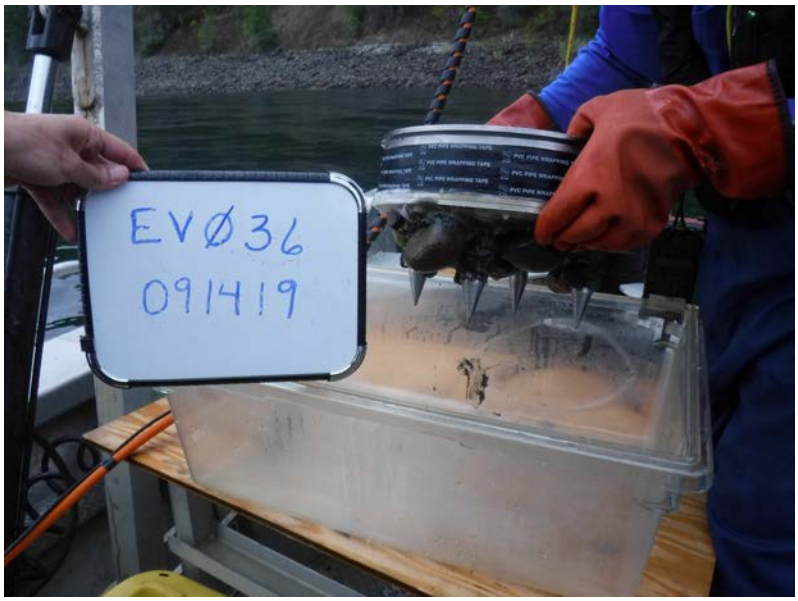
Vessel: Tieton

Media Description:

Sediment Sample Attempt

Notes:

N/A



Original Photo Name: DSCF1006.JPG

Photo No.

EV036.3

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Freeze Grab

Photo No.

EV036.4

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Original Photo Name: DSCF1007.JPG

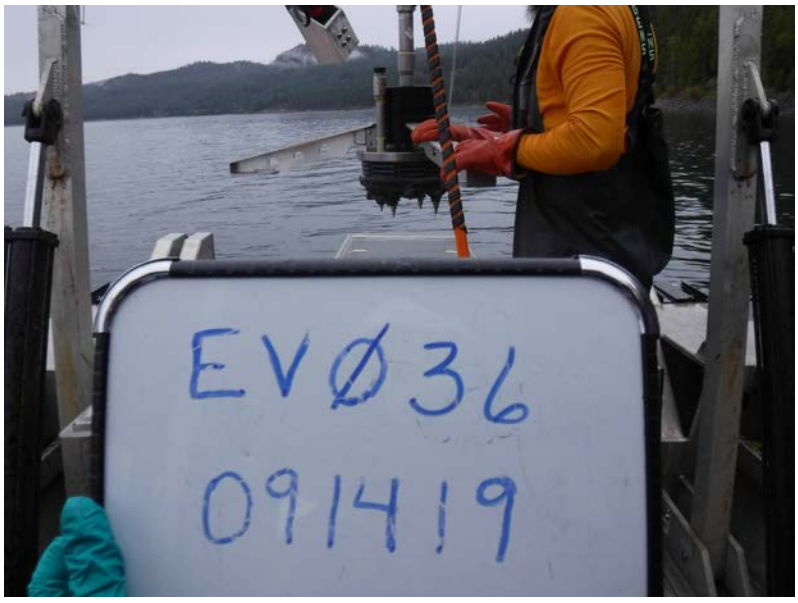


Photo No.

EV036.5

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Freeze Grab

Original Photo Name: DSCF1008.JPG

Original Photo Name: DSCF1009.JPG

Photo No.

EV036.6

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: DSCF1010.JPG

Photo No.

EV036.7

Photo Taken: 9/14/2019

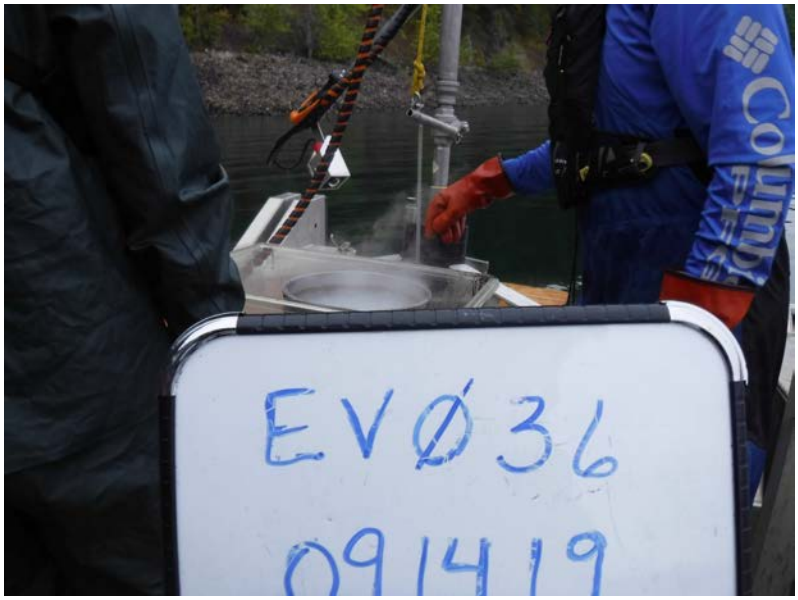
Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Freeze Grab



Original Photo Name: DSCF1011.JPG

Photo No.

EV036.8

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Freeze Grab

Original Photo Name: DSCF1012.JPG

Photo No.

EV036.9

Photo Taken: 9/14/2019

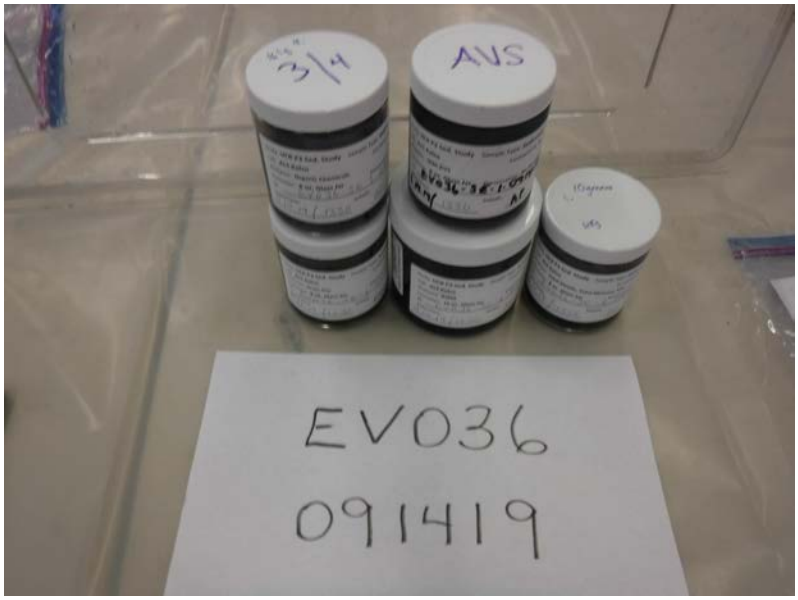
Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Lexan Tub



Original Photo Name: DSCF1013.JPG

Photo No.

EV036.10

Photo Taken: 9/14/2019

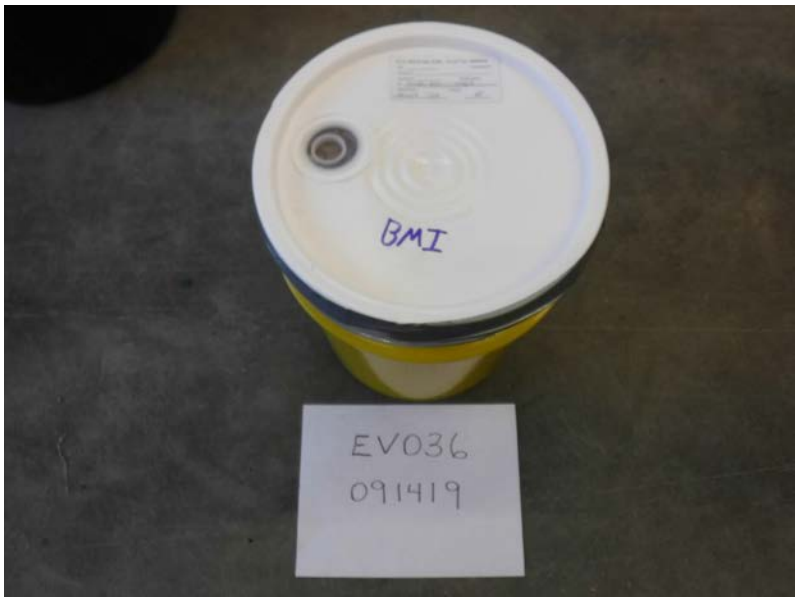
Vessel: Tieton

Media Description:

Filled Sample Jars

Notes:

N/A



Original Photo Name: DSCF1014.JPG

Photo No.

EV036.11

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0010.jpg

Photo No.

EV036.12

Photo Taken: 10/1/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Freeze Grab

Original Photo Name: DSCF0013.jpg

Photo No.

EV036.13

Photo Taken: 10/1/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #6

Notes:

Freeze Grab

Original Photo Name: DSCF0015.jpg

Photo No.

EV036.14

Photo Taken: 10/1/2019

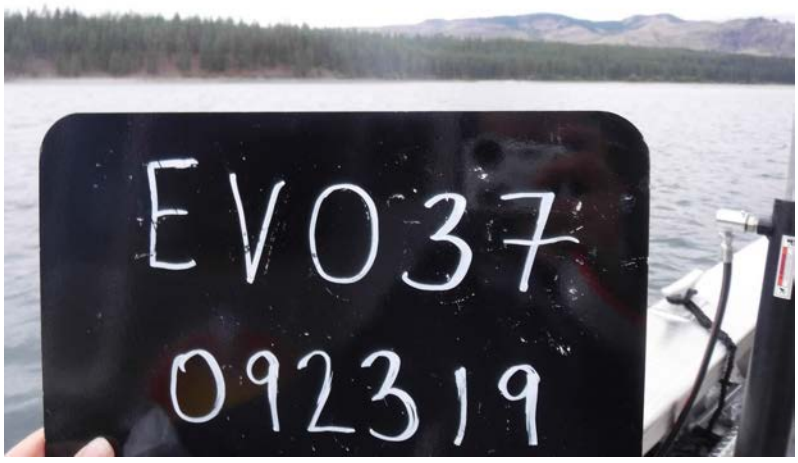
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

Freeze Grab



Original Photo Name: DSCF0010.jpg

Photo No.

EV037.1

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Photo No.

EV037.2

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0012.jpg

Photo No.

EV037.3

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0011.jpg

Original Photo Name: DSCF0017.jpg

Photo No.

EV037.4

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0015.jpg

Photo No.

EV037.5

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV037.6

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0014.jpg

Photo No.

EV038.1

Photo Taken: 10/22/2019

Vessel: Tieton

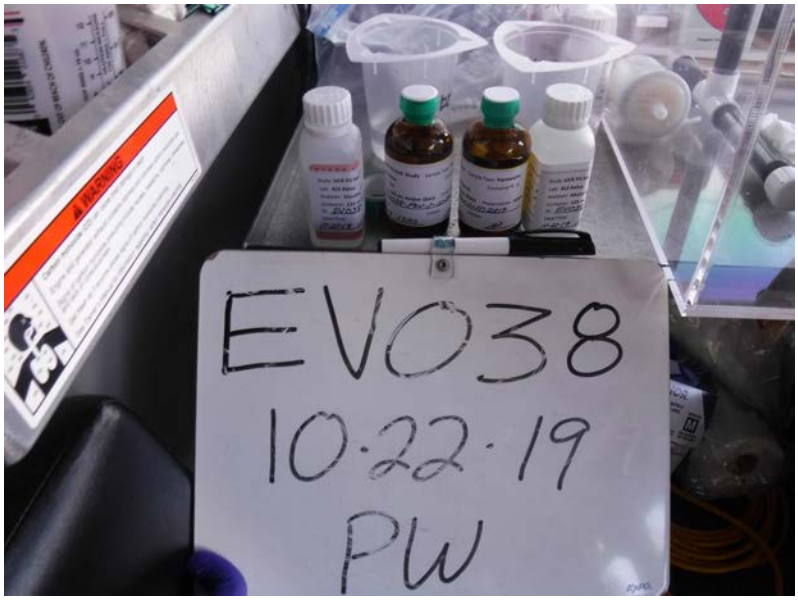
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0007.JPG



Original Photo Name: DSCF0008.JPG

Photo No.

EV038.2

Photo Taken: 10/22/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Photo No.

EV039.1

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

Date on Photo blackboard is incorrect. Photo taken on 10/02/2019.

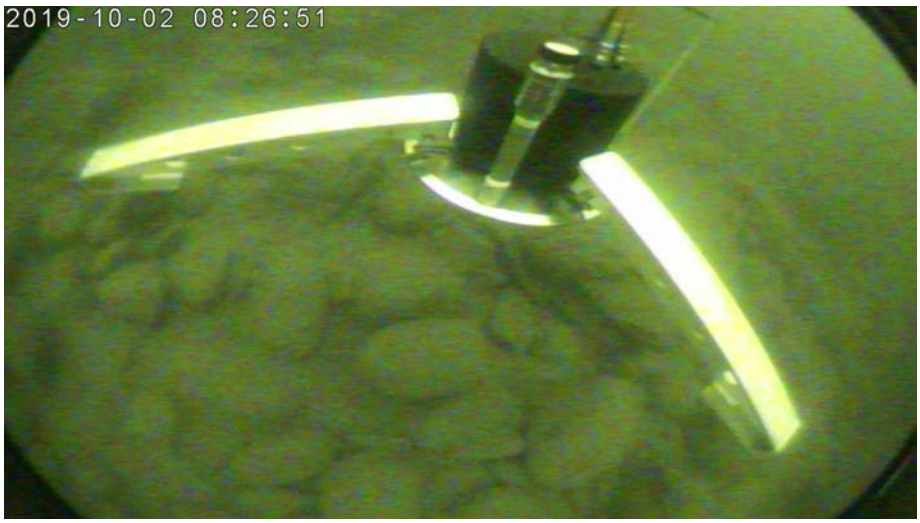


Photo No.

EV039.2

Photo Taken: 10/2/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV039_Ingalls_20191002_0826_Strata.jpg

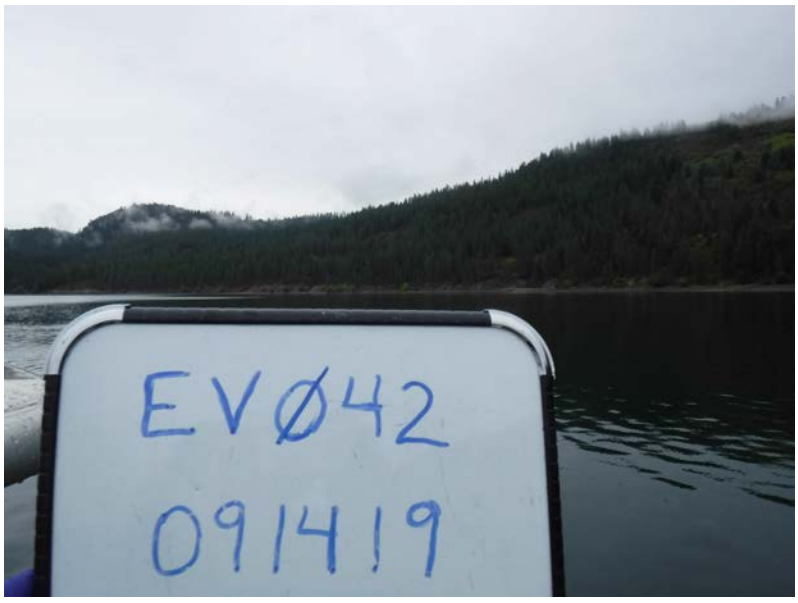


Photo No.

EV042.1

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

Original Photo Name: DSCF1004.JPG

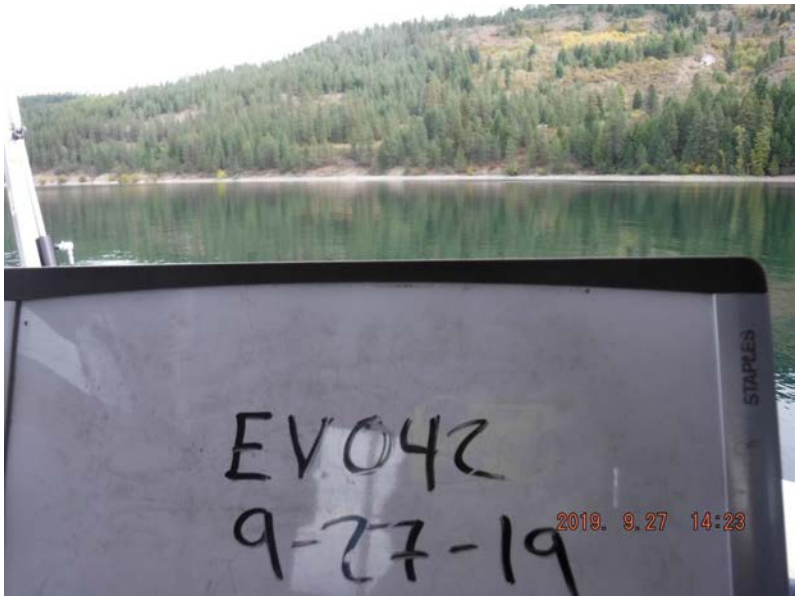


Photo No.

EV042.2

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0014.jpg

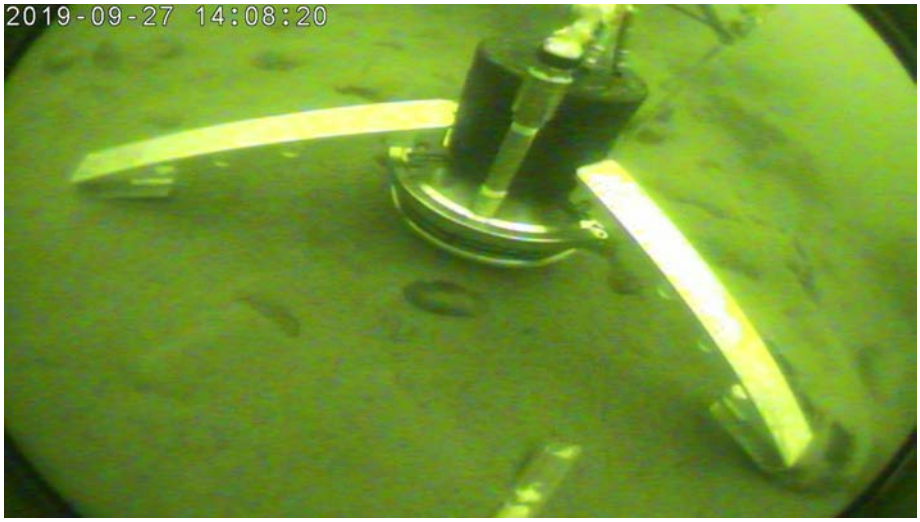


Photo No.

EV042.3

Photo Taken: 9/27/2019

Vessel: Ingalls

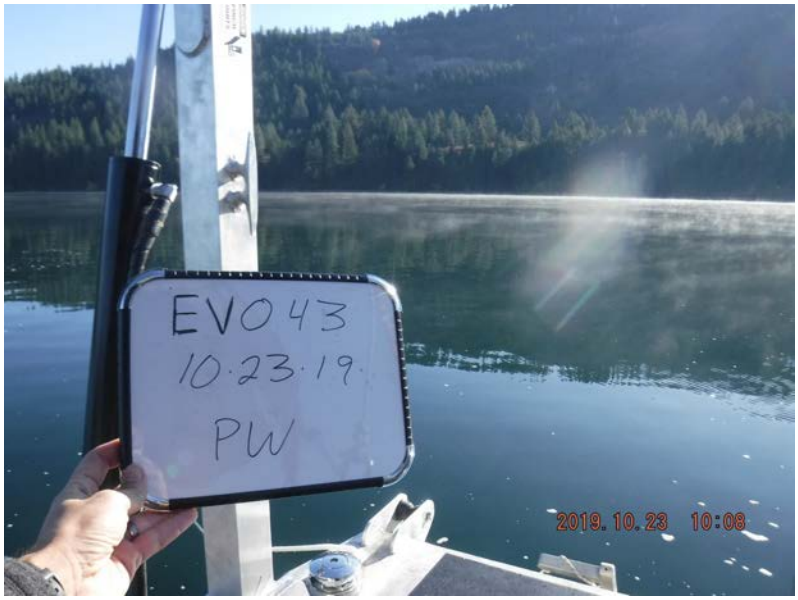
Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV042_Ingalls_20190927_1408_Strata.jpg



Original Photo Name: DSCF0001.JPG

Photo No.

EV043.1

Photo Taken: 10/23/2019

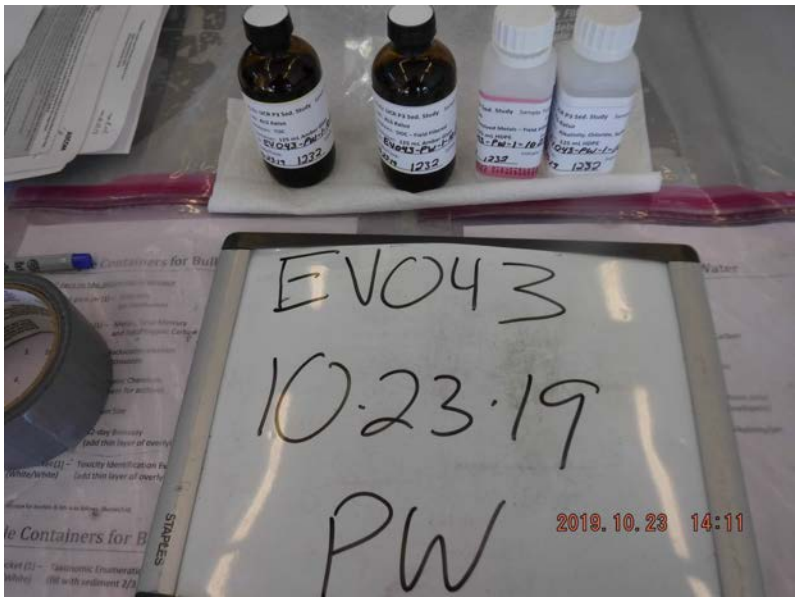
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0002.JPG

Photo No.

EV043.2

Photo Taken: 10/23/2019

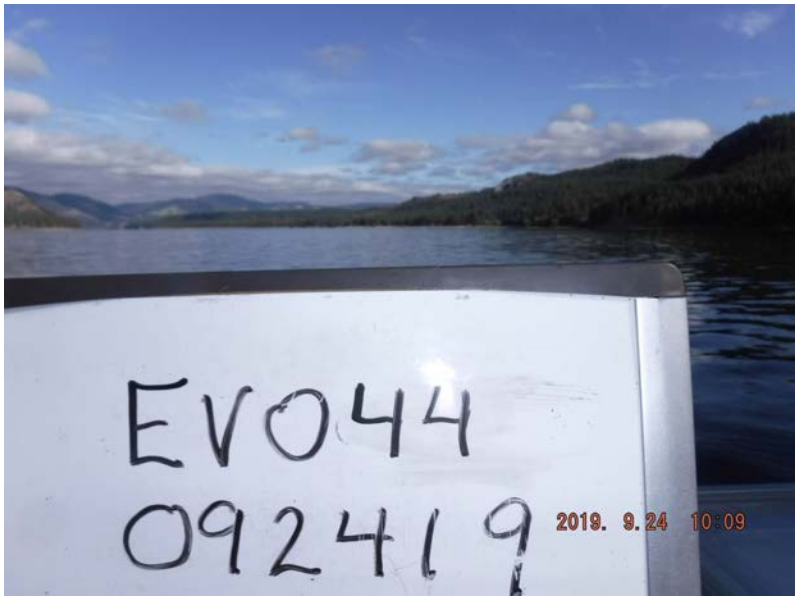
Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF3007.jpg

Photo No.

EV044.1

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF3008.jpg

Photo No.

EV044.2

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF3013.jpg

Photo No.

EV044.3

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF3012.jpg

Photo No.

EV044.4

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV044.5

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF3011.jpg

Photo No.

EV044.6

Photo Taken: 9/20/2019

Vessel: Yeti

Media Description:

Equipment Blank

Notes:

N/A

Original Photo Name: DSCF0002.jpg

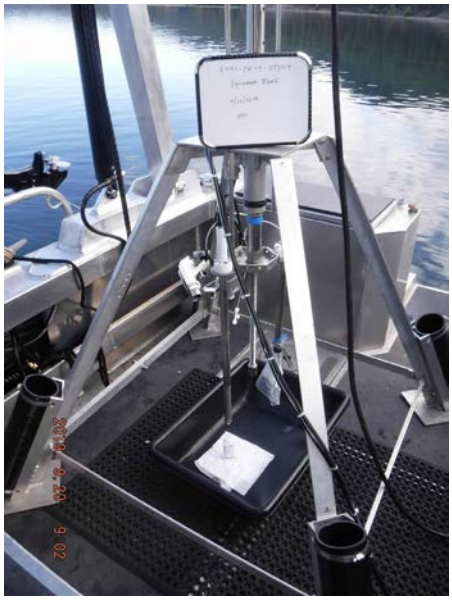


Photo No.

EV044.7

Photo Taken: 9/20/2019

Vessel: Yeti

Media Description:

Equipment Blank

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Photo No.

EV044.8

Photo Taken: 9/24/2019

Vessel: Ingalls

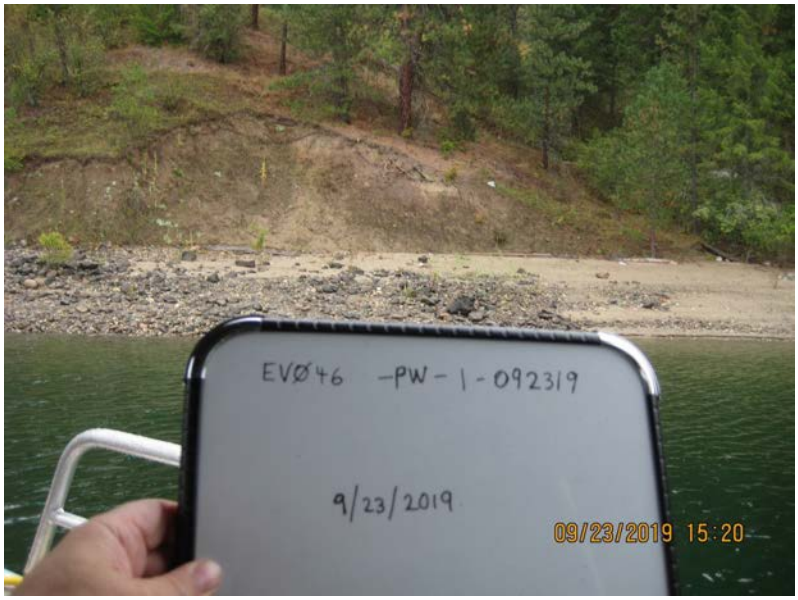
Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF3010.jpg



Original Photo Name: IMG_0462.jpg

Photo No.

EV046.1

Photo Taken: 9/23/2019

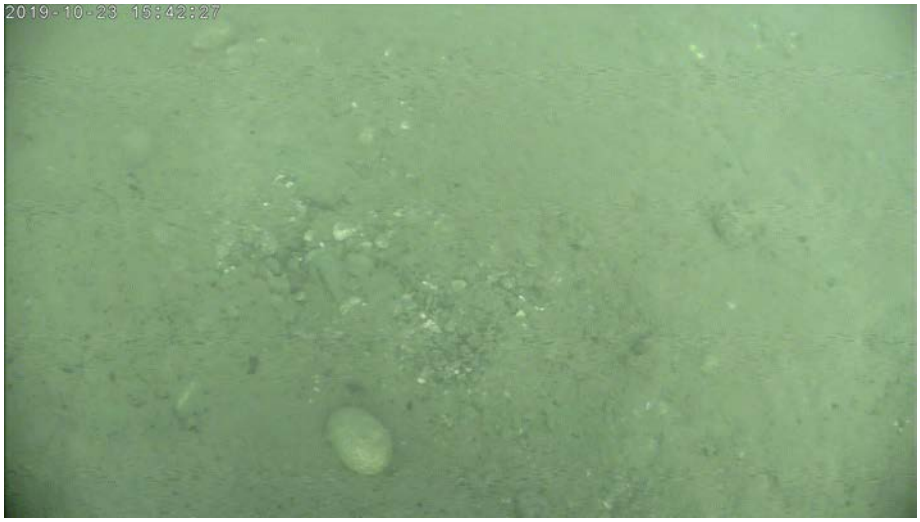
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: EV046_20191023_1542_Strata.jpg

Photo No.

EV046.2

Photo Taken: 10/23/2019

Vessel: Yeti

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF3014.jpg

Photo No.

EV048.1

Photo Taken: 9/24/2019

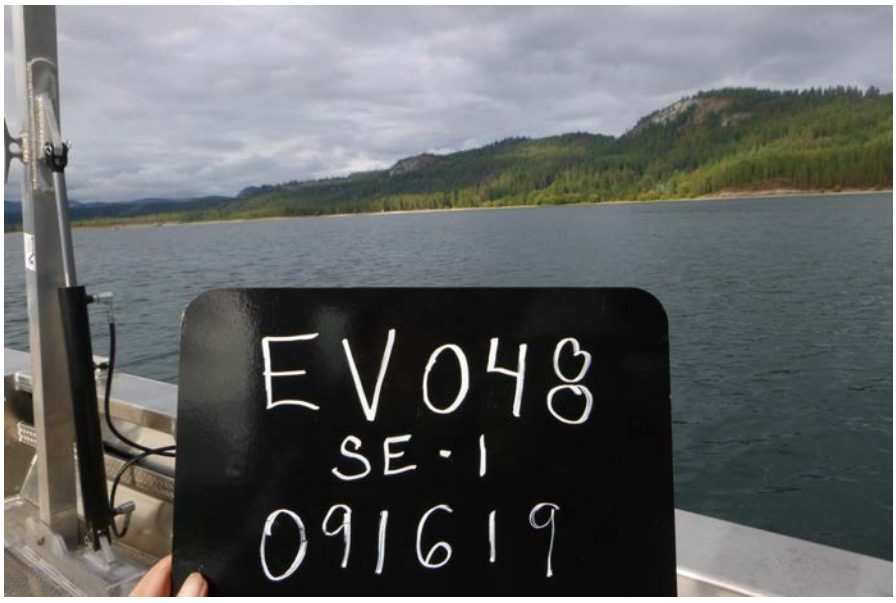
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1000514.JPG

Photo No.

EV048.2

Photo Taken: 9/16/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Photo No.

EV048.3

Photo Taken: 9/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Original Photo Name: P1000515.JPG

Photo No.

EV048.4

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF3016.jpg

Original Photo Name: DSCF3015.jpg

Photo No.

EV048.5

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF3020.jpg

Photo No.

EV048.6

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF3018.jpg

Photo No.

EV048.7

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF3019.jpg

Photo No.

EV048.8

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV048.9

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF3017.jpg

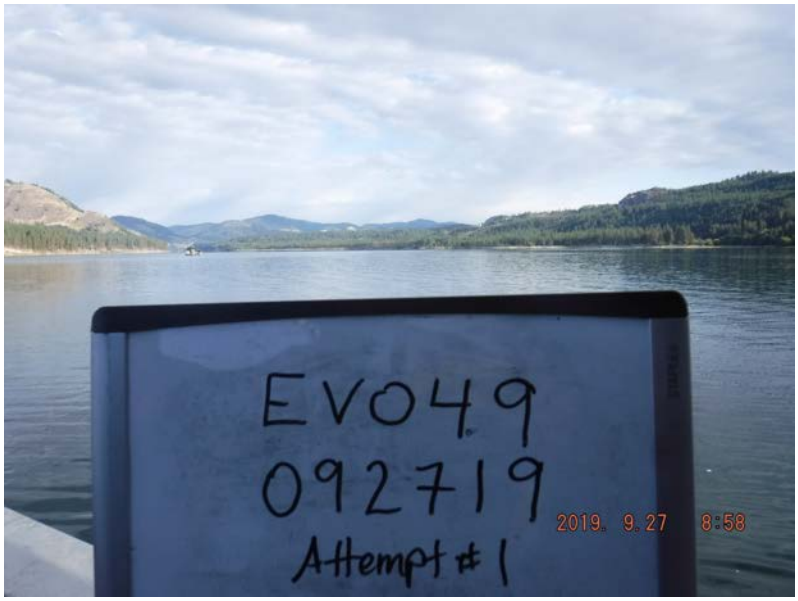


Photo No.

EV049.1

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.jpg

Original Photo Name: DSCF1002.JPG

Photo No.

EV049.2

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0004.jpg

Photo No.

EV049.3

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF1310.JPG

Photo No.

EV049.4

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF1311.JPG

Photo No.

EV049.5

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DSCF1003.JPG

Photo No.

EV049.6

Photo Taken: 9/14/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0006.jpg

Photo No.

EV049.7

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #6

Notes:

Rejected

Original Photo Name: DSCF0008.jpg

Photo No.

EV049.8

Photo Taken: 9/27/2019

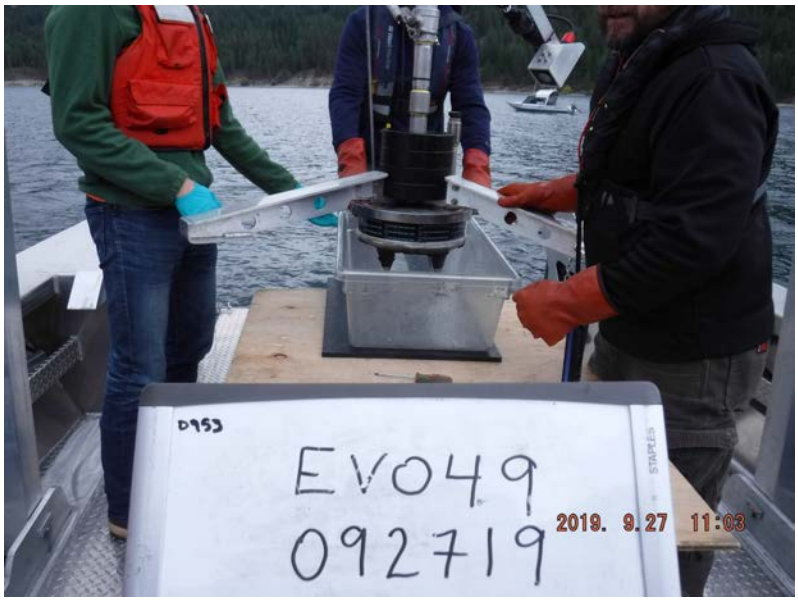
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #8

Notes:

In Lexan Tub



Original Photo Name: DSCF0007.jpg

Photo No.

EV049.9

Photo Taken: 9/27/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #7

Notes:

Freeze Grab, rejected

Original Photo Name: DSCF0012.jpg

Photo No.

EV049.10

Photo Taken: 9/27/2019

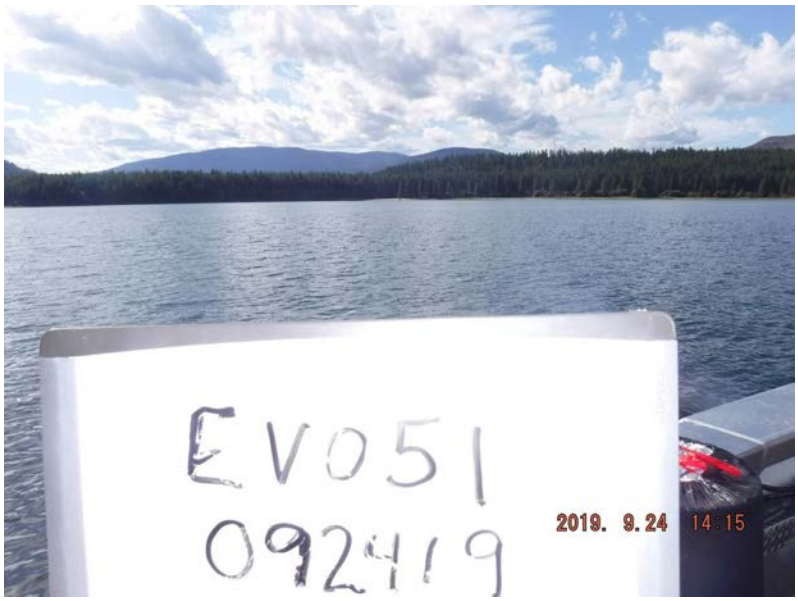
Vessel: Ingalls

Media Description:

Filled Sample Jars

Notes:

N/A



Original Photo Name: DSCF3023.jpg

Photo No.

EV051.1

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF3021.jpg

Photo No.

EV051.2

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF3022.jpg

Photo No.

EV051.3

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF3025.jpg

Photo No.

EV051.4

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF3024.jpg

Photo No.

EV051.5

Photo Taken: 9/24/2019

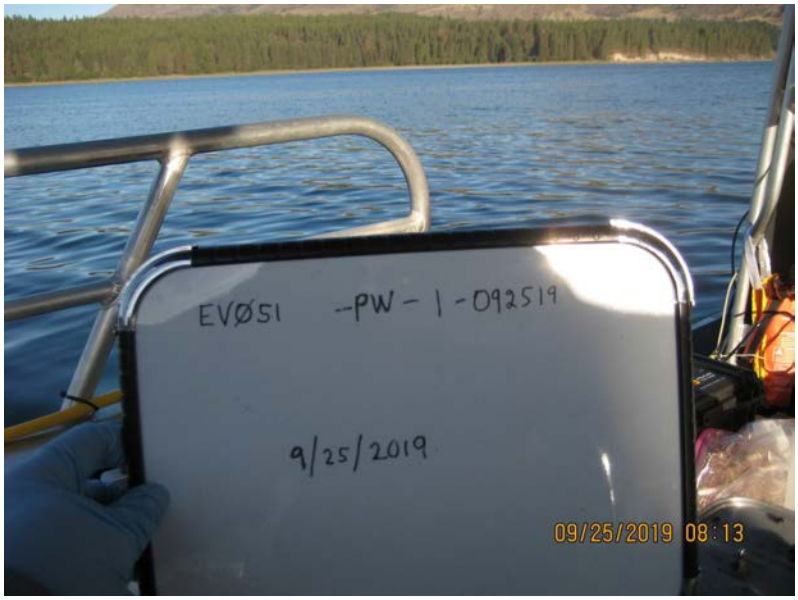
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen



Original Photo Name: IMG_0472.jpg

Photo No.

EV051.6

Photo Taken: 9/25/2019

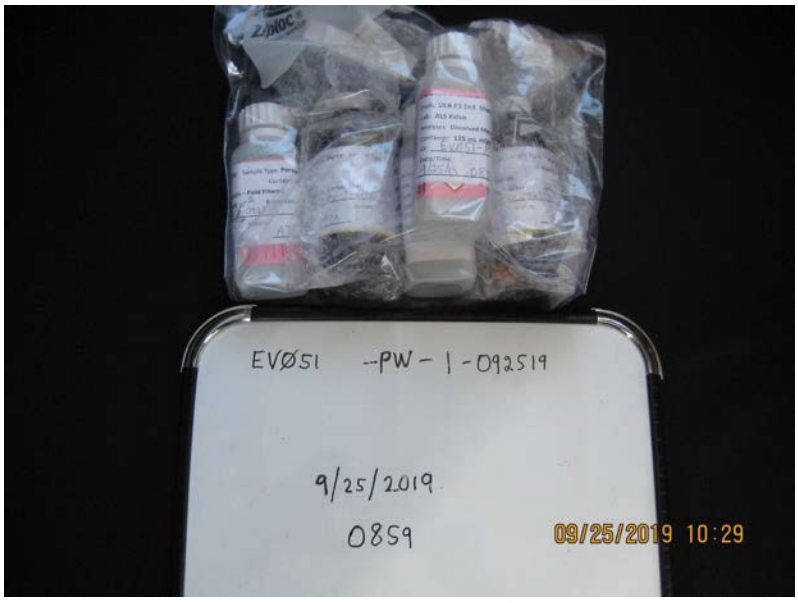
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0475.jpg

Photo No.

EV051.7

Photo Taken: 9/25/2019

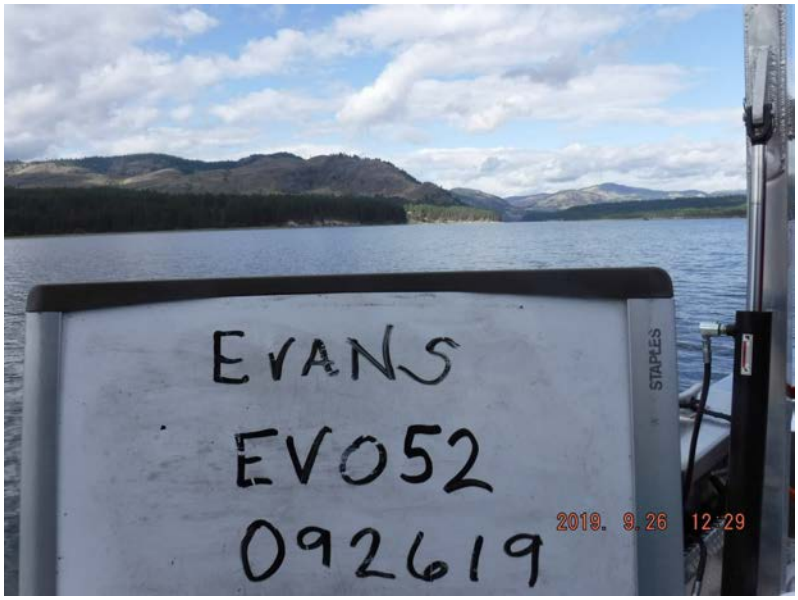
Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF0021.jpg

Photo No.

EV052.1

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0022.jpg

Photo No.

EV052.2

Photo Taken: 9/26/2019

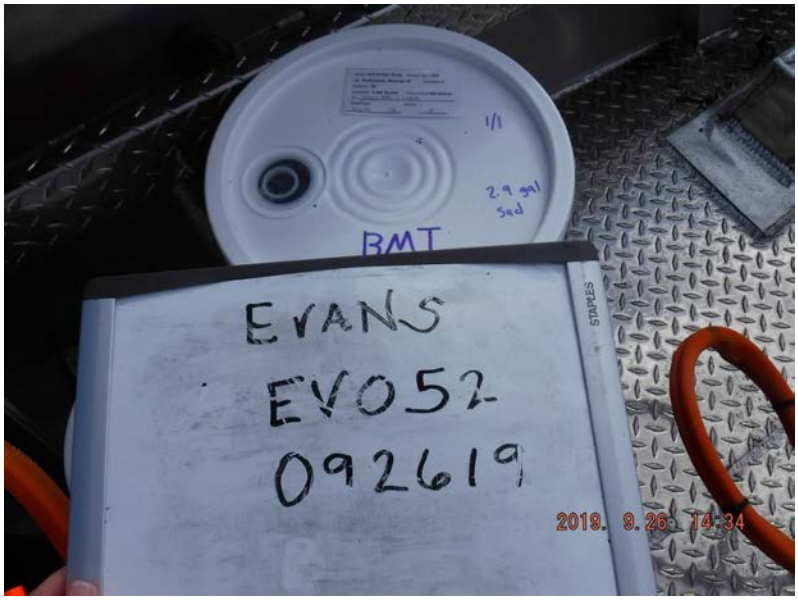
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen



Original Photo Name: DSCF0027.jpg

Photo No.

EV052.3

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0026.jpg

Photo No.

EV052.4

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

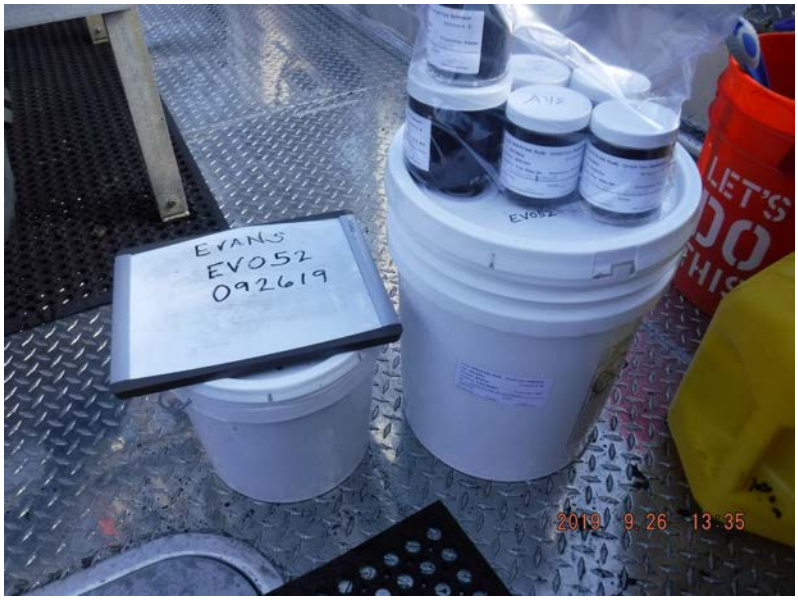


Photo No.

EV052.5

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0025.jpg

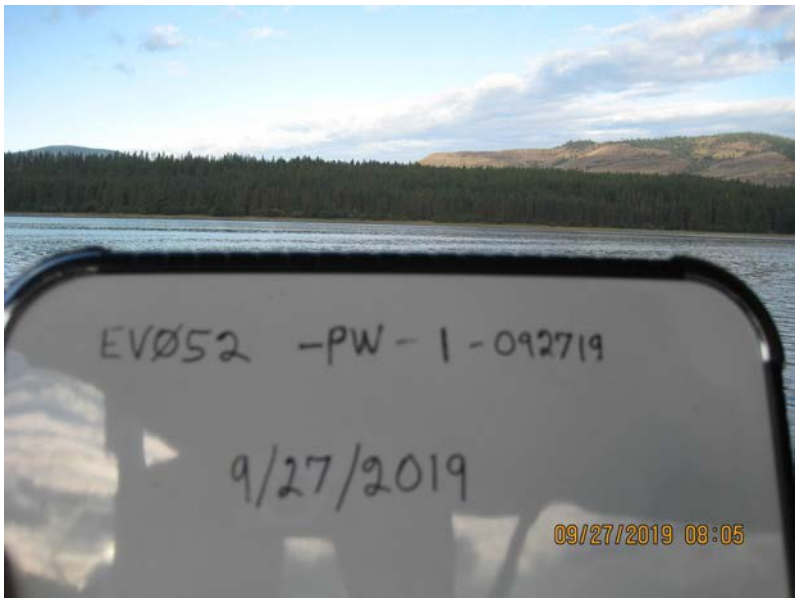


Photo No.

EV052.6

Photo Taken: 9/27/2019

Vessel: Yeti

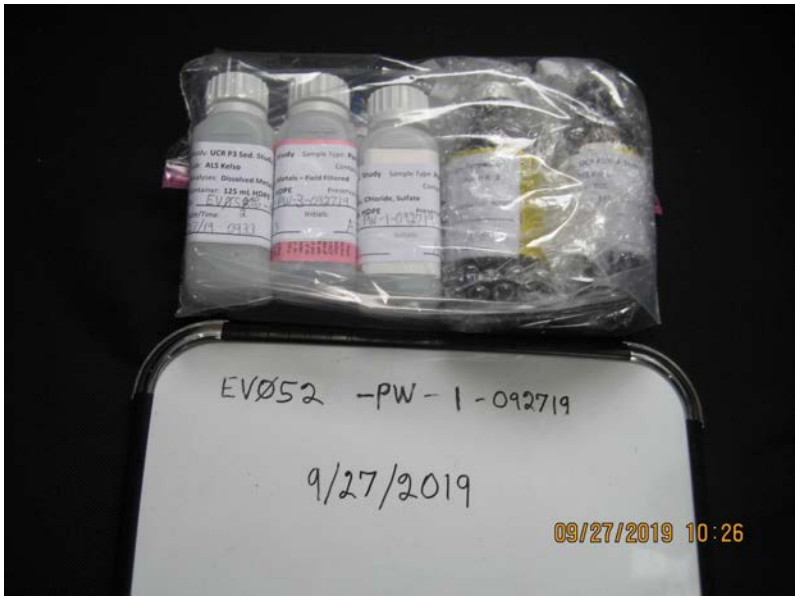
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0493.jpg



Original Photo Name: IMG_0497.jpg

Photo No.

EV052.7

Photo Taken: 9/27/2019

Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF1292.JPG

Photo No.

EV053.1

Photo Taken: 9/12/2019

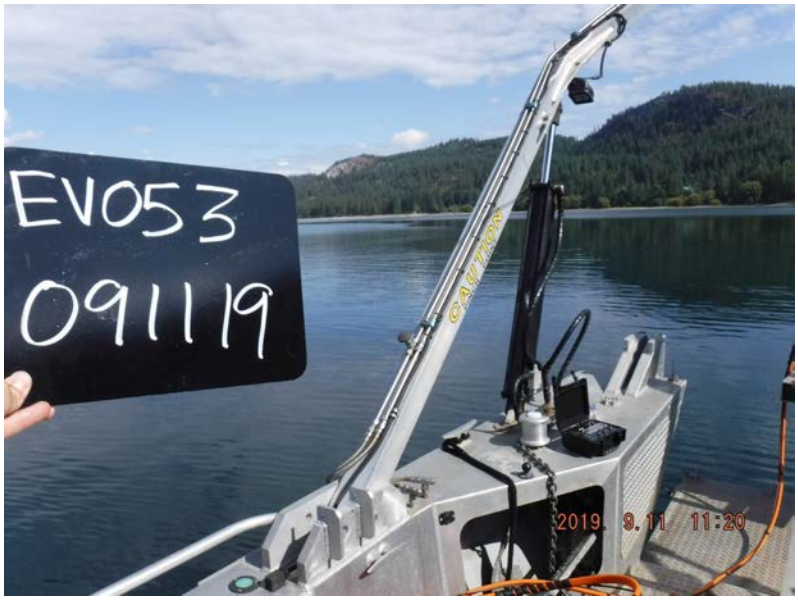
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF1374.JPG

Photo No.

EV053.2

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1375.JPG

Photo No.

EV053.3

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF1293.JPG

Photo No.

EV053.4

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF1294.JPG

Photo No.

EV053.5

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Photo No.

EV053.6

Photo Taken: 10/23/2019

Vessel: Tieton

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV053_20191023_1534_Strata.jpg

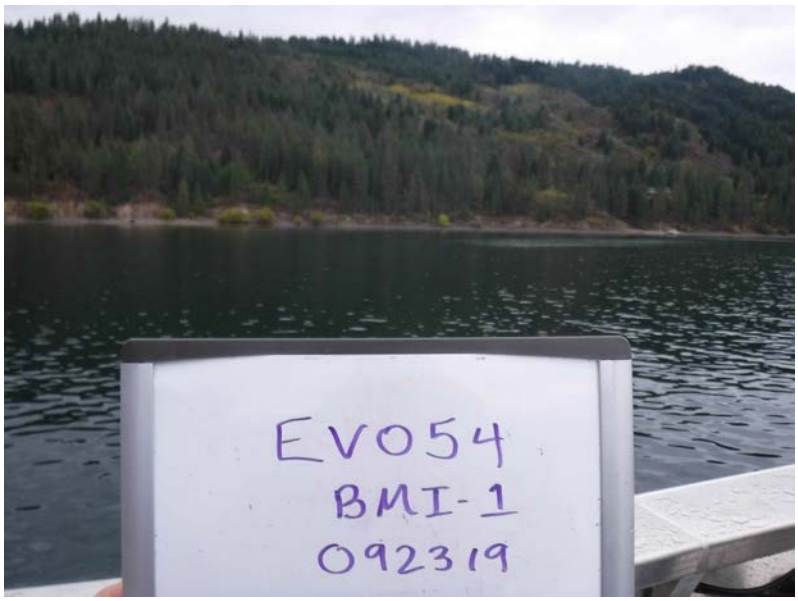


Photo No.

EV054.1

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0026.jpg

Original Photo Name: DSCF1385.JPG

Photo No.

EV054.2

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1386.JPG

Photo No.

EV054.3

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF1388.JPG

Photo No.

EV054.4

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Original Photo Name: DSCF0025.jpg

Photo No.

EV054.5

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV054.6

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF1390.JPG

Photo No.

EV057.1

Photo Taken: 9/11/2019

Vessel: Tieton

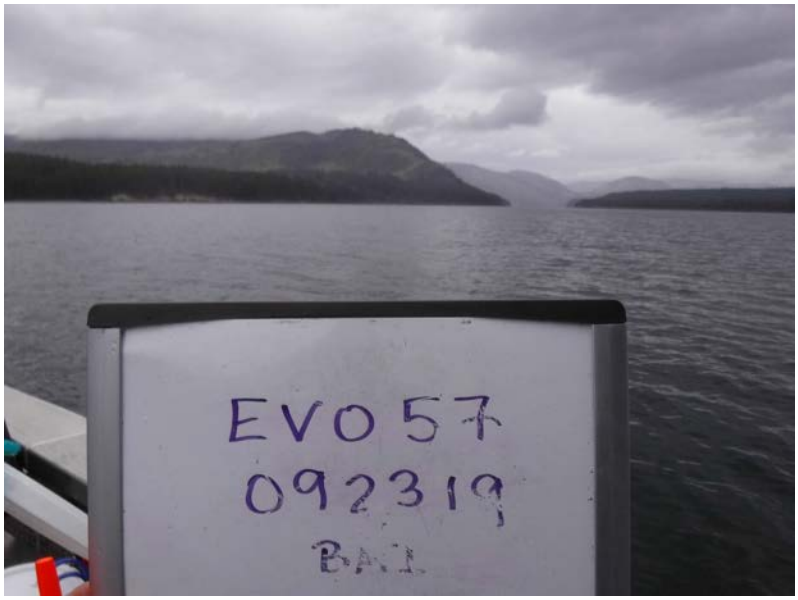
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1376.JPG



Original Photo Name: DSCF0023.jpg

Photo No.

EV057.2

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1379.JPG

Photo No.

EV057.3

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF1381.JPG

Photo No.

EV057.4

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Original Photo Name: DSCF0024.jpg

Photo No.

EV057.5

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0022.jpg

Photo No.

EV057.6

Photo Taken: 9/23/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF1382.JPG

Photo No.

EV057.7

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF1384.JPG

Photo No.

EV057.8

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF1391.JPG

Photo No.

EV058.1

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1392.JPG

Photo No.

EV058.2

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF1393.JPG

Photo No.

EV058.3

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF1394.JPG

Photo No.

EV058.4

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DSCF1296.JPG

Photo No.

EV058.5

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF1297.JPG

Photo No.

EV058.6

Photo Taken: 9/12/2019

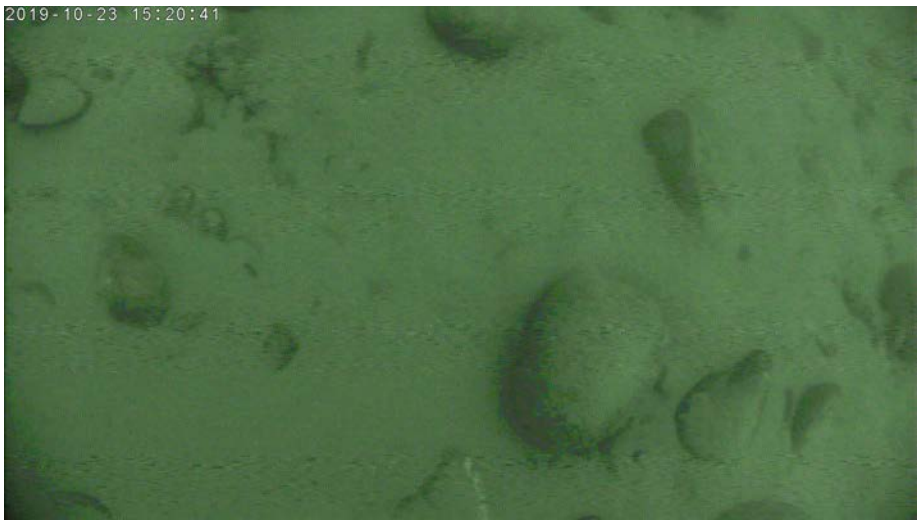
Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Rejected



Original Photo Name: EV058_20191023_1520_Strata.jpg

Photo No.

EV058.7

Photo Taken: 10/23/2019

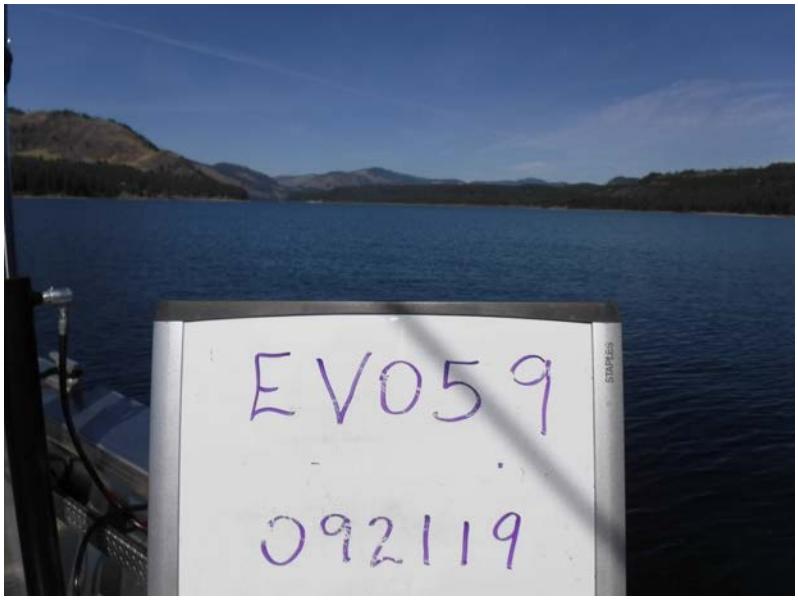
Vessel: Tieton

Media Description:

Strata Photo

Notes:

N/A



Original Photo Name: DSCF0013.jpg

Photo No.

EV059.1

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1373.JPG

Photo No.

EV059.2

Photo Taken: 9/11/2019

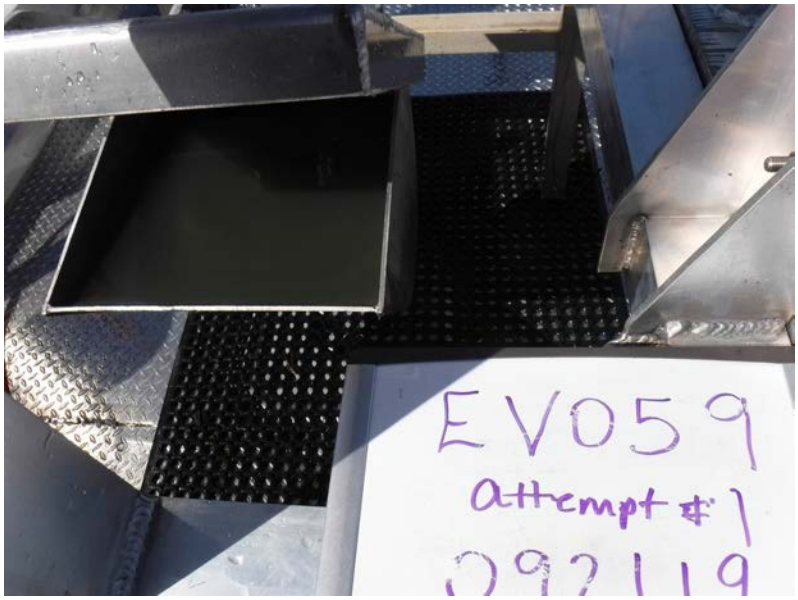
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0014.jpg

Photo No.

EV059.3

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0015.jpg

Photo No.

EV059.4

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: IMG_0476.jpg

Photo No.

EV059.5

Photo Taken: 9/25/2019

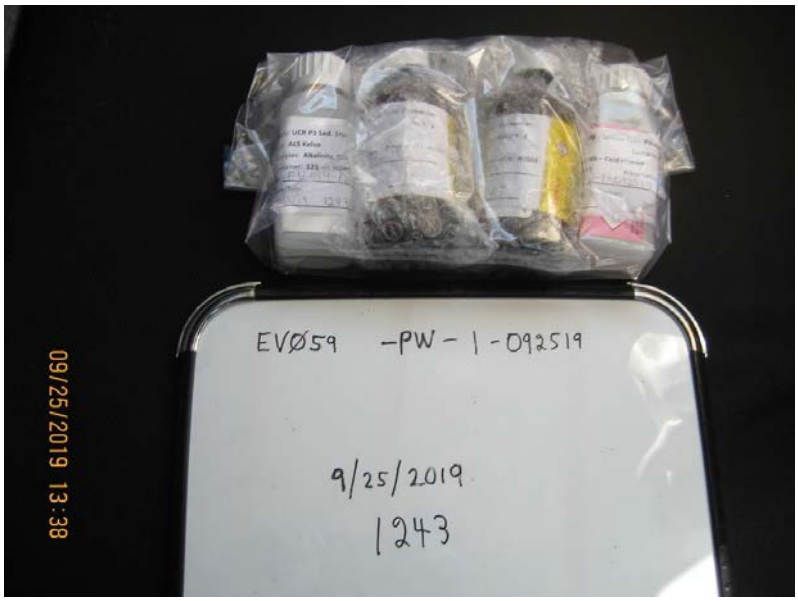
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0477.jpg

Photo No.

EV059.6

Photo Taken: 9/25/2019

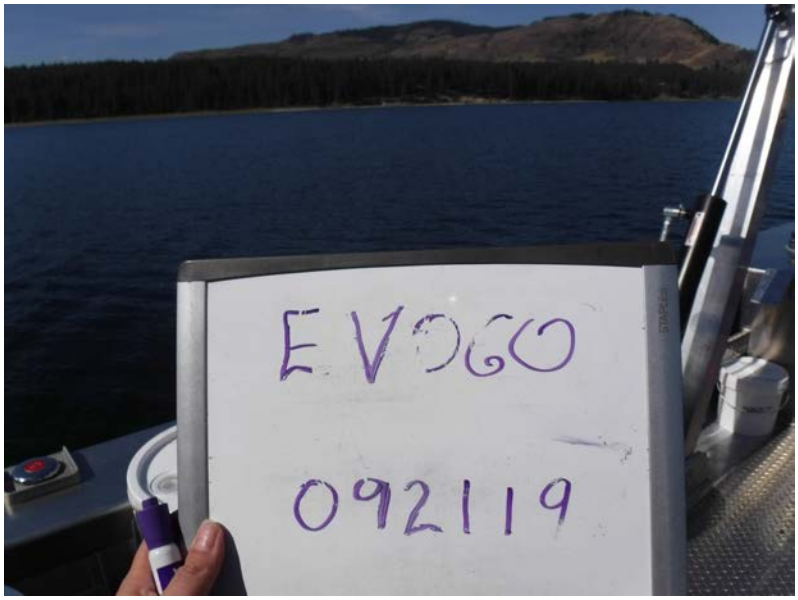
Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF0016.jpg

Photo No.

EV060.1

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0017.jpg

Photo No.

EV060.2

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0018.jpg

Photo No.

EV060.3

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0019.jpg

Photo No.

EV060.4

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Photo No.

EV060.5

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0021.jpg

Photo No.

EV060.6

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0020.jpg

Original Photo Name: DSCF0022.jpg

Photo No.

EV060.7

Photo Taken: 9/21/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0025.jpg

Photo No.

EV060.8

Photo Taken: 9/21/2019

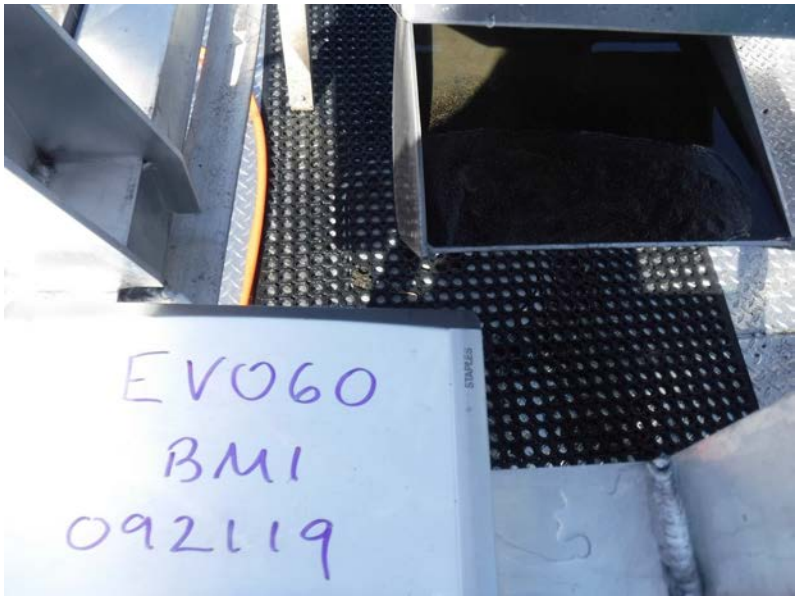
Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket



Original Photo Name: DSCF0024.jpg

Photo No.

EV060.9

Photo Taken: 9/21/2019

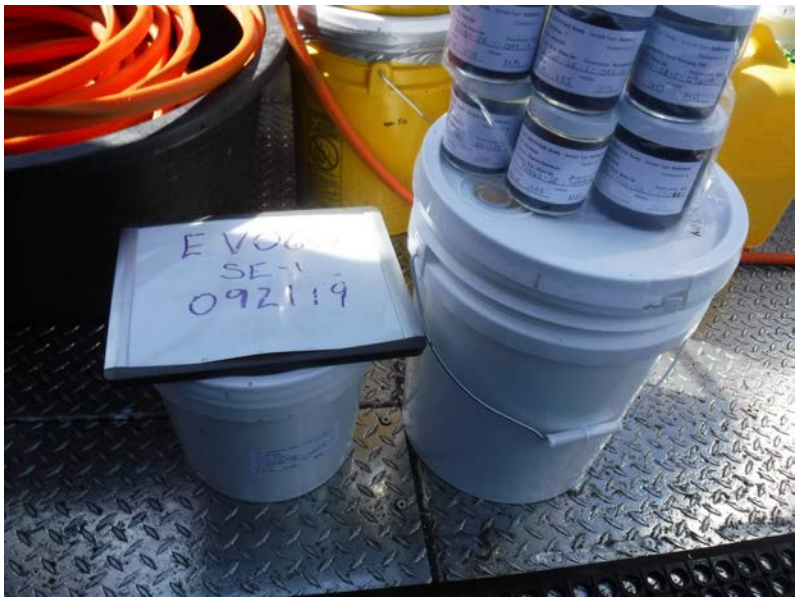
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon



Original Photo Name: DSCF0023.jpg

Photo No.

EV060.10

Photo Taken: 9/21/2019

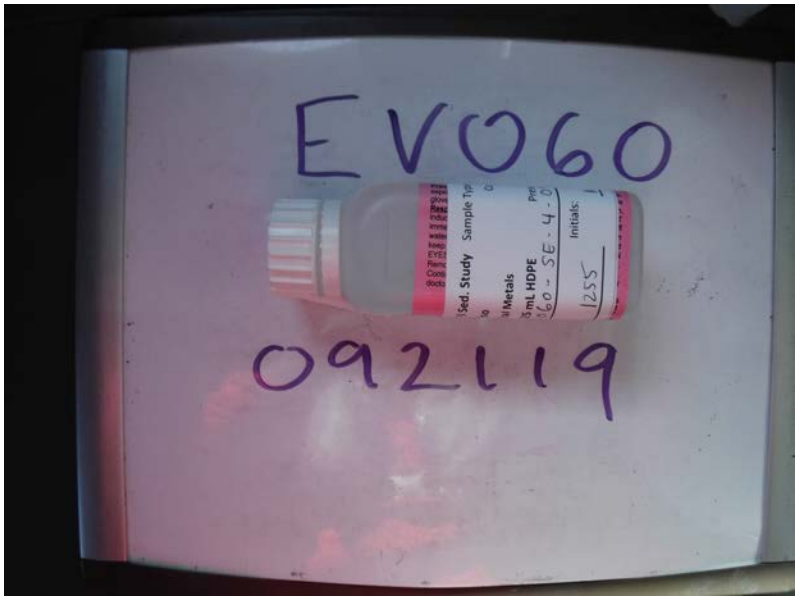
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A



Original Photo Name: DSCF0027.jpg

Photo No.

EV060.11

Photo Taken: 9/21/2019

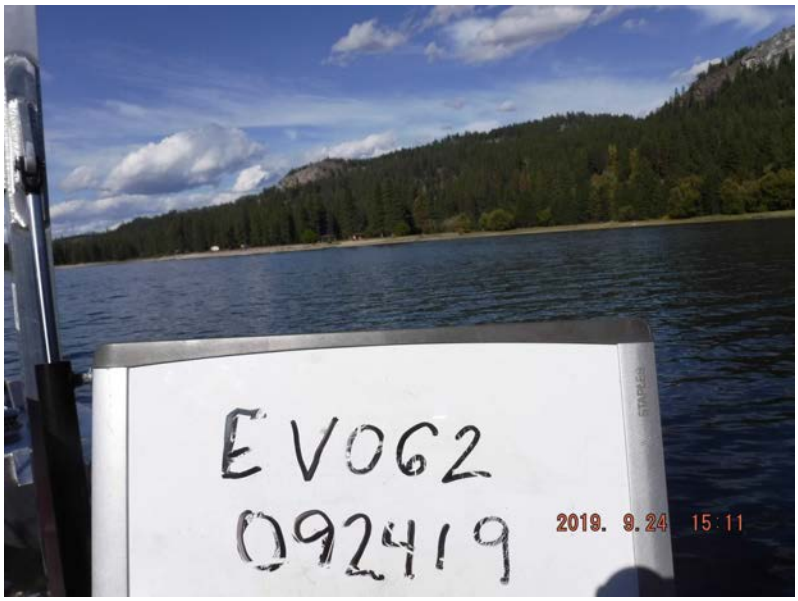
Vessel: Ingalls

Media Description:

Rinseate Blank

Notes:

N/A



Original Photo Name: DSCF3027.jpg

Photo No.

EV062.1

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Photo No.

EV062.2

Photo Taken: 9/24/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF3026.jpg

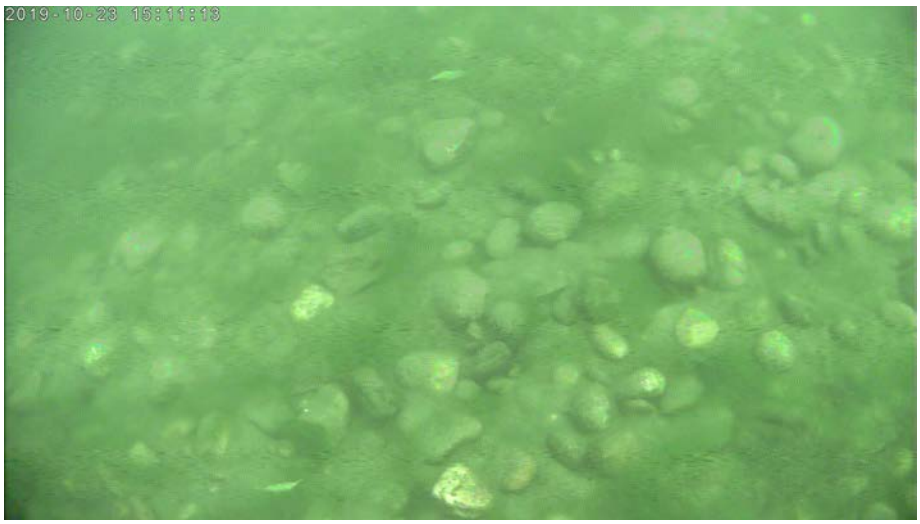


Photo No.

EV062.3

Photo Taken: 10/23/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV062_20191023_1511_Strata.jpg

Original Photo Name: DSCF1351.JPG

Photo No.

EV063.1

Photo Taken: 9/10/2019

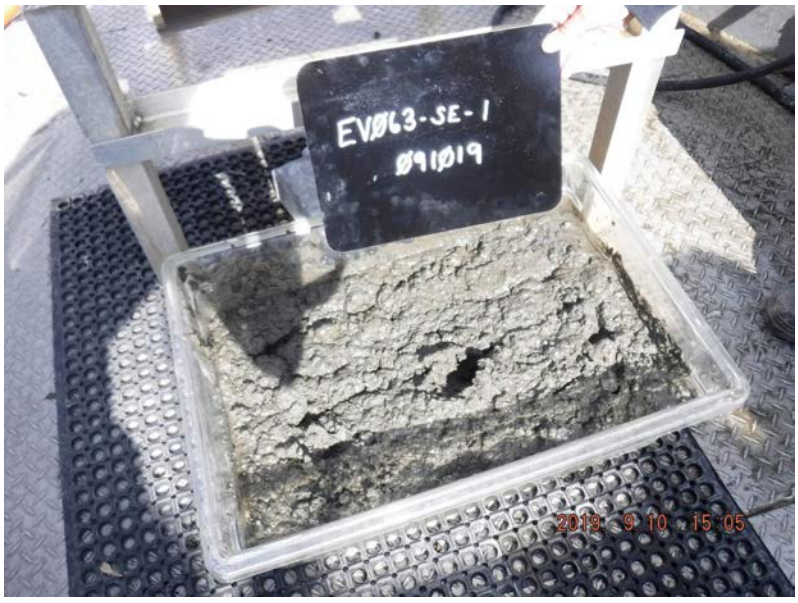
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF1354.JPG

Photo No.

EV063.2

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Original Photo Name: DSCF1352.JPG

Photo No.

EV063.3

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

N/A

Original Photo Name: DSCF1357.JPG

Photo No.

EV063.4

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV063.5

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF1361.JPG

Photo No.

EV063.6

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF1355.JPG

Original Photo Name: DSCF1336.JPG

Photo No.

EV064.1

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1337.JPG

Photo No.

EV064.2

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF1348.JPG

Photo No.

EV064.3

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

BMI Sample

Notes:

Original Photo Name: DSCF1344.JPG

Photo No.

EV064.4

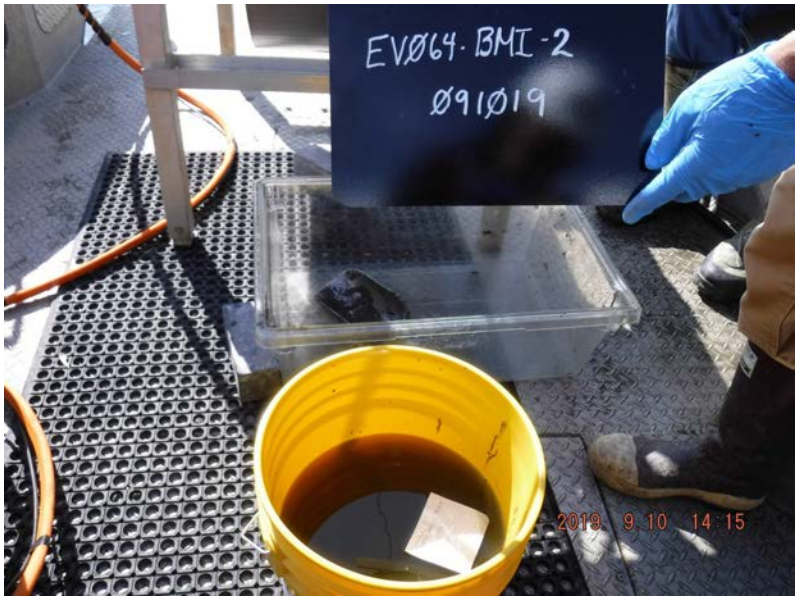
Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

BMI Sample- Grab Attempt #1

Notes:



Original Photo Name: DSCF1350.JPG

Photo No.

EV064.5

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

BMI Sample

Notes:

Original Photo Name: DSCF1346.JPG

Photo No.

EV064.6

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Original Photo Name: DSCF1345.JPG

Photo No.

EV064.7

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Original Photo Name: DSCF1341.JPG

Photo No.

EV064.8

Photo Taken: 9/10/2019

Vessel: Tieton

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Photo No.

EV065.1

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1303.JPG

Photo No.

EV065.2

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1304.JPG

Photo No.

EV065.3

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0003.jpg

Photo No.

EV065.4

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF1308.JPG

Photo No.

EV065.5

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0002.jpg

Photo No.

EV065.6

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV065.7

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0006.jpg

Photo No.

EV065.8

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0005.jpg

Photo No.

EV065.9

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0004.jpg

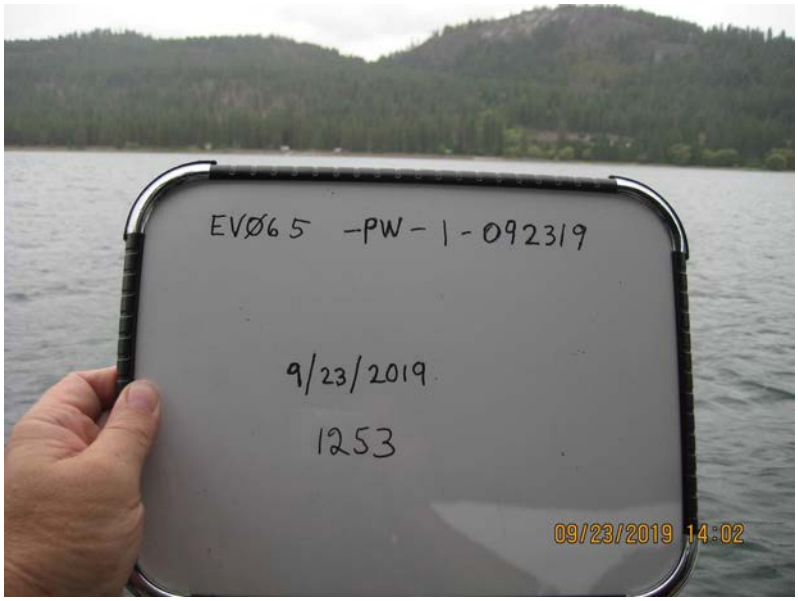


Photo No.

EV065.10

Photo Taken: 9/23/2019

Vessel: Yeti

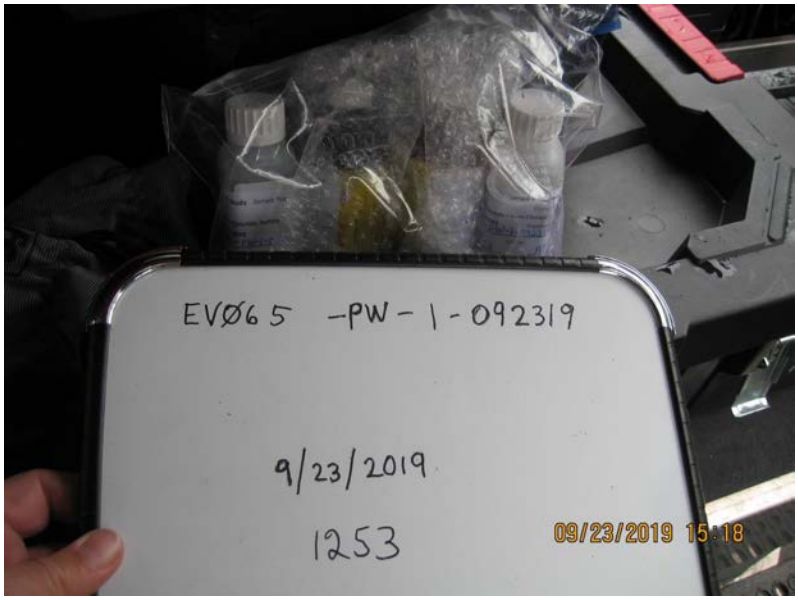
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0460.jpg



Original Photo Name: IMG_0461.jpg

Photo No.

EV065.11

Photo Taken: 9/23/2019

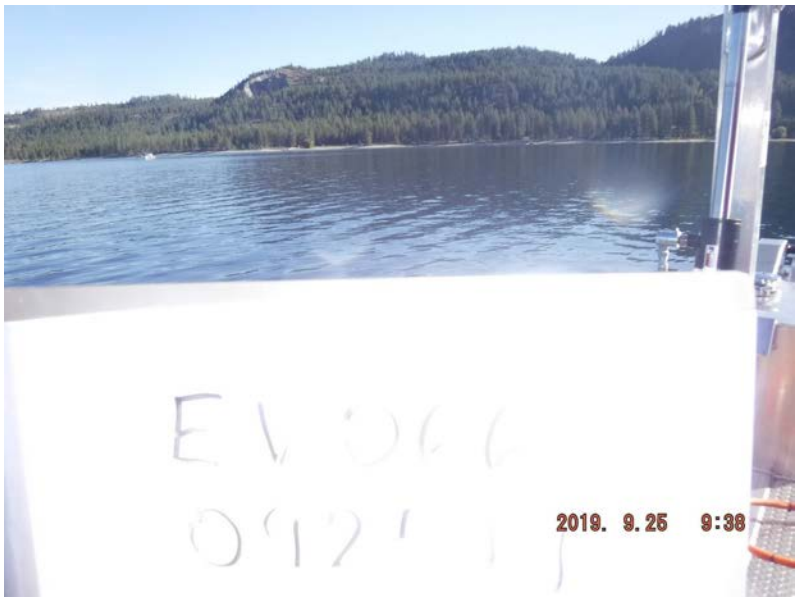
Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF0007.jpg

Photo No.

EV066.1

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0008.jpg

Photo No.

EV066.2

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0009.jpg

Photo No.

EV066.3

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0013.jpg

Photo No.

EV066.4

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0012.jpg

Photo No.

EV066.5

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0011.jpg

Photo No.

EV066.6

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0010.jpg

Photo No.

EV066.7

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF1372.JPG

Photo No.

EV067.1

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1371.JPG

Photo No.

EV067.2

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF1298.JPG

Photo No.

EV067.3

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF1299.JPG

Photo No.

EV067.4

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

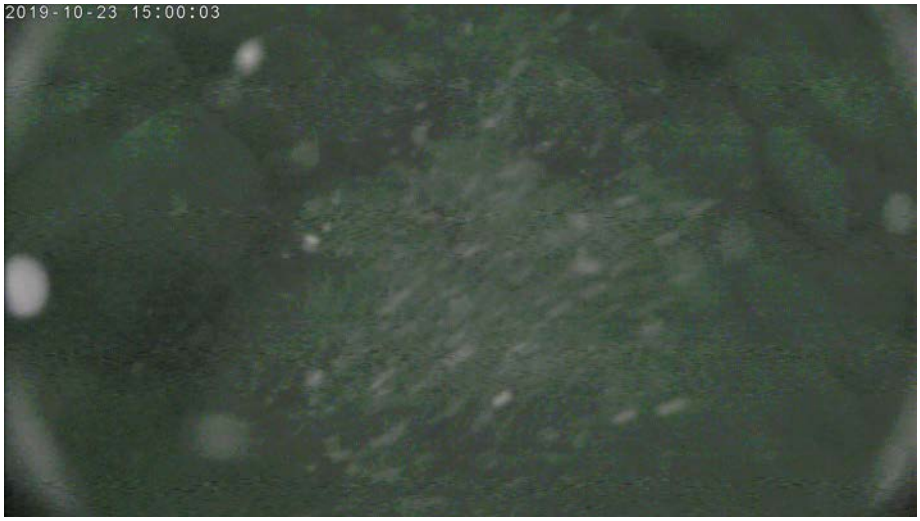


Photo No.

EV067.5

Photo Taken: 10/23/2019

Vessel: Tieton

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV067_20191023_1500_Strata.jpg

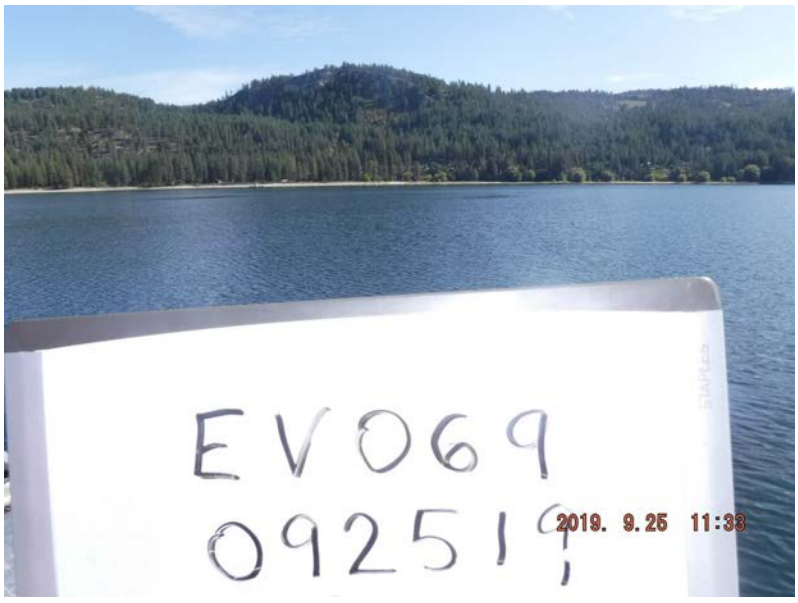


Photo No.

EV069.1

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0017.jpg

Original Photo Name: DSCF0014.jpg

Photo No.

EV069.2

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0015.jpg

Photo No.

EV069.3

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0018.jpg

Photo No.

EV069.4

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0019.jpg

Photo No.

EV069.5

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0020.jpg

Photo No.

EV069.6

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0021.jpg

Photo No.

EV069.7

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Photo No.

EV069.8

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0022.jpg

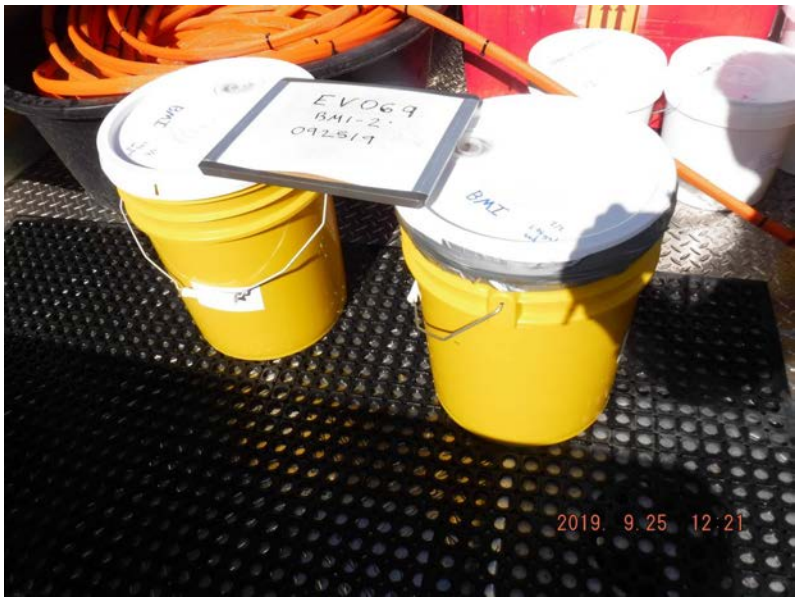


Photo No.

EV069.9

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0023.jpg

Photo No.

EV069.10

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars, EPA Split and Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0016.jpg

Photo No.

EV071.1

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0029.jpg

Original Photo Name: DSCF0028.jpg

Photo No.

EV071.2

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0030.jpg

Photo No.

EV071.3

Photo Taken: 9/25/2019

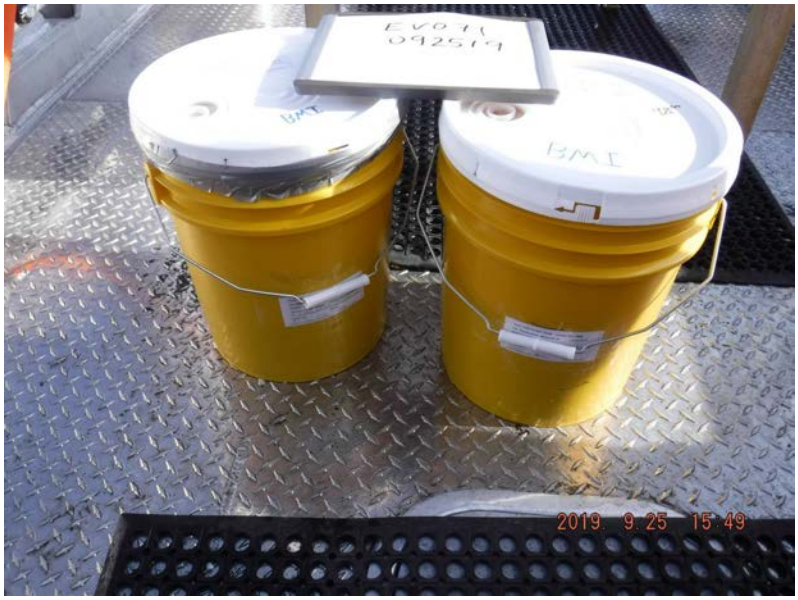
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen



Original Photo Name: DSCF0034.jpg

Photo No.

EV071.4

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0032.jpg

Photo No.

EV071.5

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Photo No.

EV071.6

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0033.jpg

Photo No.

EV071.7

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0031.jpg

Photo No.

EV071.8

Photo Taken: 10/1/2019

Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0004.jpg

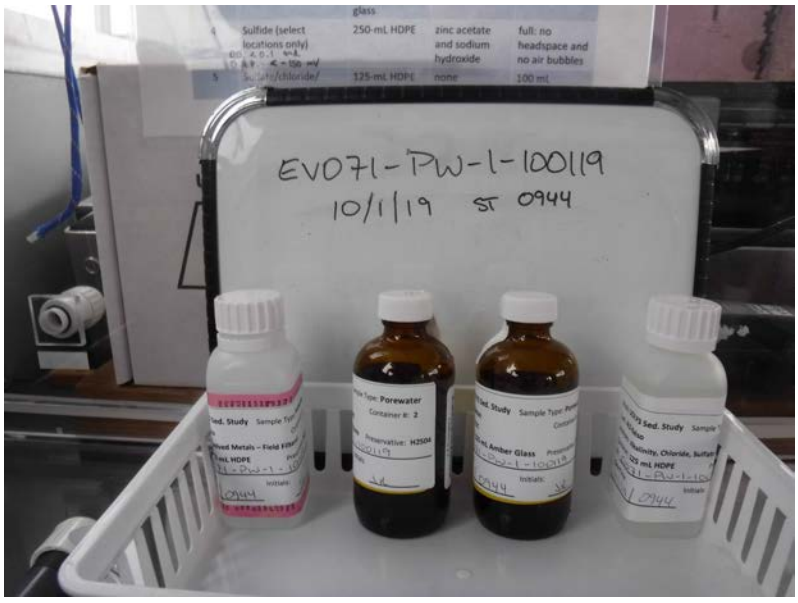


Photo No.

EV071.9

Photo Taken: 10/1/2019

Vessel: Yeti

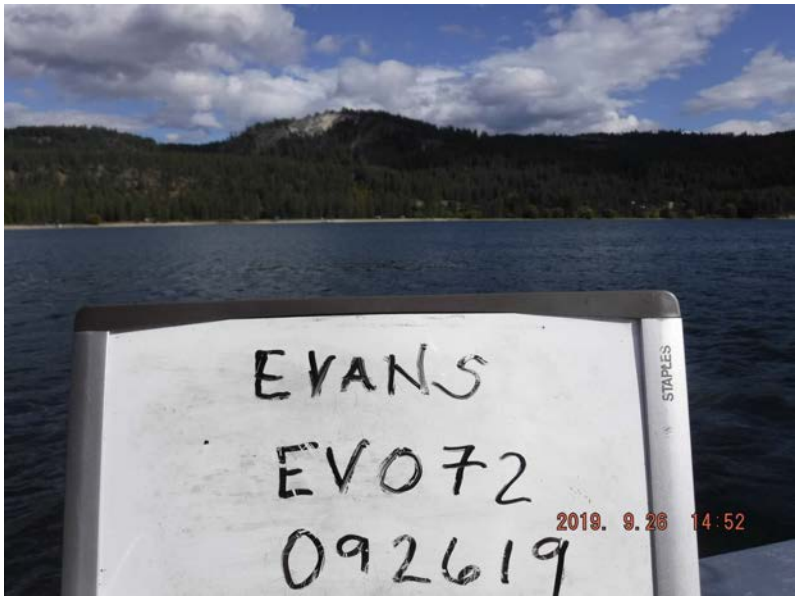
Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0003.jpg



Original Photo Name: DSCF0028.jpg

Photo No.

EV072.1

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0029.jpg

Photo No.

EV072.2

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0031.jpg

Photo No.

EV072.3

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0030.jpg

Photo No.

EV072.4

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0032.jpg

Photo No.

EV072.5

Photo Taken: 9/26/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0033.jpg

Photo No.

EV072.6

Photo Taken: 9/26/2019

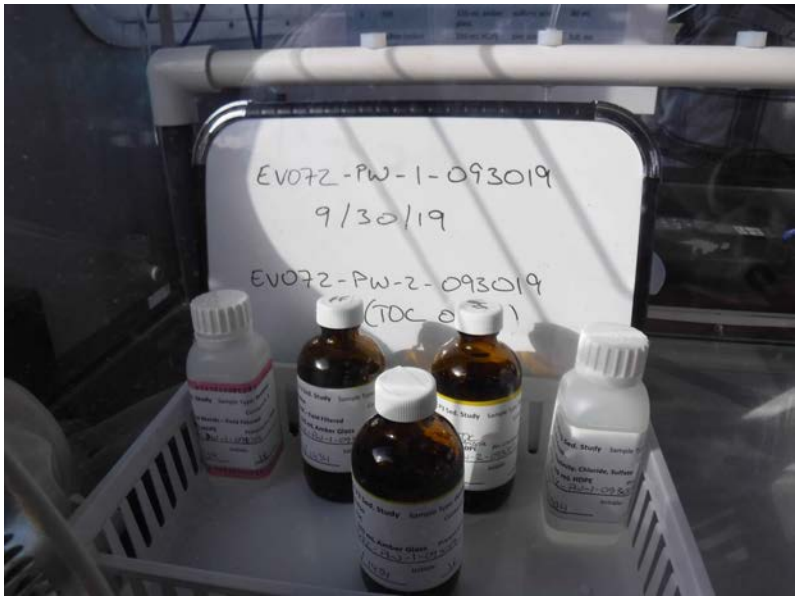
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

EV072-SE-2-092619 Collected



Original Photo Name: DSCF0004.jpg

Photo No.

EV072.7

Photo Taken: 9/30/2019

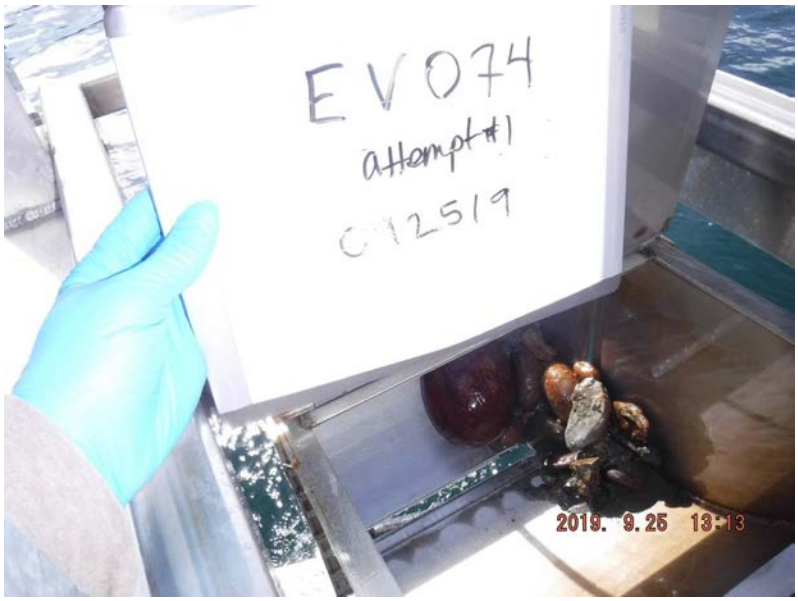
Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF0024.jpg

Photo No.

EV074.1

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

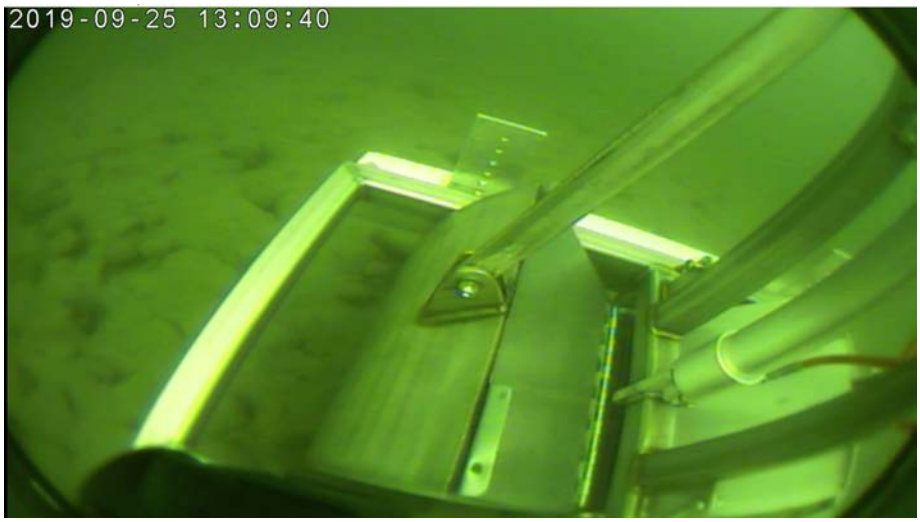


Photo No.

EV074.2

Photo Taken: 9/25/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: EV074_INGALLS_20190925.JPG

Photo No.

EV075.1

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF1362.JPG

Original Photo Name: DSCF1363.JPG

Photo No.

EV075.2

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF1301.JPG

Photo No.

EV075.3

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Photo No.

EV075.4

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF1300.JPG

Photo No.

EV075.5

Photo Taken: 9/11/2019

Vessel: Tieton

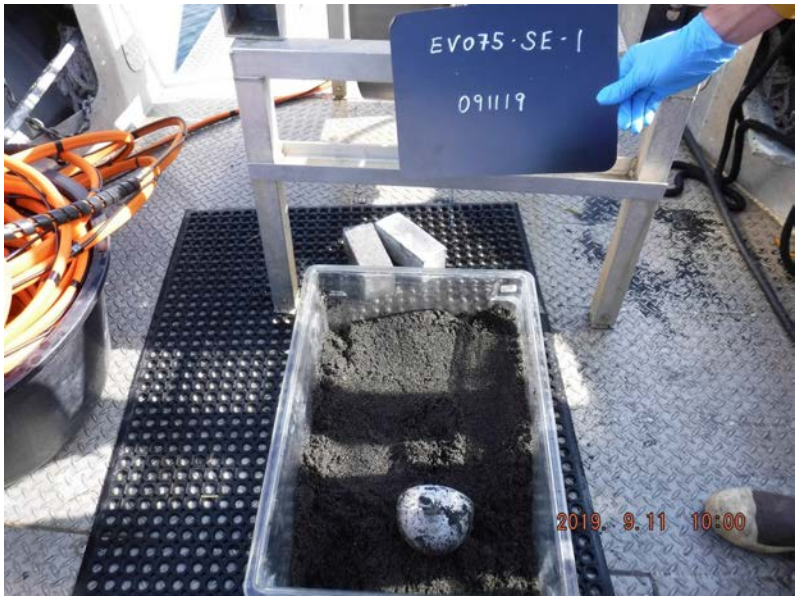
Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF1365.JPG



Original Photo Name: DSCF1367.JPG

Photo No.

EV075.6

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: DSCF1302.JPG

Photo No.

EV075.7

Photo Taken: 9/12/2019

Vessel: Tieton

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF1369.JPG

Photo No.

EV075.8

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Filled Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF1368.JPG

Photo No.

EV075.9

Photo Taken: 9/11/2019

Vessel: Tieton

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF0029.JPG

Photo No.

3-R7-2019.1

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0028.JPG

Photo No.

3-R7-2019.2

Photo Taken: 10/15/2019

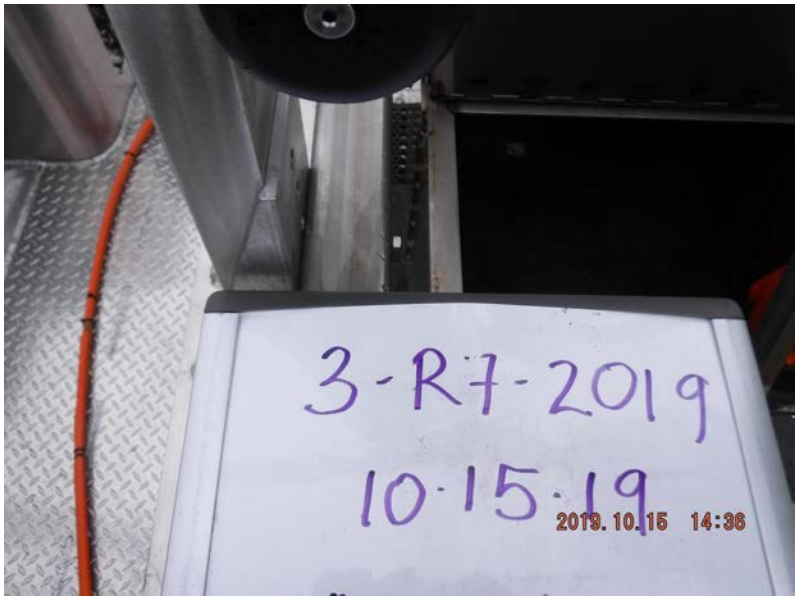
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon



Original Photo Name: DSCF0027.JPG

Photo No.

3-R7-2019.3

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0032.JPG

Photo No.

3-R7-2019.4

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0030.JPG

Photo No.

3-R7-2019.5

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0031.JPG

Photo No.

3-R7-2019.6

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0003.JPG

Photo No.

3-R8-2019.1

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Photo No.

3-R8-2019.2

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0005.JPG

Photo No.

3-R8-2019.3

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Rejected

Original Photo Name: DSCF0004.JPG

Photo No.

3-R8-2019.4

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Rejected

Original Photo Name: DSCF0007.JPG

Photo No.

3-R8-2019.5

Photo Taken: 10/16/2019

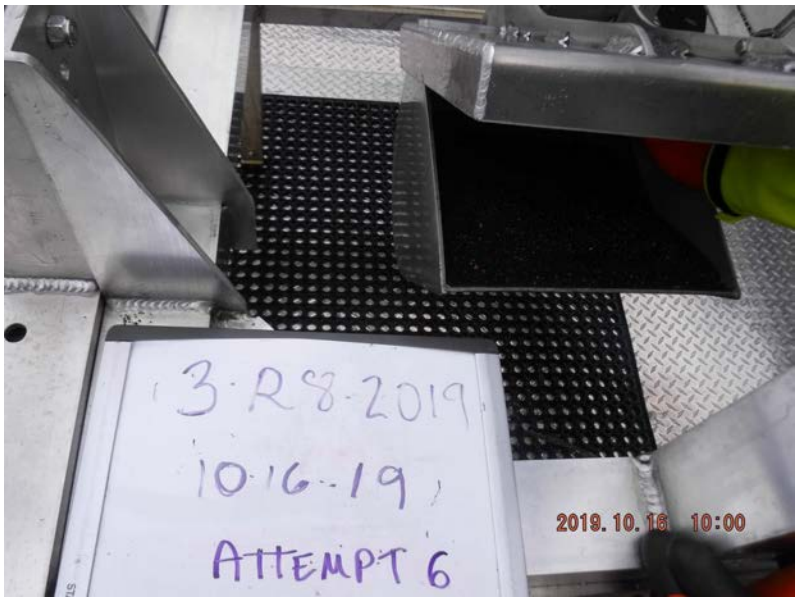
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon



Original Photo Name: DSCF0006.JPG

Photo No.

3-R8-2019.6

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0011.JPG

Photo No.

3-R8-2019.7

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0010.JPG

Photo No.

3-R8-2019.8

Photo Taken: 10/16/2019

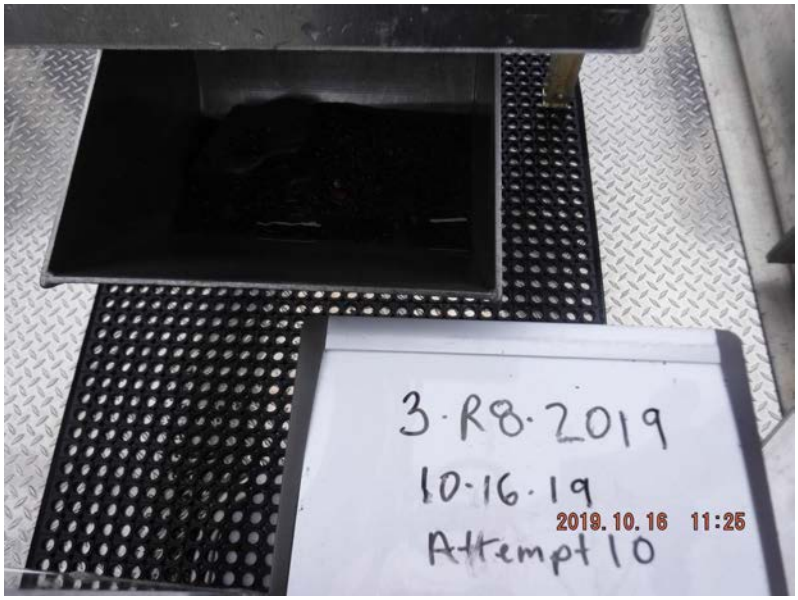
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #10

Notes:

In Hamon



Original Photo Name: DSCF0009.JPG

Photo No.

3-R8-2019.9

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #10

Notes:

In Hamon

Original Photo Name: DSCF0008.JPG

Photo No.

3-R8-2019.10

Photo Taken: 10/16/2019

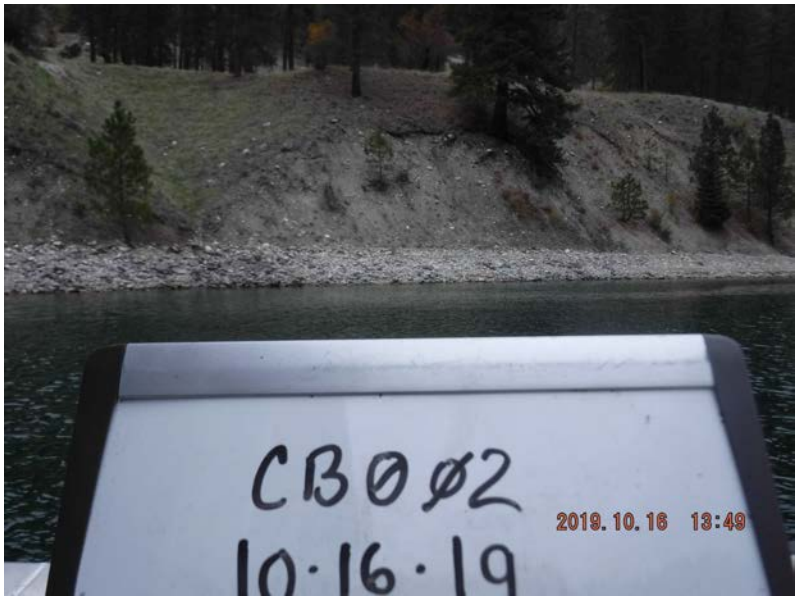
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A



Original Photo Name: DSCF0017.JPG

Photo No.

CB002.1

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0020.JPG

Photo No.

CB002.2

Photo Taken: 10/16/2019

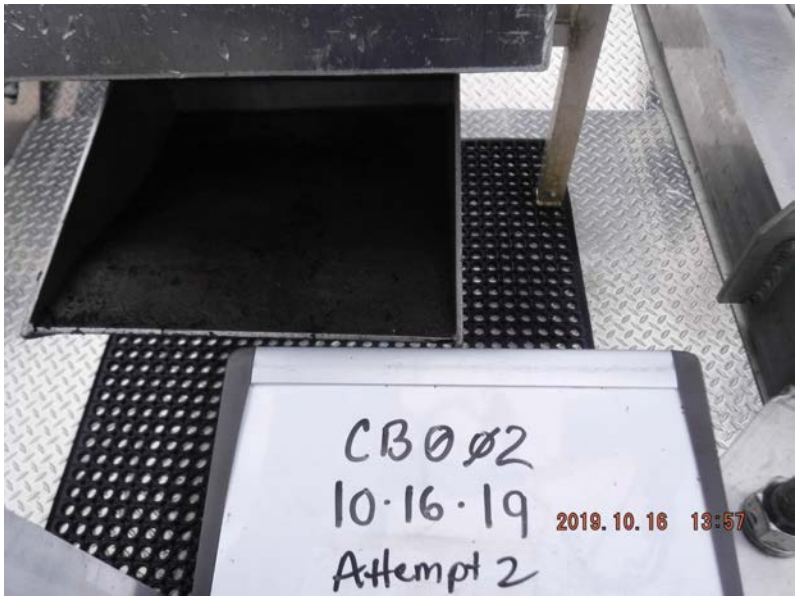
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon



Original Photo Name: DSCF0019.JPG

Photo No.

CB002.3

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0022.JPG

Photo No.

CB002.4

Photo Taken: 10/16/2019

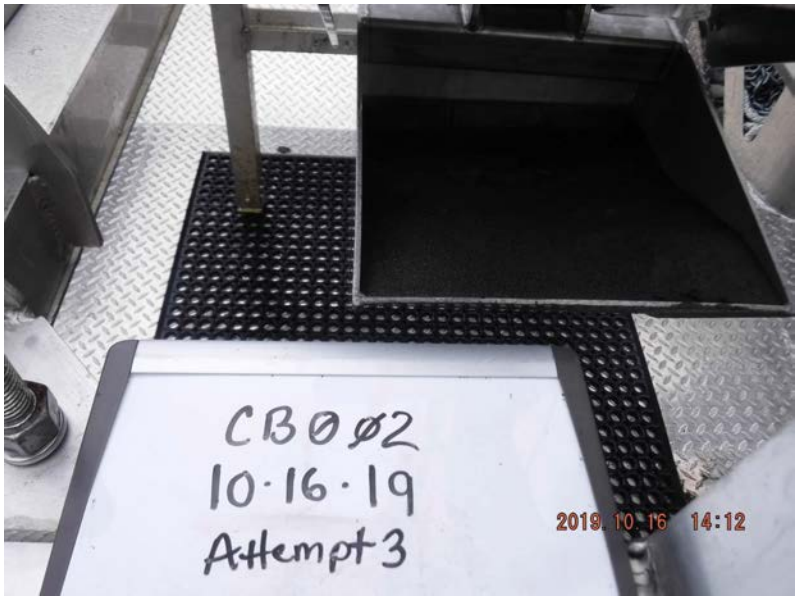
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon



Original Photo Name: DSCF0021.JPG

Photo No.

CB002.6

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0026.JPG

Photo No.

CB002.7

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0025.JPG

Photo No.

CB002.8

Photo Taken: 10/16/2019

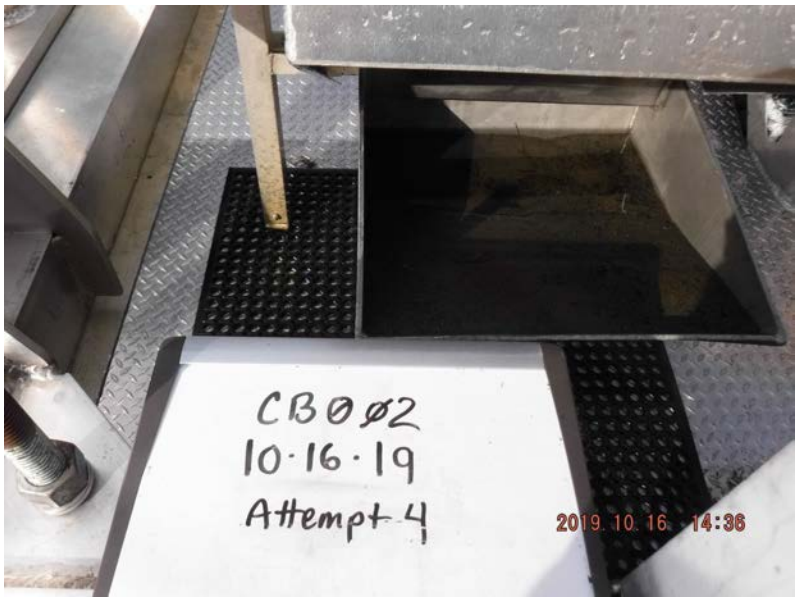
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Hamon



Original Photo Name: DSCF0024.JPG

Photo No.

CB002.9

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Hamon

Photo No.

CB002.10

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0023.JPG

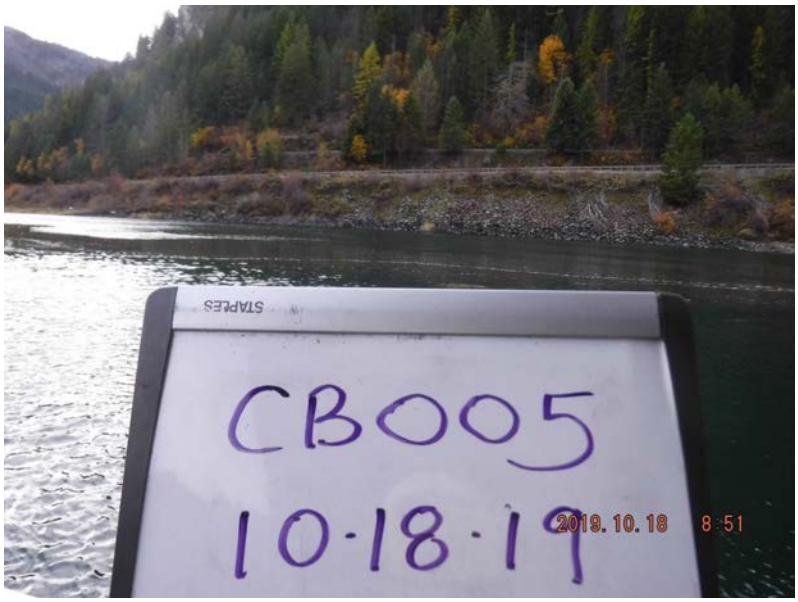


Photo No.

CB005.1

Photo Taken: 10/18/2019

Vessel: Ingalls

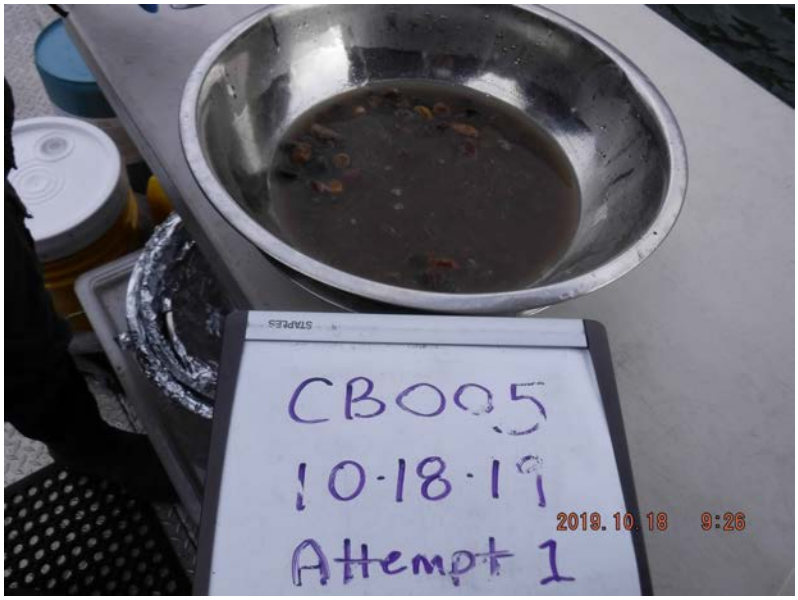
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.JPG



Original Photo Name: DSCF0003.JPG

Photo No.

CB005.2

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0002.JPG

Photo No.

CB005.3

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0004.JPG

Photo No.

CB005.4

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0005.JPG

Photo No.

CB005.5

Photo Taken: 10/18/2019

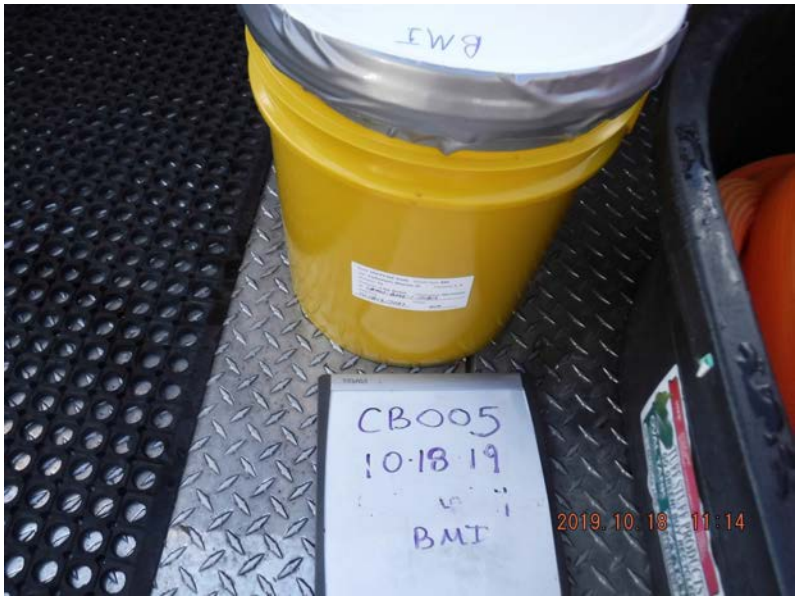
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected



Original Photo Name: DSCF0008.JPG

Photo No.

CB005.6

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0007.JPG

Photo No.

CB005.7

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0006.JPG

Photo No.

CB005.8

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Photo No.

CB006.1

Photo Taken: 10/9/2019

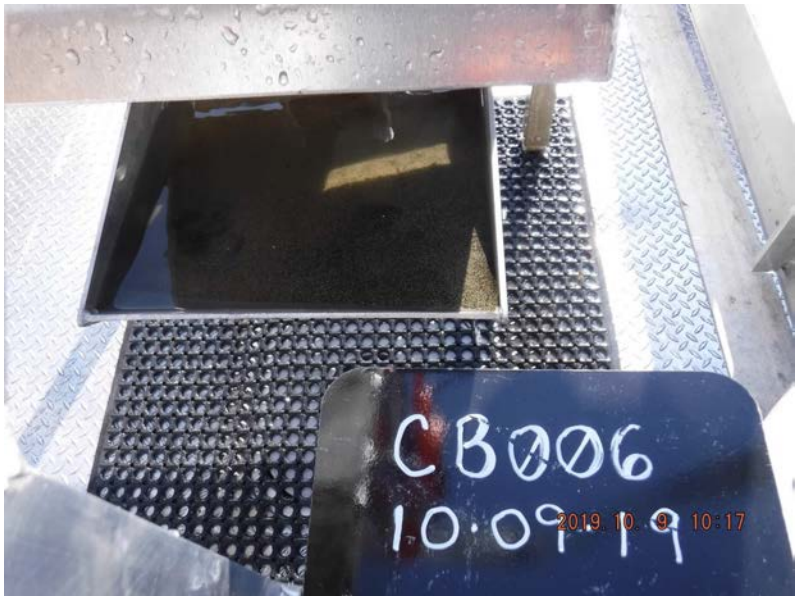
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0002.JPG

Photo No.

CB006.2

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0003.JPG

Photo No.

CB006.3

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0006.JPG

Photo No.

CB006.4

Photo Taken: 10/9/2019

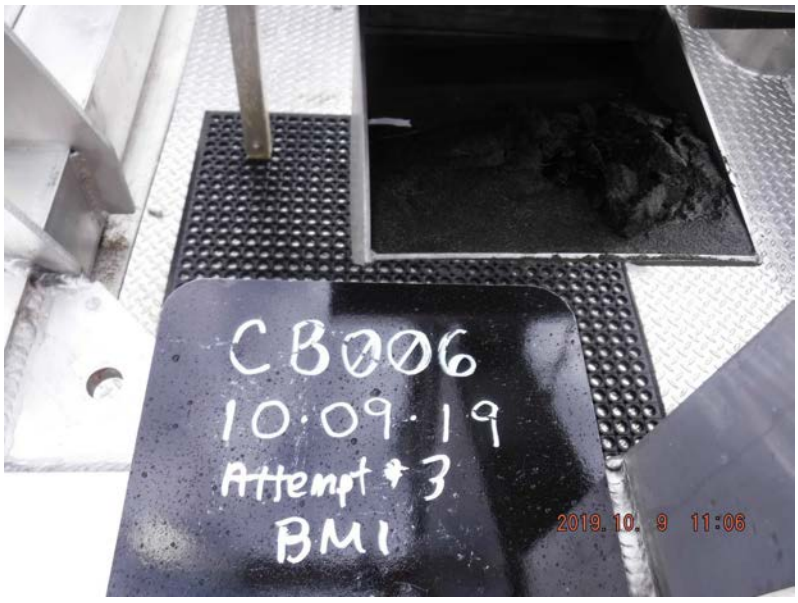
Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket



Original Photo Name: DSCF0005.JPG

Photo No.

CB006.5

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Photo No.

CB006.6

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0004.JPG

Photo No.

CB007.1

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0017.JPG

Original Photo Name: DSCF0020.JPG

Photo No.

CB007.2

Photo Taken: 10/9/2019

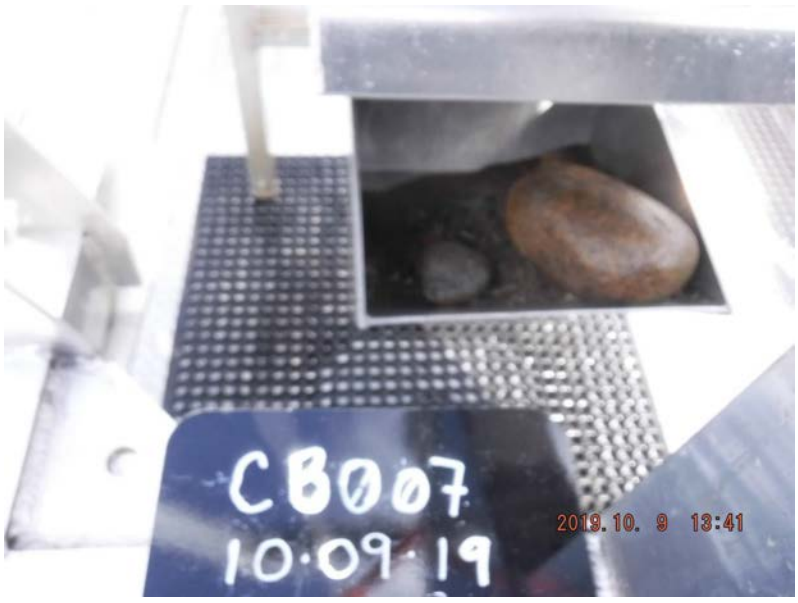
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempts

Notes:

In Stainless Steel Bowls



Original Photo Name: DSCF0018.JPG

Photo No.

CB007.3

Photo Taken: 10/9/2019

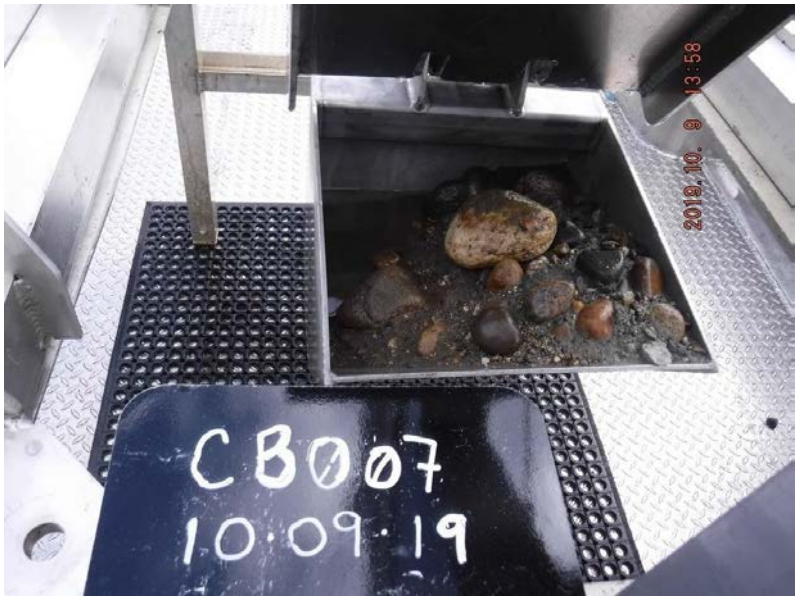
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon



Original Photo Name: DSCF0019.JPG

Photo No.

CB007.4

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0023.JPG

Photo No.

CB007.5

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DSCF0025.JPG

Photo No.

CB007.6

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #7

Notes:

In Hamon

Original Photo Name: DSCF0026.JPG

Photo No.

CB007.7

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Photo No.

CB007.8

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0024.JPG

Photo No.

CB008.1

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0005.JPG

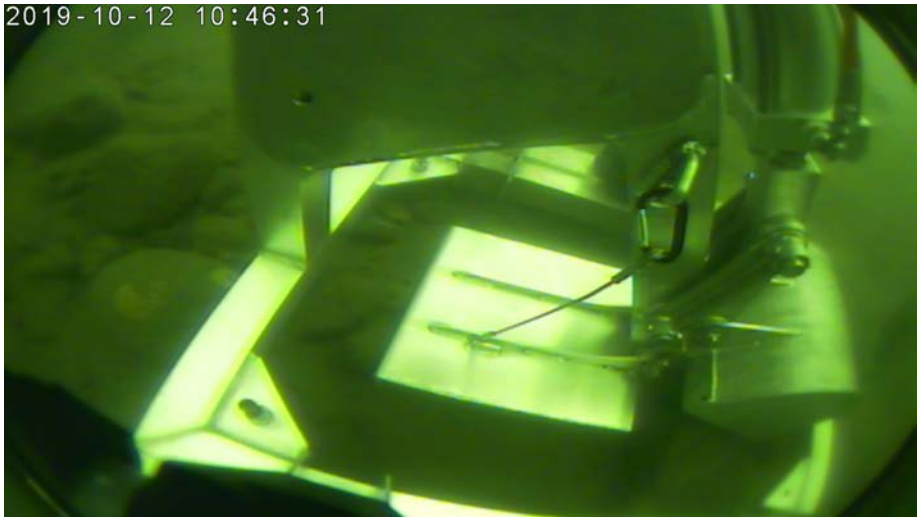


Photo No.

CB008.2

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: CB008_Ingalls_20191012_1046_Strata.jpg

Photo No.

CB009.1

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0007.JPG

Original Photo Name: DSCF0008.JPG

Photo No.

CB009.2

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0009.JPG

Photo No.

CB009.3

Photo Taken: 10/12/2019

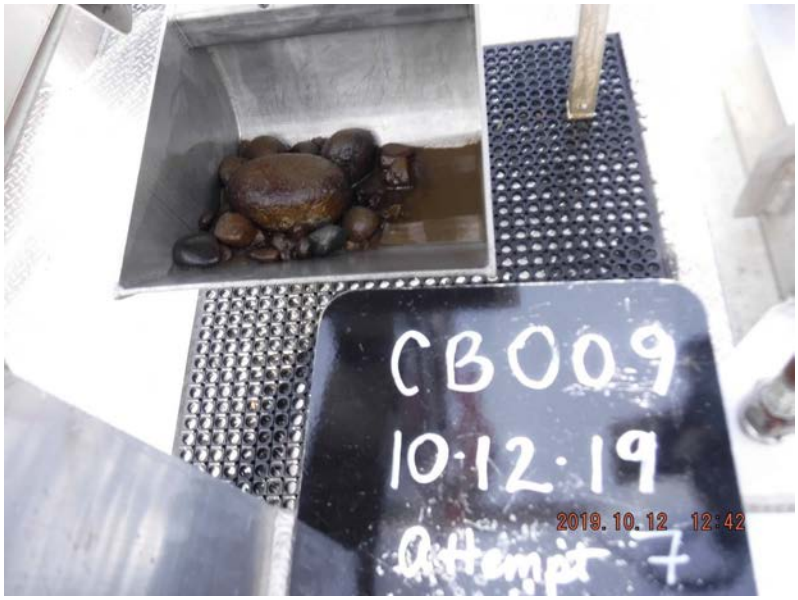
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected



Original Photo Name: DSCF0010.JPG

Photo No.

CB009.4

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Hamon

Original Photo Name: DSCF0013.JPG

Photo No.

CB009.5

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0012.JPG

Photo No.

CB009.6

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #10

Notes:

In Hamon

Original Photo Name: DSCF0011.JPG

Photo No.

CB009.7

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0014.JPG

Photo No.

CB010.1

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0015.JPG

Photo No.

CB010.2

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0016.JPG

Photo No.

CB010.3

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0018.JPG

Photo No.

CB010.4

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon

Photo No.

CB010.5

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0017.JPG

Photo No.

CB012.1

Photo Taken: 10/9/2019

Vessel: Ingalls

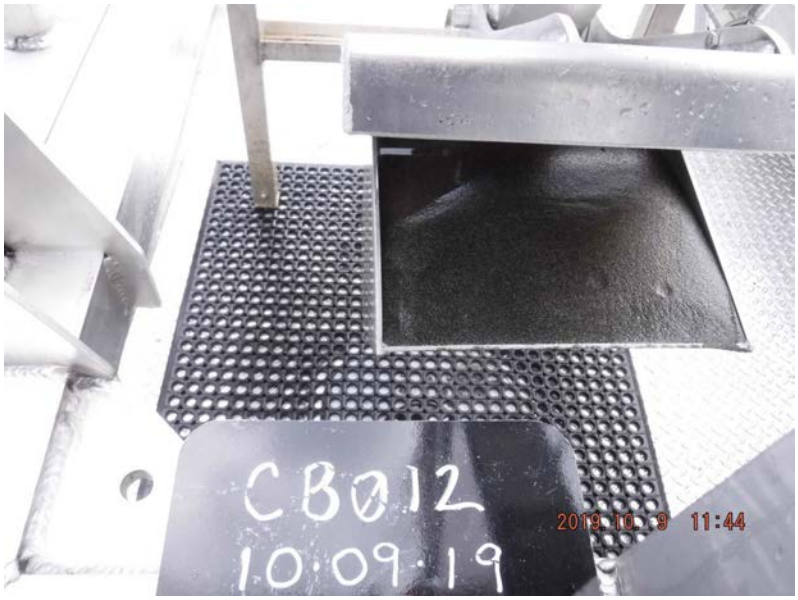
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0007.JPG



Original Photo Name: DSCF0008.JPG

Photo No.

CB012.2

Photo Taken: 10/9/2019

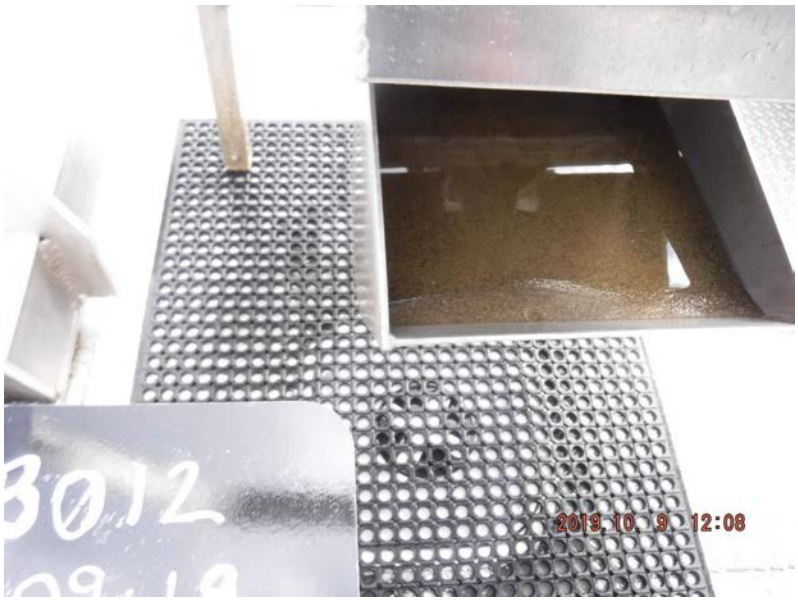
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon



Original Photo Name: DSCF0009.JPG

Photo No.

CB012.3

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0014.JPG

Photo No.

CB012.4

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0012.JPG

Photo No.

CB012.5

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Photo No.

CB012.6

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0011.JPG

Photo No.

CB014.1

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0016.JPG

Original Photo Name: DSCF0015.JPG

Photo No.

CB014.2

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0020.JPG

Photo No.

CB014.3

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0022.JPG

Photo No.

CB014.4

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0021.JPG

Photo No.

CB014.5

Photo Taken: 10/15/2019

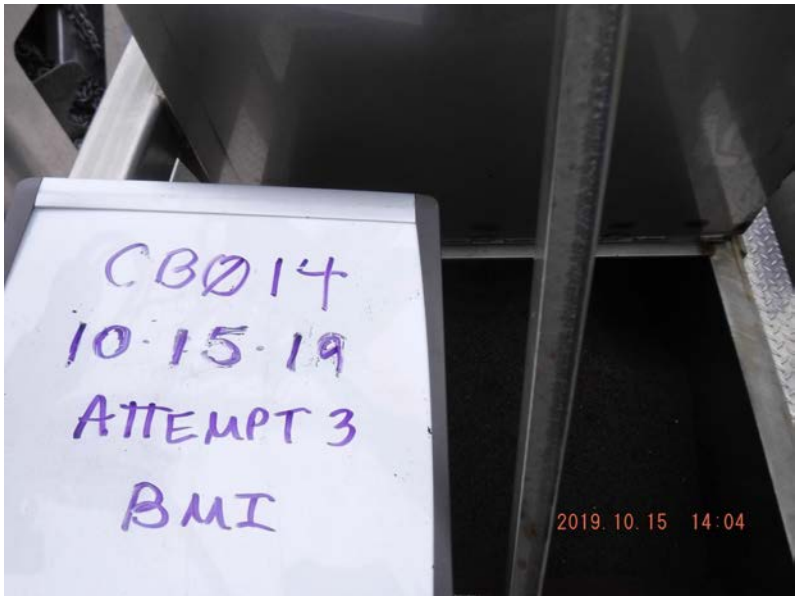
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon



Original Photo Name: DSCF0024.JPG

Photo No.

CB014.6

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0025.JPG

Photo No.

CB014.7

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0026.JPG

Photo No.

CB014.8

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0023.JPG

Photo No.

CB014.9

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0012.JPG

Photo No.

CB015.1

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0012.JPG

Photo No.

CB016.1

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0013.JPG

Photo No.

CB016.2

Photo Taken: 10/11/2019

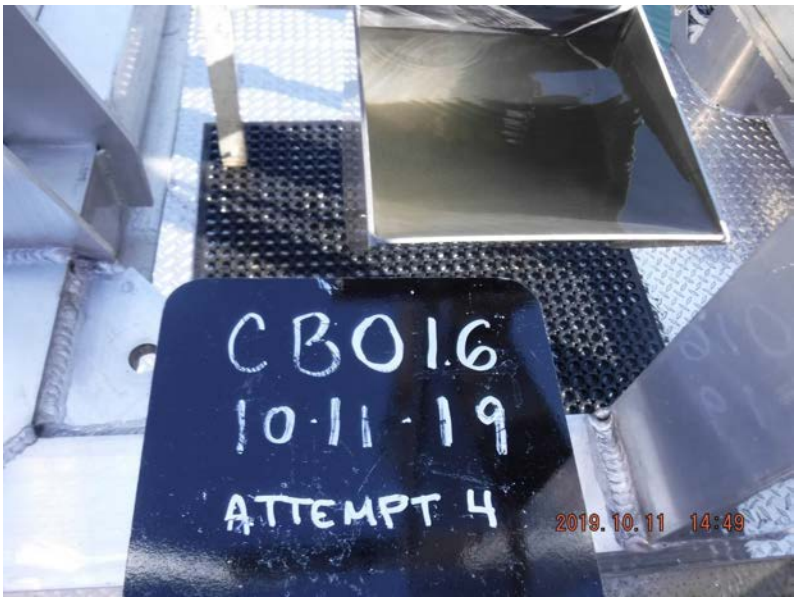
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon



Original Photo Name: DSCF0014.JPG

Photo No.

CB016.3

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0016.JPG

Photo No.

CB016.4

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0015.JPG

Photo No.

CB016.5

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0028.JPG

Photo No.

CB018.1

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0027.JPG

Photo No.

CB018.2

Photo Taken: 10/9/2019

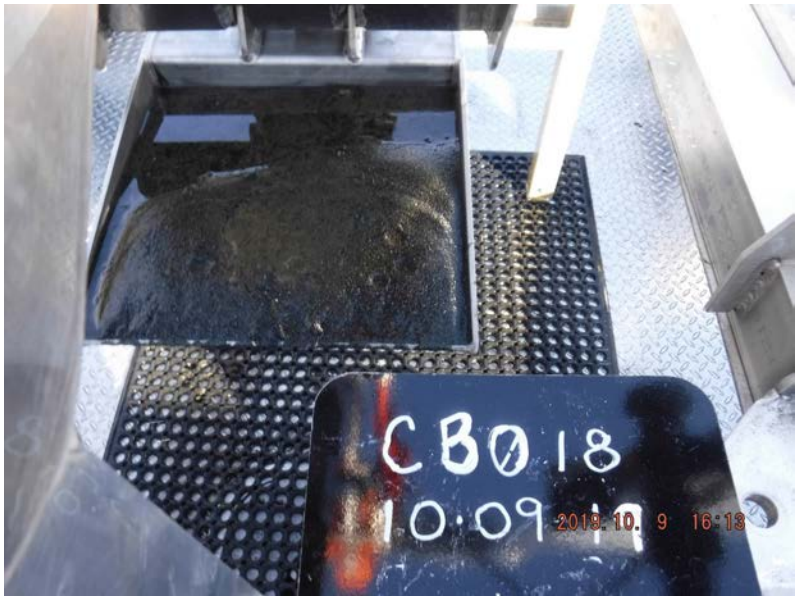
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon



Original Photo Name: DSCF0029.JPG

Photo No.

CB018.3

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0019.JPG

Photo No.

CB018.4

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0018.JPG

Photo No.

CB018.5

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0030.JPG

Photo No.

CB018.6

Photo Taken: 10/9/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0008.JPG

Photo No.

CB020.1

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0010.JPG

Photo No.

CB020.2

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0009.JPG

Photo No.

CB020.3

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0014.JPG

Photo No.

CB020.4

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0012.JPG

Photo No.

CB020.5

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0017.JPG

Photo No.

CB020.6

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0015.JPG

Photo No.

CB020.7

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0016.JPG

Photo No.

CB020.8

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Photo No.

CB020.9

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0011.JPG

Photo No.

CB021.1

Photo Taken: 10/14/2019

Vessel: Ingalls

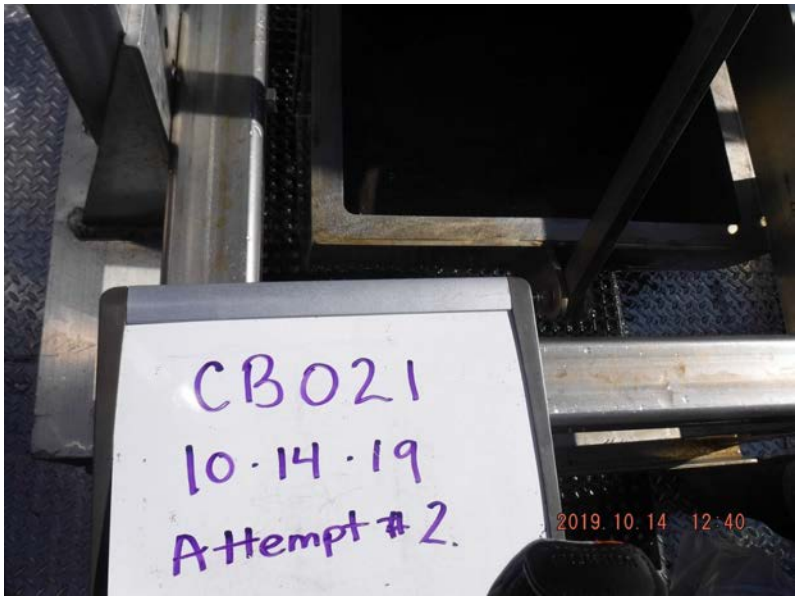
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0018.JPG



Original Photo Name: DSCF0019.JPG

Photo No.

CB021.2

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0020.JPG

Photo No.

CB021.3

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0024.JPG

Photo No.

CB021.4

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0022.JPG

Photo No.

CB021.5

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Photo No.

CB021.6

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0021.JPG

Photo No.

CB022.1

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Original Photo Name: DSCF0002.JPG

Photo No.

CB022.2

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0005.JPG

Photo No.

CB022.3

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0007.JPG

Photo No.

CB022.4

Photo Taken: 10/14/2019

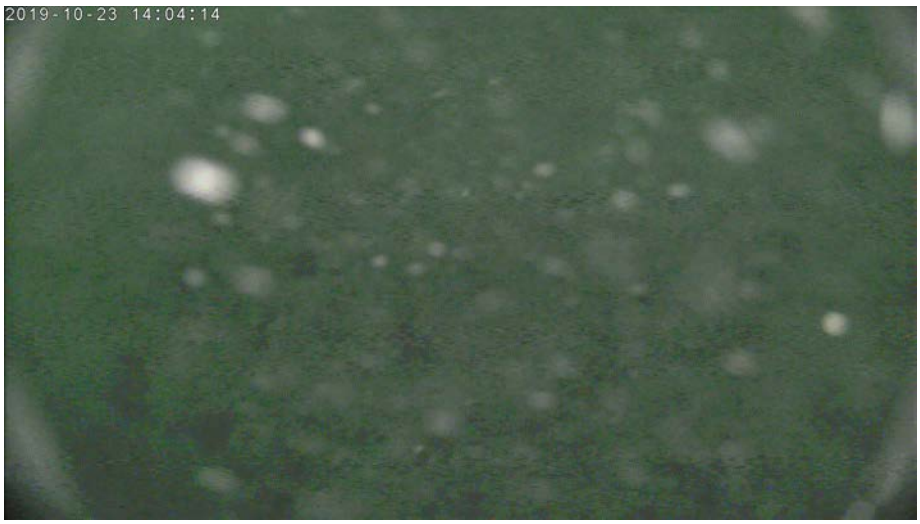
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected



Original Photo Name: CB022_20191023_1404-2_Strata.jpg

Photo No.

CB022.5

Photo Taken: 10/23/2019

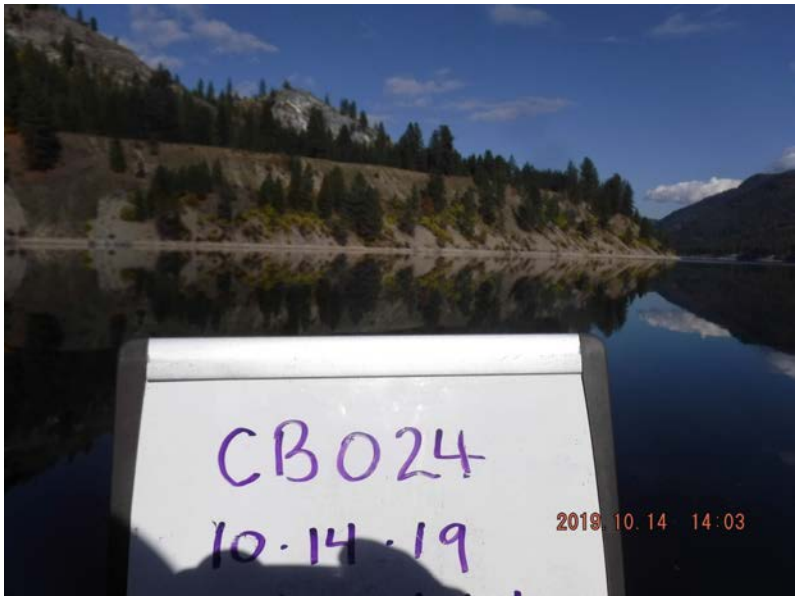
Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A



Original Photo Name: DSCF0025.JPG

Photo No.

CB024.1

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0027.JPG

Photo No.

CB024.2

Photo Taken: 10/14/2019

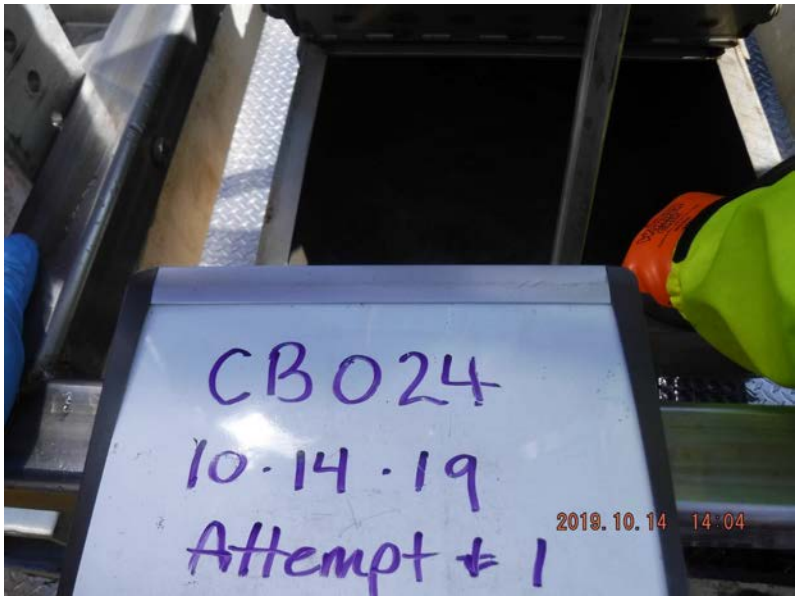
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon



Original Photo Name: DSCF0026.JPG

Photo No.

CB024.3

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0030.JPG

Photo No.

CB024.4

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0029.JPG

Photo No.

CB024.5

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0028.JPG

Photo No.

CB024.6

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

In Hamon

Original Photo Name: DSCF0032.JPG

Photo No.

CB027.1

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0034.JPG

Photo No.

CB027.2

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0033.JPG

Photo No.

CB027.3

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0003.JPG

Photo No.

CB027.4

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0001.JPG

Photo No.

CB027.5

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0002.JPG

Photo No.

CB027.6

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0035.JPG

Photo No.

CB027.7

Photo Taken: 10/14/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0004.JPG

Photo No.

CB029.1

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0005.JPG

Photo No.

CB029.2

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0006.JPG

Photo No.

CB029.3

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0012.JPG

Photo No.

CB029.4

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0008.JPG

Photo No.

CB029.5

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0009.JPG

Photo No.

CB029.6

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0011.JPG

Photo No.

CB029.7

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0010.JPG

Photo No.

CB029.8

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0007.JPG

Photo No.

CB029.9

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0018.JPG

Photo No.

CB031.1

Photo Taken: 10/10/2019

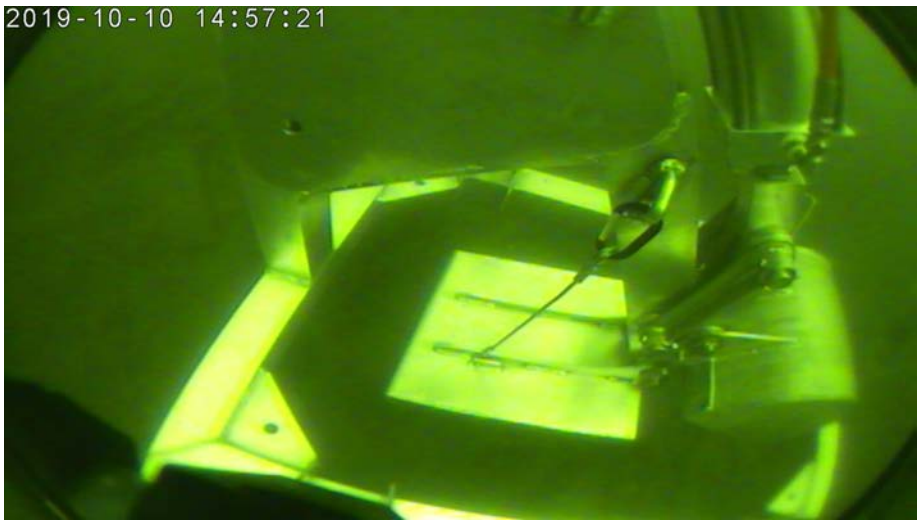
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: CB031_Ingalls_20191010_1457_Strata.jpg

Photo No.

CB031.2

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Photo No.

CB032.1

Photo Taken: 10/8/2019

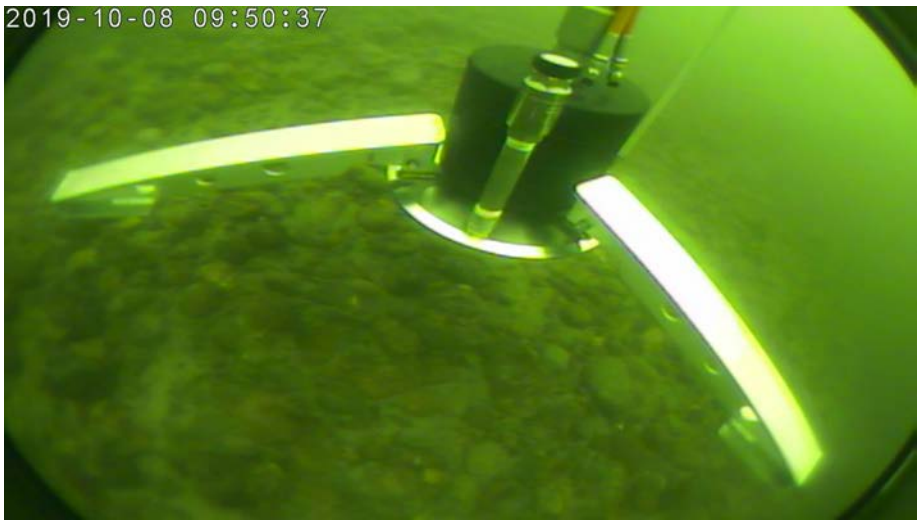
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: CB032_Ingalls_20191008_0950_Strata.jpg

Photo No.

CB032.2

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

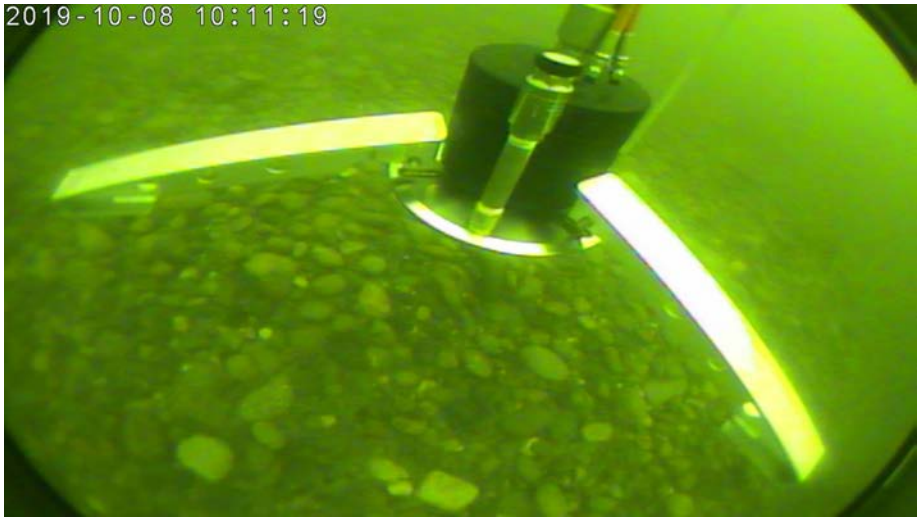


Photo No.

CB034.1

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: CB034_Ingalls_20191008_1011_Strata.jpg

Photo No.

CB035.1

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Original Photo Name: DSCF0005.jpg

Photo No.

CB035.2

Photo Taken: 10/3/2019

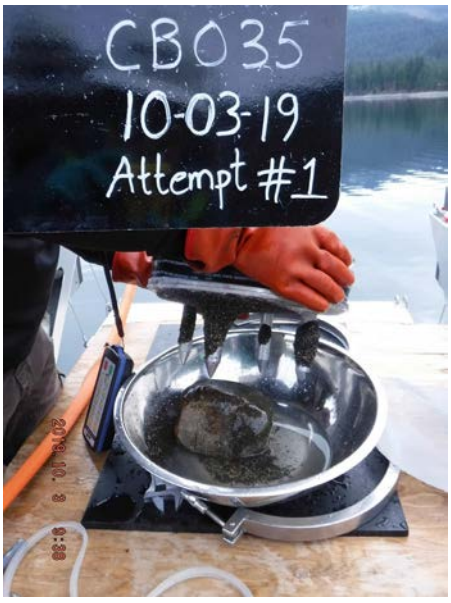
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Stainless Steel Bowls



Original Photo Name: DSCF0002.jpg

Photo No.

CB035.3

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0007.jpg

Photo No.

CB035.4

Photo Taken: 10/3/2019

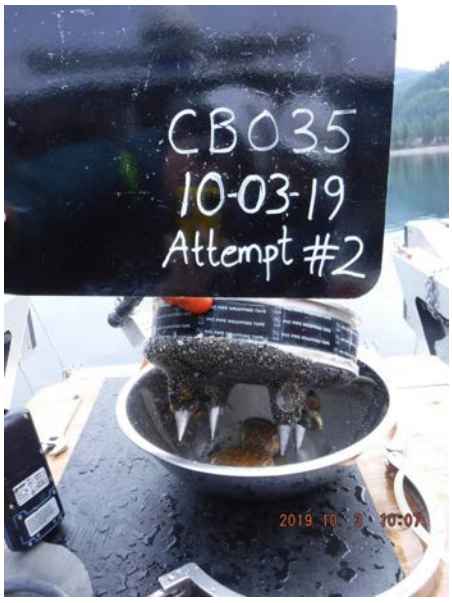
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Stainless Steel Bowls



Original Photo Name: DSCF0006.jpg

Photo No.

CB035.5

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0011.jpg

Photo No.

CB035.6

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Freeze Grab

Original Photo Name: DSCF0013.jpg

Photo No.

CB035.7

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0020.jpg

Photo No.

CB035.8

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0022.jpg

Photo No.

CB035.9

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

Freeze Grab

Original Photo Name: DSCF0024.jpg

Photo No.

CB035.10

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0025.jpg

Photo No.

CB035.11

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

Freeze Grab

Original Photo Name: DSCF0026.jpg

Photo No.

CB035.12

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0009.jpg

Photo No.

CB035.13

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0004.jpg

Photo No.

CB036.1

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0005.jpg

Photo No.

CB036.2

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0010.jpg

Photo No.

CB036.3

Photo Taken: 10/4/2019

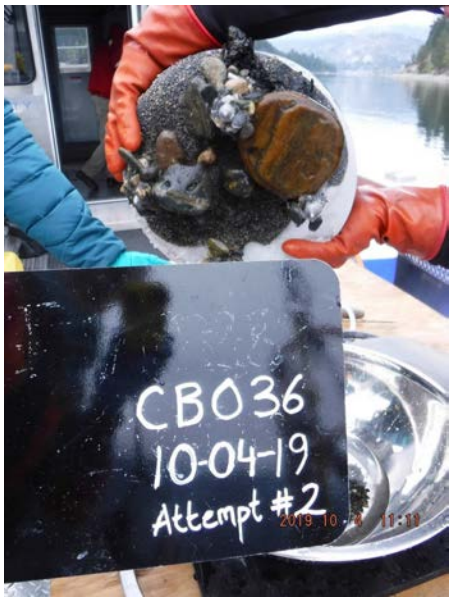
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Stainless Steel Bowls



Original Photo Name: DSCF0008.jpg

Photo No.

CB036.4

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0016.jpg

Photo No.

CB036.5

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DSCF0017.jpg

Photo No.

CB036.6

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

Freeze Grab

Original Photo Name: DSCF0018.jpg

Photo No.

CB036.7

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0020.jpg

Photo No.

CB036.8

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

Freeze Grab

Original Photo Name: DSCF0021.jpg

Photo No.

CB036.9

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0024.jpg

Photo No.

CB036.10

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

Freeze Grab

Original Photo Name: DSCF0025.jpg

Photo No.

CB036.11

Photo Taken: 10/4/2019

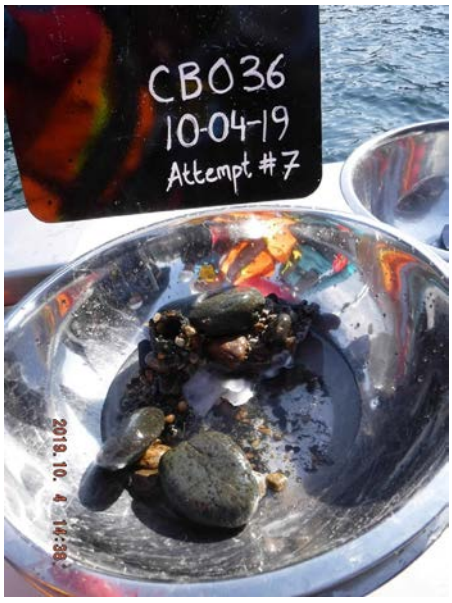
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Stainless Steel Bowls



Original Photo Name: DSCF0027.jpg

Photo No.

CB036.12

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #7

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0026.jpg

Photo No.

CB036.13

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #7

Notes:

Freeze Grab

Original Photo Name: DSCF0028.jpg

Photo No.

CB036.14

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #8

Notes:

Freeze Grab

Original Photo Name: DSCF0029.jpg

Photo No.

CB036.15

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #8

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0031.jpg

Photo No.

CB036.16

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #9

Notes:

Freeze Grab

Original Photo Name: DSCF0035.jpg

Photo No.

CB036.17

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #9

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0001.jpg

Photo No.

CB037.1

Photo Taken: 10/4/2019

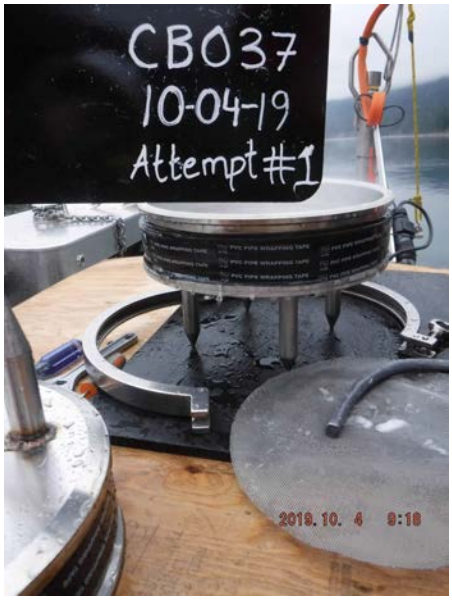
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0002.jpg

Photo No.

CB037.2

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0003.jpg

Photo No.

CB037.3

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Photo No.

CB037.4

Photo Taken: 10/4/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: CB037_20191004_084645A.jpg

Photo No.

CB038.1

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0027.jpg

Original Photo Name: DSCF0030.jpg

Photo No.

CB038.2

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0028.jpg

Photo No.

CB038.3

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0032.jpg

Photo No.

CB038.4

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0033.jpg

Photo No.

CB038.5

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Rejected

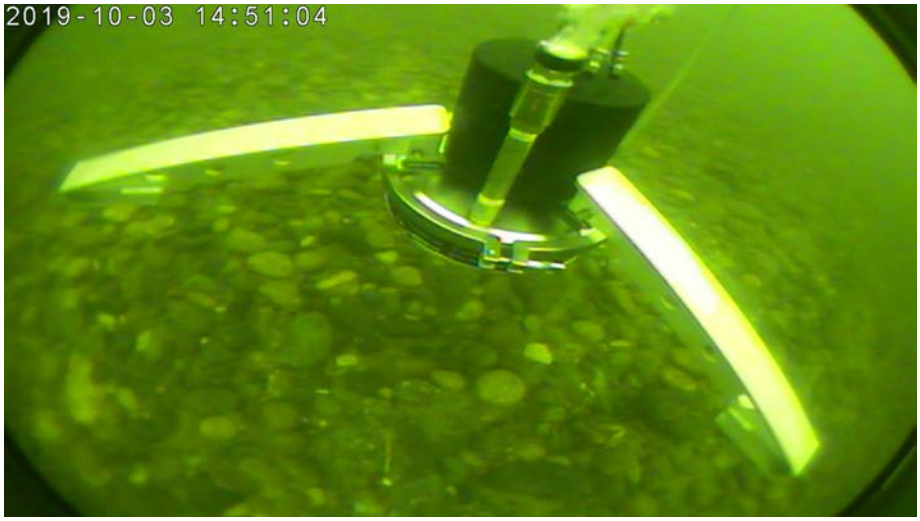


Photo No.

CB038.6

Photo Taken: 10/3/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: CB038_Ingalls_20191003_1451_Strata.jpg

Photo No.

CB039.1

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0019.JPG

Original Photo Name: DSCF0001.JPG

Photo No.

CB039.2

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0004.JPG

Photo No.

CB039.3

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0002.JPG

Photo No.

CB039.4

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #14

Notes:

In Hamon

Original Photo Name: DSCF0001.JPG

Photo No.

CB039.5

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #14

Notes:

Rejected

Original Photo Name: DSCF0003.JPG

Photo No.

CB039.6

Photo Taken: 10/12/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #16

Notes:

In Hamon

Original Photo Name: DSCF0003.JPG

Photo No.

CB039.7

Photo Taken: 10/11/2019

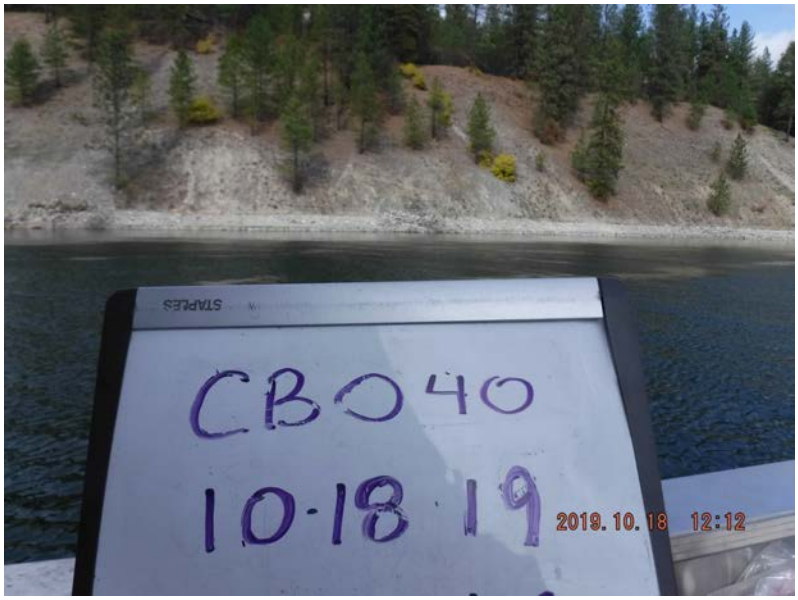
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A



Original Photo Name: DSCF0009.JPG

Photo No.

CB040.1

Photo Taken: 10/18/2019

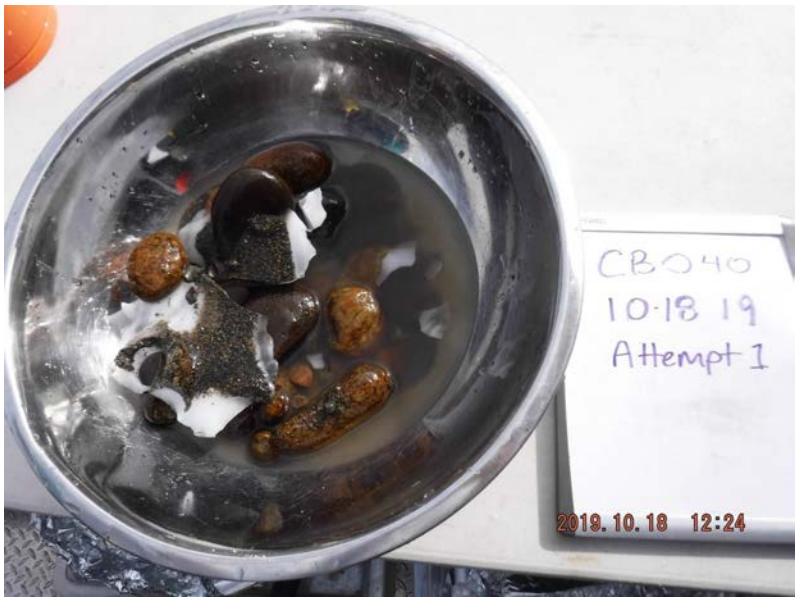
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0010.JPG

Photo No.

CB040.2

Photo Taken: 10/18/2019

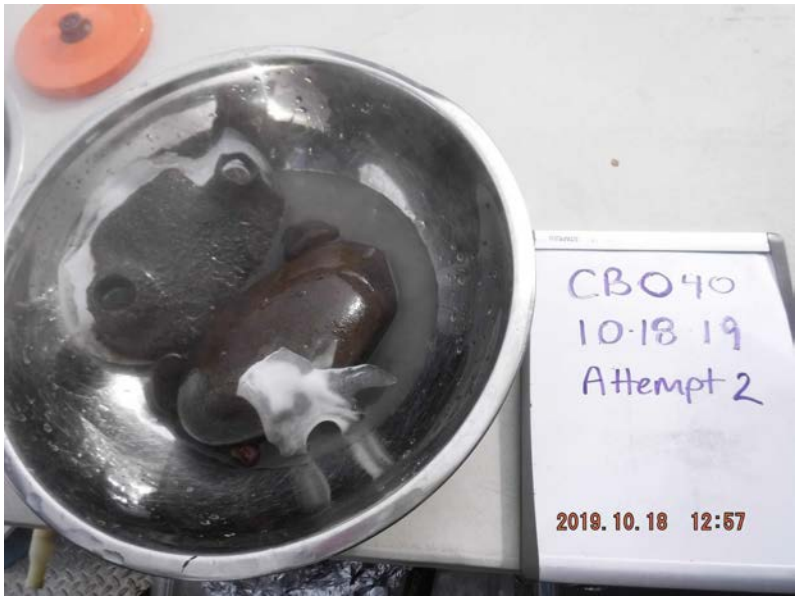
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Stainless Steel Bowls



Original Photo Name: DSCF0011.JPG

Photo No.

CB040.3

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0012.JPG

Photo No.

CB040.4

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Freeze Grab

Photo No.

CB040.5

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0013.JPG

Photo No.

CB040.6

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0014.JPG

Original Photo Name: DSCF0015.JPG

Photo No.

CB040.7

Photo Taken: 10/18/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0002.JPG

Photo No.

CB040.8

Photo Taken: 10/21/2019

Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.JPG

Photo No.

CB040.9

Photo Taken: 10/21/2019

Vessel: Yeti

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0013.JPG

Photo No.

CB042.1

Photo Taken: 10/16/2019

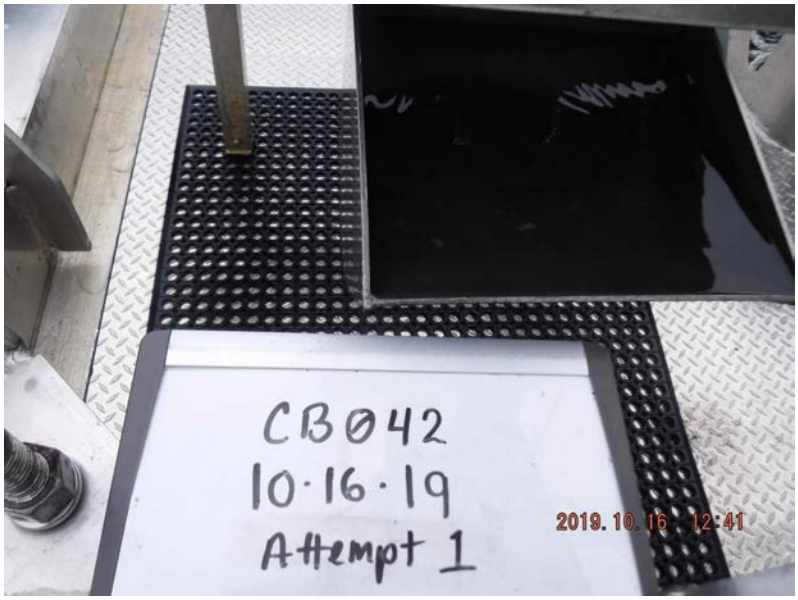
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0014.JPG

Photo No.

CB042.2

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0016.JPG

Photo No.

CB042.3

Photo Taken: 10/16/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0013.JPG

Photo No.

CB044.1

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0015.JPG

Photo No.

CB044.2

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0014.JPG

Photo No.

CB044.3

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0019.JPG

Photo No.

CB044.4

Photo Taken: 10/15/2019

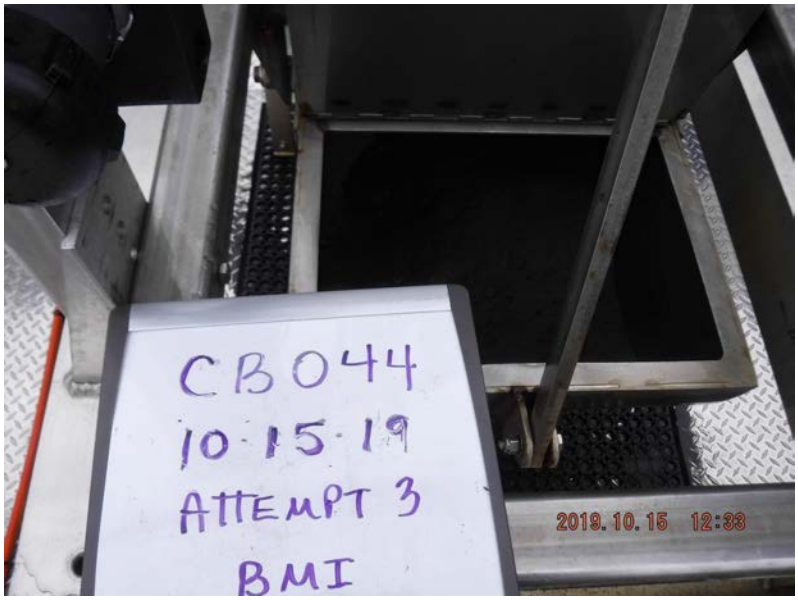
Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket



Original Photo Name: DSCF0017.JPG

Photo No.

CB044.5

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0018.JPG

Photo No.

CB044.6

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

Photo No.

CB044.7

Photo Taken: 10/15/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0016.JPG

Photo No.

CB046.1

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Original Photo Name: DSCF0007.JPG

Photo No.

CB046.2

Photo Taken: 10/8/2019

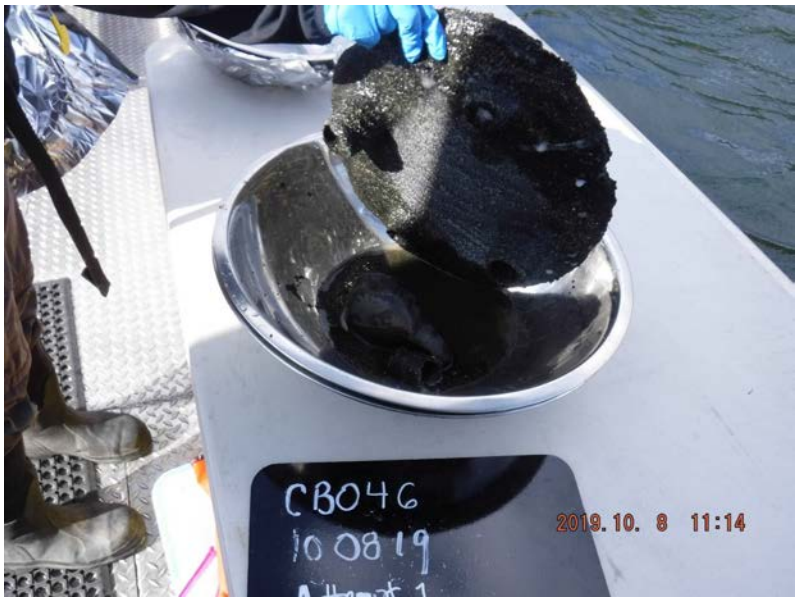
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempts

Notes:

In Stainless Steel Bowls



Original Photo Name: DSCF0004.JPG

Photo No.

CB046.3

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0005.JPG

Photo No.

CB046.4

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0006.JPG

Photo No.

CB046.5

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0013.JPG

Photo No.

CB046.6

Photo Taken: 10/8/2019

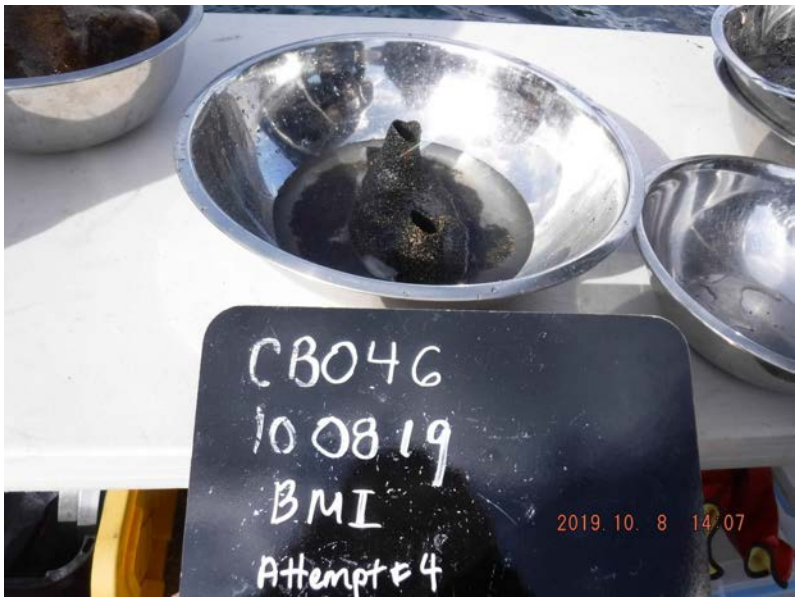
Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket



Original Photo Name: DSCF0010.JPG

Photo No.

CB046.7

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0011.JPG

Photo No.

CB046.8

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

Freeze Grab

Original Photo Name: DSCF0012.JPG

Photo No.

CB046.9

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0008.JPG

Photo No.

CB046.10

Photo Taken: 10/8/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF0004.JPG

Photo No.

CB047.1

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0005.JPG

Photo No.

CB047.2

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0006.JPG

Photo No.

CB047.3

Photo Taken: 10/11/2019

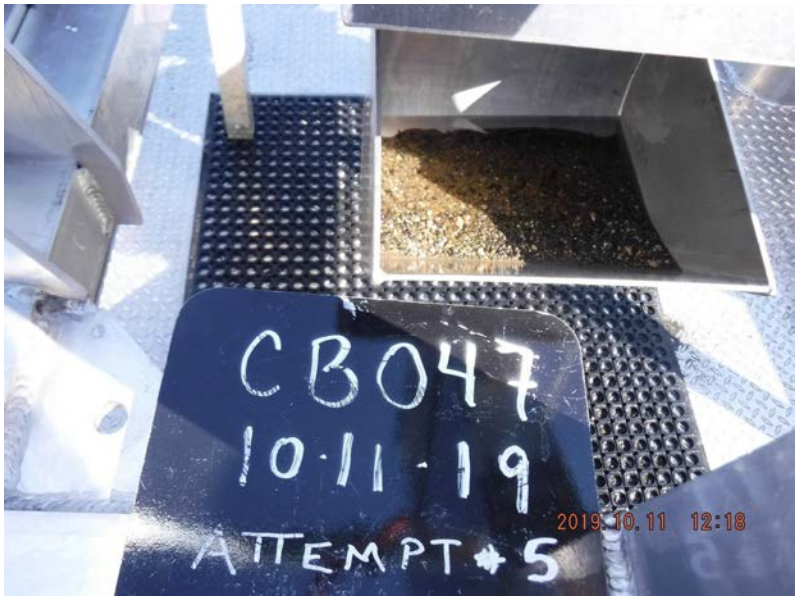
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon



Original Photo Name: DSCF0007.JPG

Photo No.

CB047.4

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0008.JPG

Photo No.

CB047.5

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #8

Notes:

In Hamon

Original Photo Name: DSCF0011.JPG

Photo No.

CB047.6

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0010.JPG

Photo No.

CB047.7

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #9

Notes:

In Hamon

Photo No.

CB047.8

Photo Taken: 10/11/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0009.JPG

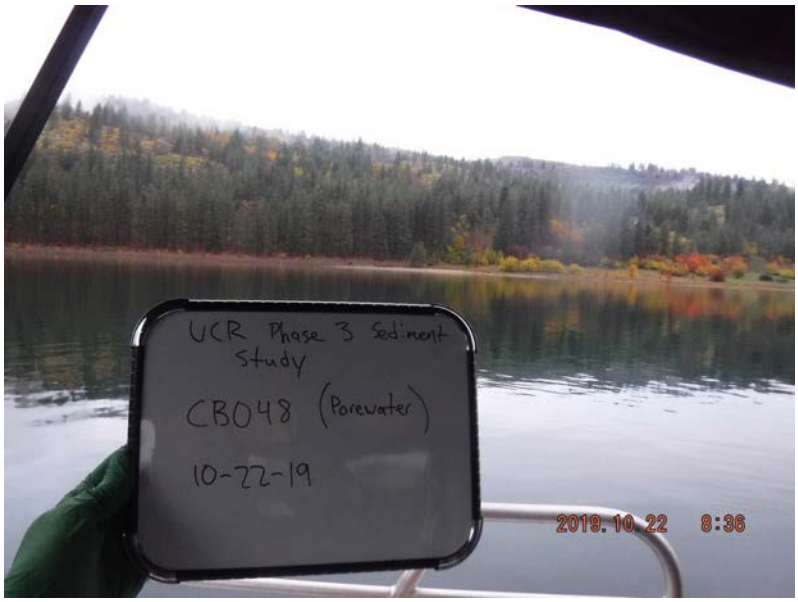


Photo No.

CB048.1

Photo Taken: 10/22/2019

Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Original Photo Name: DSCF0004.JPG

Photo No.

CB049.1

Photo Taken: 10/22/2019

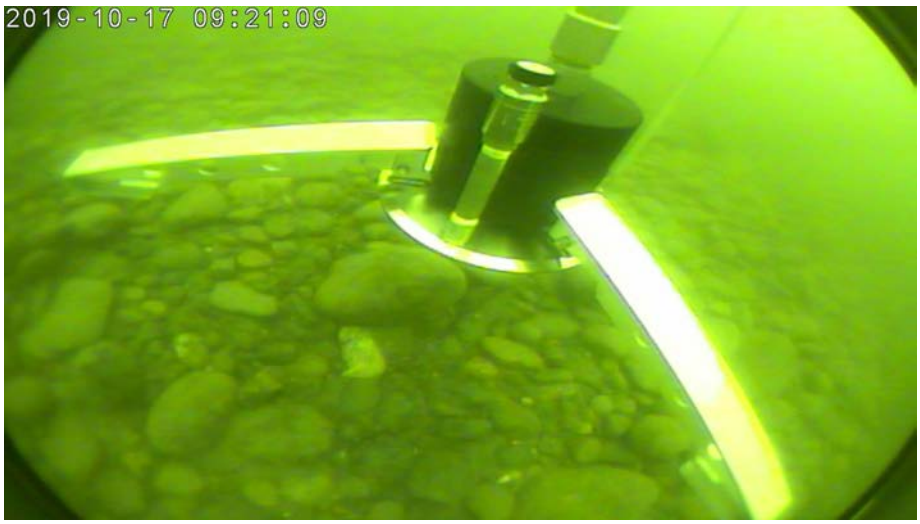
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: CB050_Ingalls_20191017_0921_Strata.jpg

Photo No.

CB050.1

Photo Taken: 10/17/2019

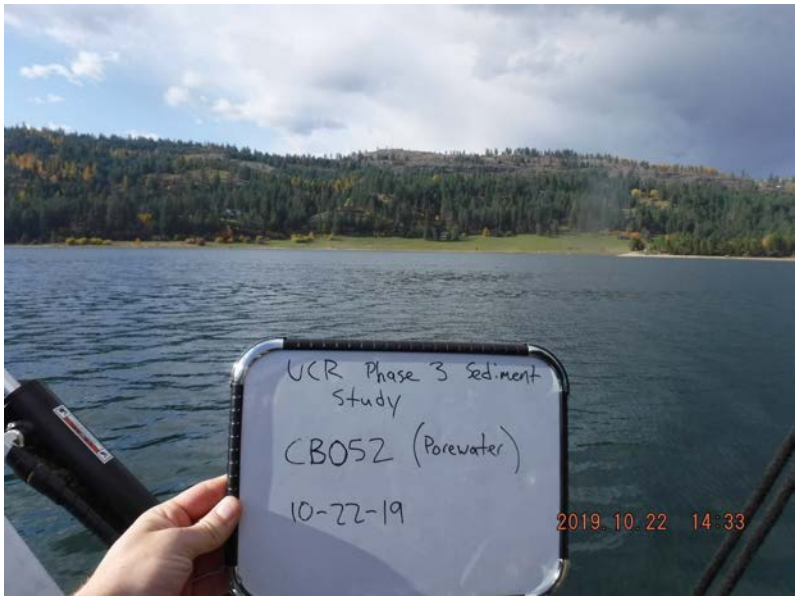
Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A



Original Photo Name: DSCF0006.JPG

Photo No.

CB052.1

Photo Taken: 10/22/2019

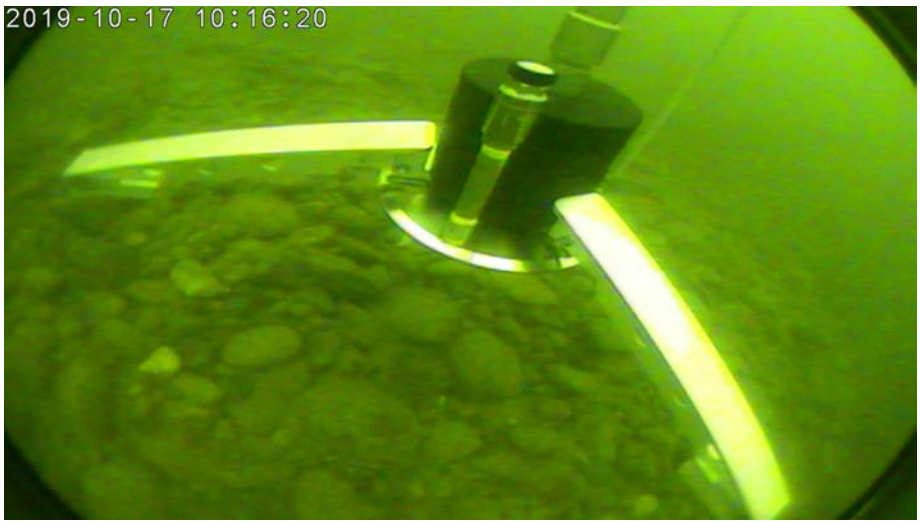
Vessel: Yeti

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: CB054_Ingalls_20191017_1016_Strata.jpg

Photo No.

CB054.1

Photo Taken: 10/17/2019

Vessel: Ingalls

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0017.jpg

Photo No.

CB056.1

Photo Taken: 10/17/2019

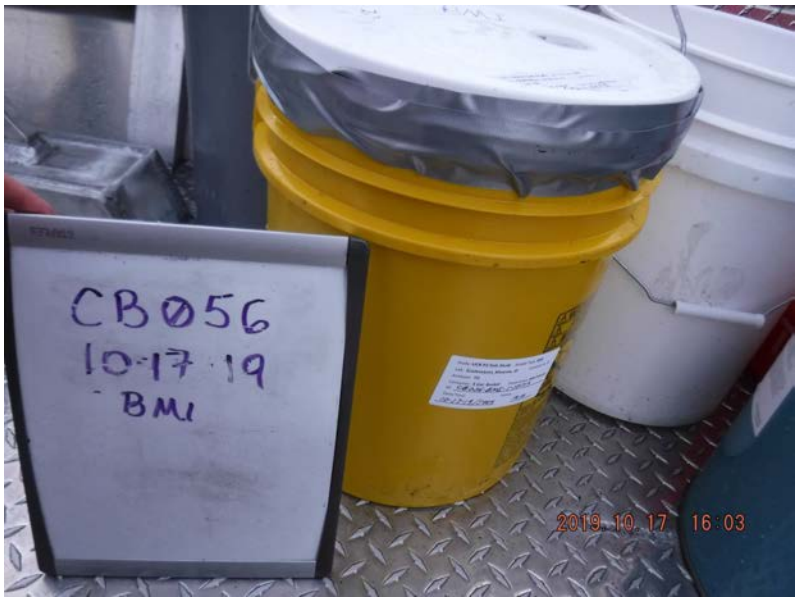
Vessel: Ingalls

Media Description:

Sediment Sample Attempt

Notes:

N/A



Original Photo Name: DSCF0021.jpg

Photo No.

CB056.2

Photo Taken: 10/17/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0018.jpg

Photo No.

CB056.3

Photo Taken: 10/17/2019

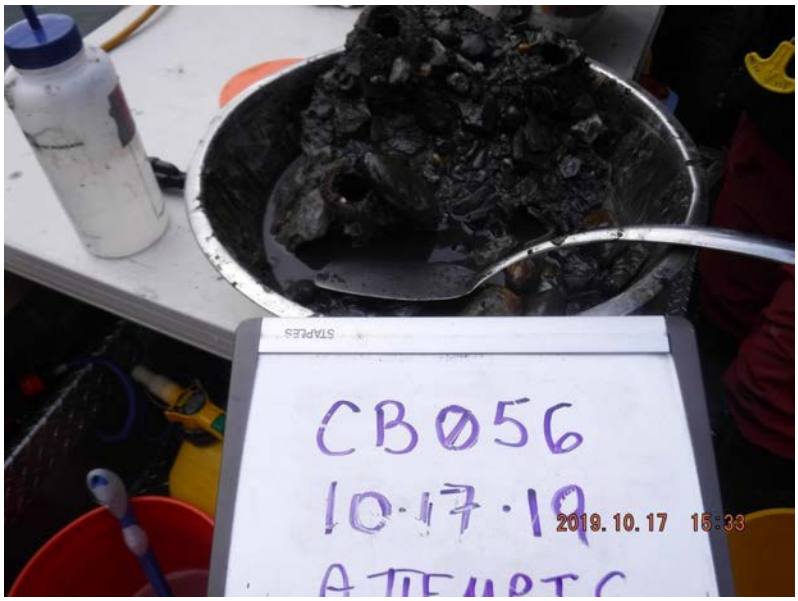
Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

Freeze Grab



Original Photo Name: DSCF0019.jpg

Photo No.

CB056.4

Photo Taken: 10/17/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Stainless Steel Bowls

Original Photo Name: DSCF0016.jpg

Photo No.

CB056.5

Photo Taken: 10/17/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Photo No.

JS001.1

Photo Taken: 10/10/2019

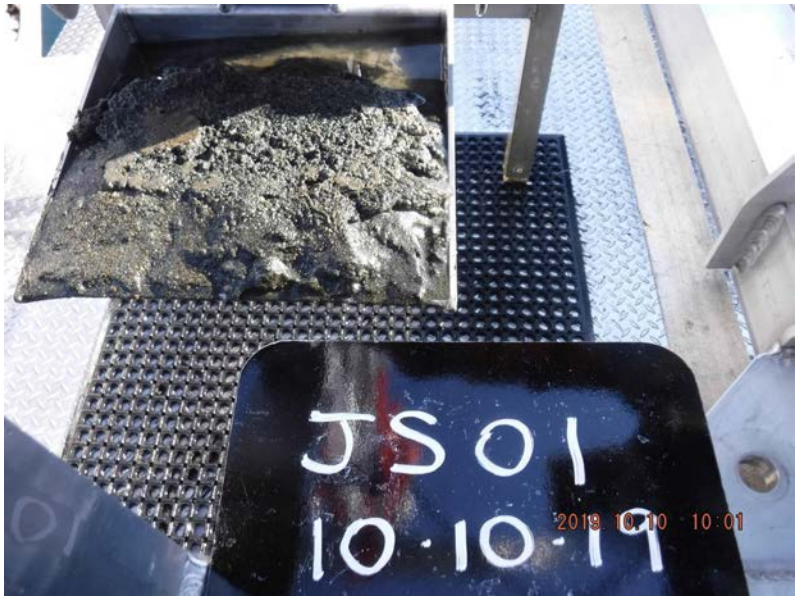
Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

Incorrect Location Name 'JS01' on the Photo blackboard.



Original Photo Name: DSCF0002.JPG

Photo No.

JS001.2

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Incorrect Location Name 'JS01' on the Photo blackboard.

Original Photo Name: DSCF0003.JPG

Photo No.

JS001.3

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon. Incorrect Location Name 'JS01' on the Photo blackboard.

Original Photo Name: DSCF0004.JPG

Photo No.

JS001.4

Photo Taken: 10/10/2019

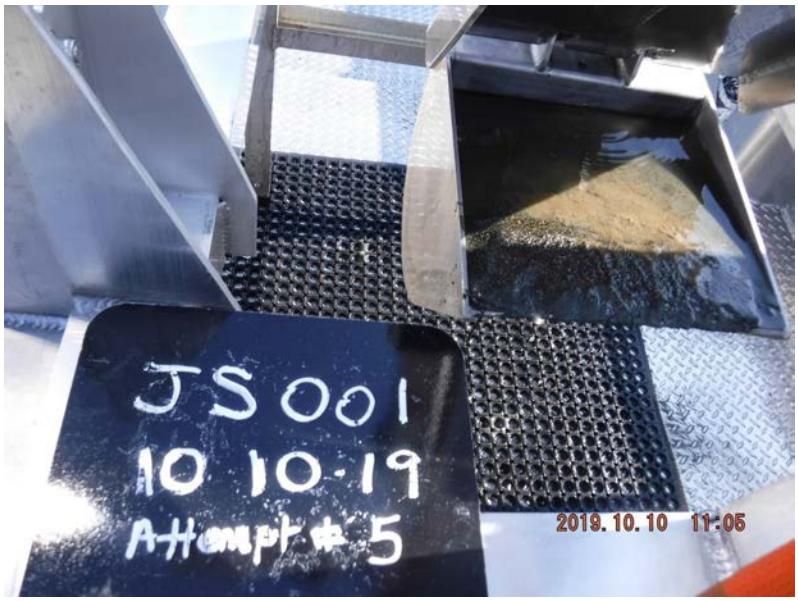
Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon



Original Photo Name: DSCF0005.JPG

Photo No.

JS001.5

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Rejected

Original Photo Name: DSCF0006.JPG

Photo No.

JS001.6

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0010.JPG

Photo No.

JS001.7

Photo Taken: 10/10/2019

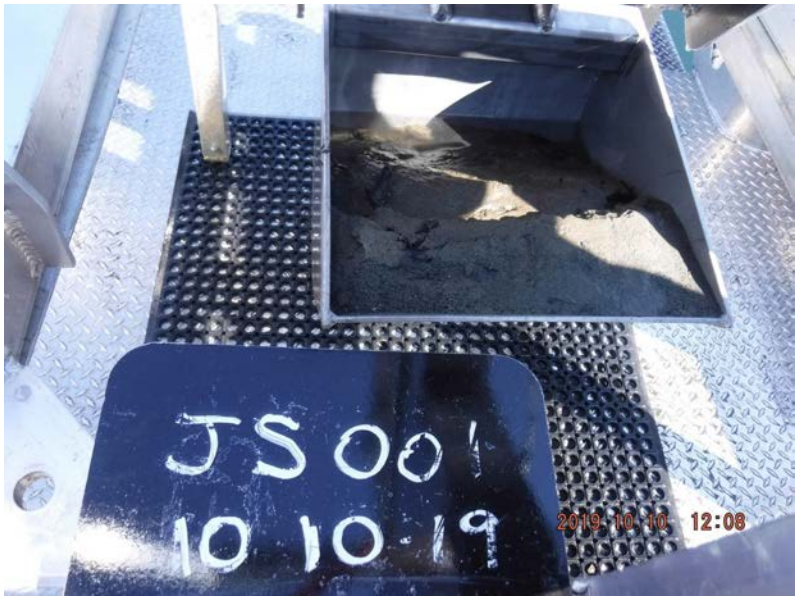
Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket



Original Photo Name: DSCF0009.JPG

Photo No.

JS001.8

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #7

Notes:

In Hamon

Original Photo Name: DSCF0007.JPG

Photo No.

JS001.9

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: DSCF0012.JPG

Photo No.

JS002.1

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0011.JPG

Photo No.

JS002.2

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0013.JPG

Photo No.

JS002.3

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0014.JPG

Photo No.

JS002.4

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0017.JPG

Photo No.

JS002.5

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: DSCF0016.JPG

Photo No.

JS002.6

Photo Taken: 10/10/2019

Vessel: Ingalls

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0015.JPG

Photo No.

JS002.7

Photo Taken: 10/10/2019

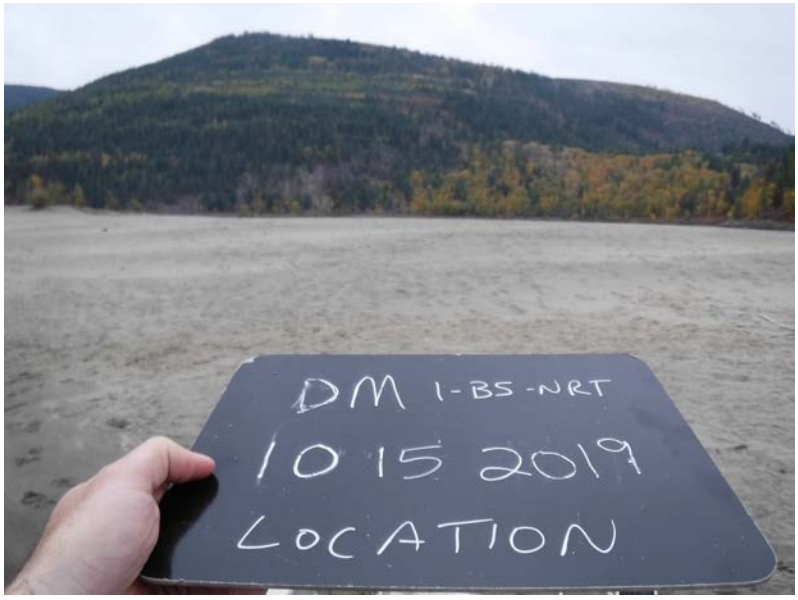
Vessel: Ingalls

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A



Original Photo Name: DSCF0017.JPG

Photo No.

1-B5-NRT-2019.1

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0018.JPG

Photo No.

1-B5-NRT-2019.2

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0019.JPG

Photo No.

1-B5-NRT-2019.3

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0020.JPG

Photo No.

1-B5-NRT-2019.4

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0021.JPG

Photo No.

1-B5-NRT-2019.5

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0001.JPG

Photo No.

1-B6-NRT-2019.1

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Photo No.

1-B6-NRT-2019.2

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0003.JPG

Photo No.

1-B6-NRT-2019.3

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0004.JPG

Photo No.

1-B6-NRT-2019.4

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0001.JPG

Photo No.

DM002.1

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Photo No.

DM002.2

Photo Taken: 10/9/2019

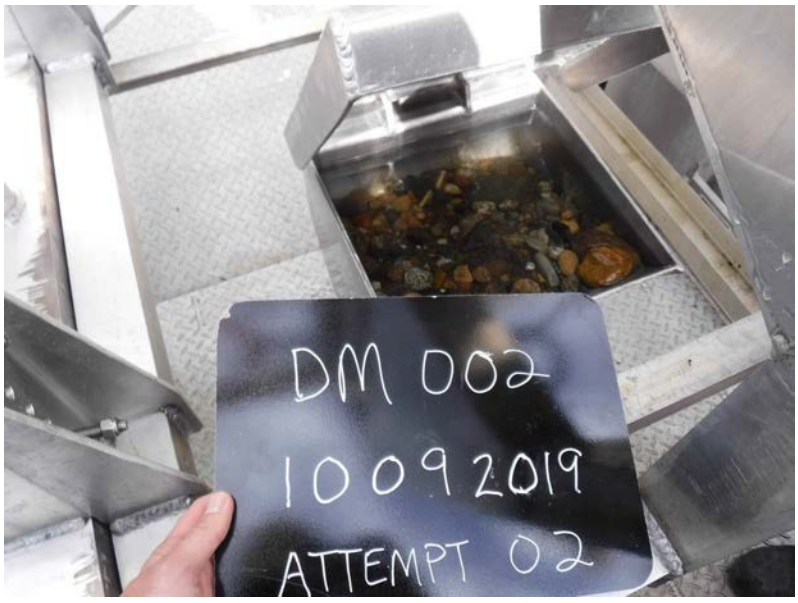
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon



Original Photo Name: DSCF0003.JPG

Photo No.

DM002.3

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0004.JPG

Photo No.

DM002.4

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0005.JPG

Photo No.

DM002.5

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0006.JPG

Photo No.

DM002.6

Photo Taken: 10/9/2019

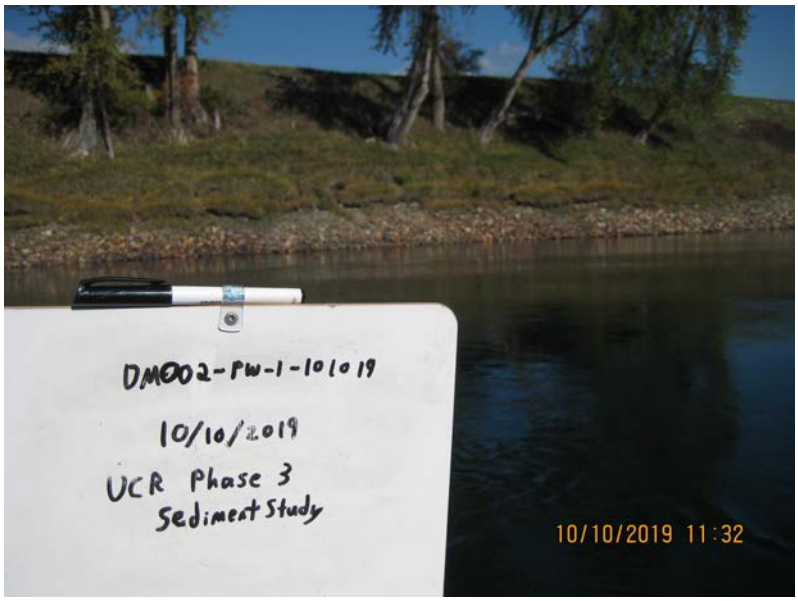
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon



Original Photo Name: IMG_0526.JPG

Photo No.

DM002.7

Photo Taken: 10/10/2019

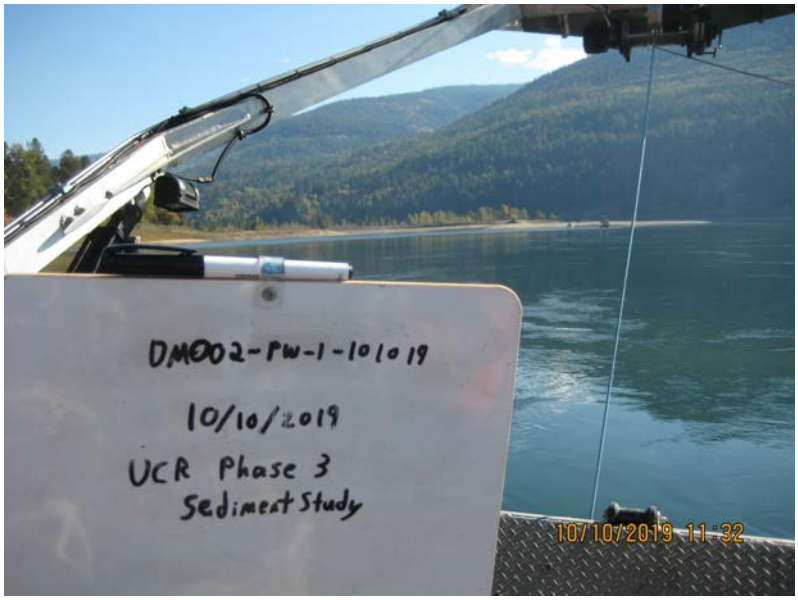
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0525.JPG

Photo No.

DM002.8

Photo Taken: 10/10/2019

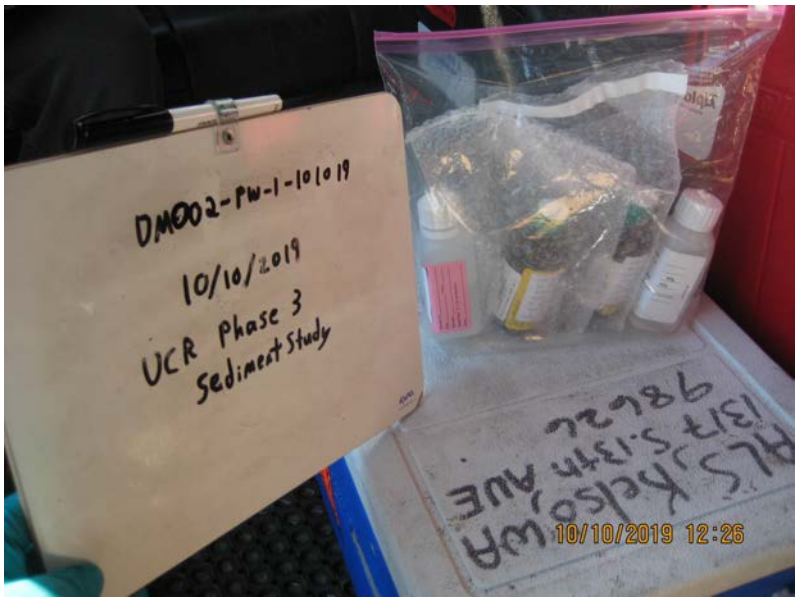
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0527.JPG

Photo No.

DM002.9

Photo Taken: 10/10/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Photo No.

DM004.1

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DM004_Cayuse_20191017_095933A.jpg

Photo No.

DM004.2

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0003.JPG

Photo No.

DM005.1

Photo Taken: 10/17/2019

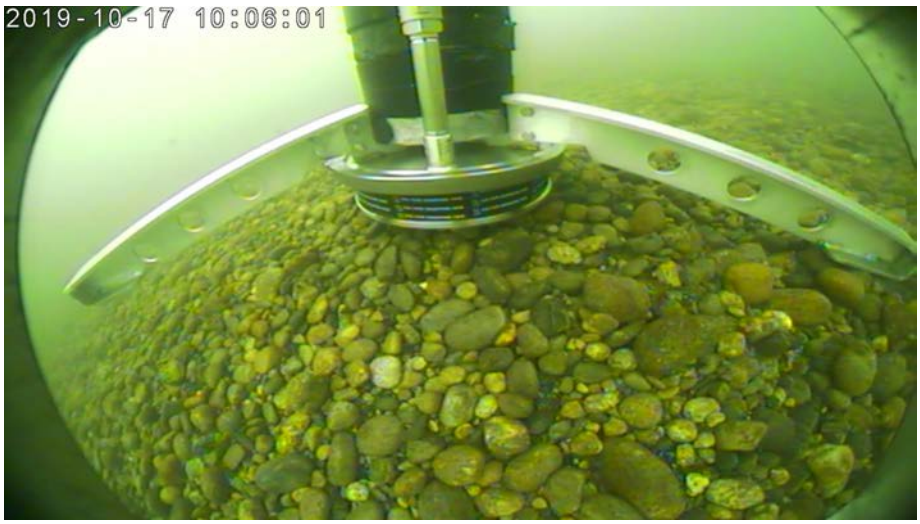
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DM005_Cayuse_20191017_100601A.jpg

Photo No.

DM005.2

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0004.JPG

Photo No.

DM006.1

Photo Taken: 10/17/2019

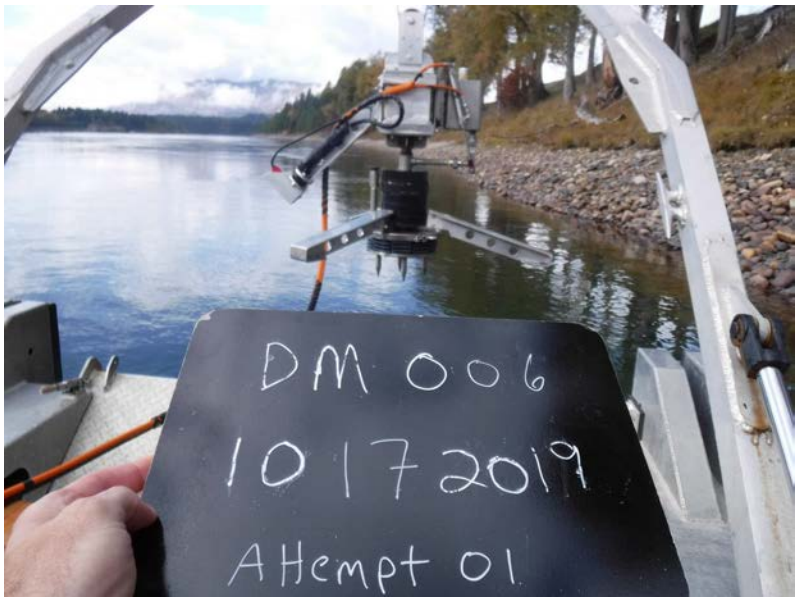
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0005.JPG

Photo No.

DM006.2

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0006.JPG

Photo No.

DM006.3

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DM006_Cayuse_20191017_102416A.jpg

Photo No.

DM006.4

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

Original Photo Name: DSCF0008.JPG

Photo No.

DM007.1

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0009.JPG

Photo No.

DM007.2

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0010.JPG

Photo No.

DM007.3

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0011.JPG

Photo No.

DM007.4

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0012.JPG

Photo No.

DM007.5

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0006.JPG

Photo No.

DM008.1

Photo Taken: 10/11/2019

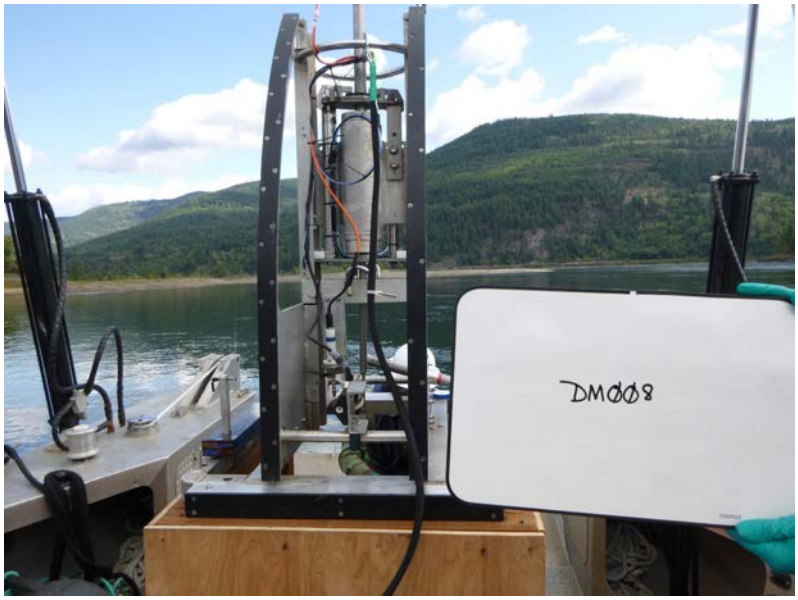
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020036.jpg

Photo No.

DM008.2

Photo Taken: 9/19/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0007.JPG

Photo No.

DM008.3

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0008.JPG

Photo No.

DM008.4

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0009.JPG

Photo No.

DM008.5

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0010.JPG

Photo No.

DM008.6

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: DSCF0011.JPG

Photo No.

DM008.7

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0012.JPG

Photo No.

DM008.8

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

Rejected

Original Photo Name: DSCF0013.JPG

Photo No.

DM008.9

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Hamon

Original Photo Name: DSCF0014.JPG

Photo No.

DM008.10

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #8

Notes:

In Hamon

Original Photo Name: DSCF0015.JPG

Photo No.

DM008.11

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #9

Notes:

In Hamon

Original Photo Name: DSCF0016.JPG

Photo No.

DM008.12

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #10

Notes:

In Hamon

Original Photo Name: DSCF0017.JPG

Photo No.

DM008.13

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0018.JPG

Photo No.

DM008.14

Photo Taken: 10/11/2019

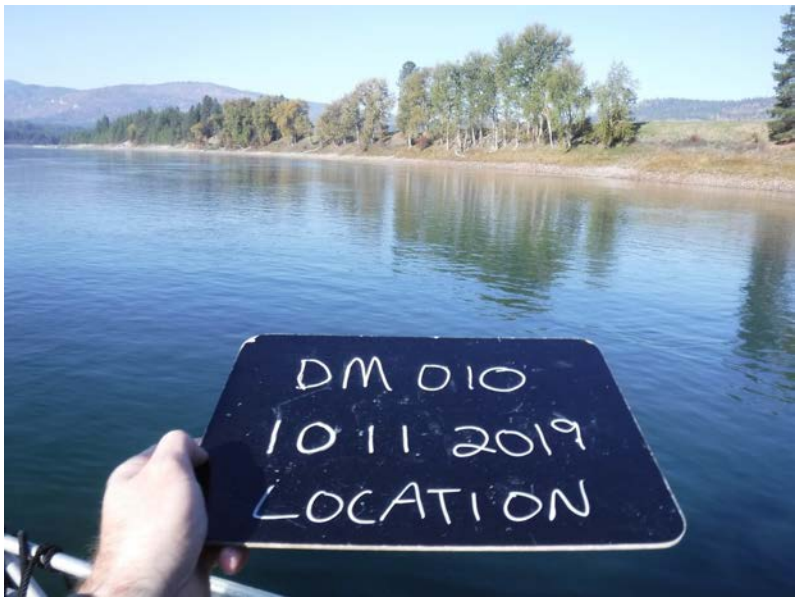
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #11

Notes:

In Hamon



Original Photo Name: DSCF0001.JPG

Photo No.

DM010.1

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Photo No.

DM010.2

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0003.JPG

Photo No.

DM010.3

Photo Taken: 10/11/2019

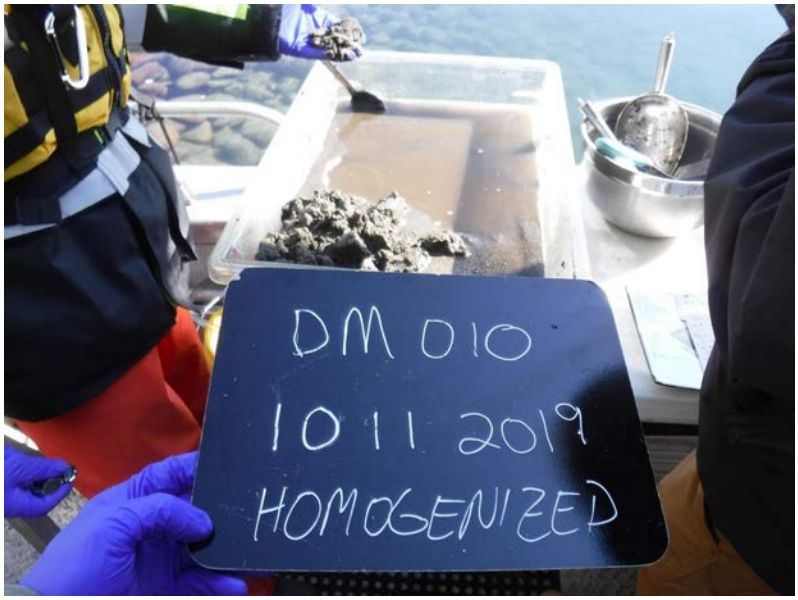
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon



Original Photo Name: DSCF0004.JPG

Photo No.

DM010.4

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0005.JPG

Photo No.

DM010.5

Photo Taken: 10/11/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon

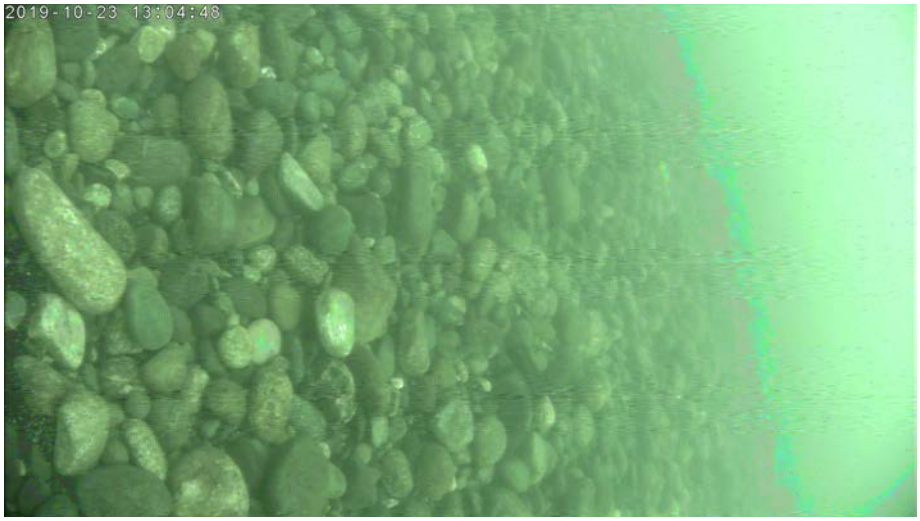


Photo No.

DM012.1

Photo Taken: 10/23/2019

Vessel: Tieton

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DM012_20191023_1304_Strata.jpg

Photo No.

DM013.1

Photo Taken: 10/8/2019

Vessel: Cayuse

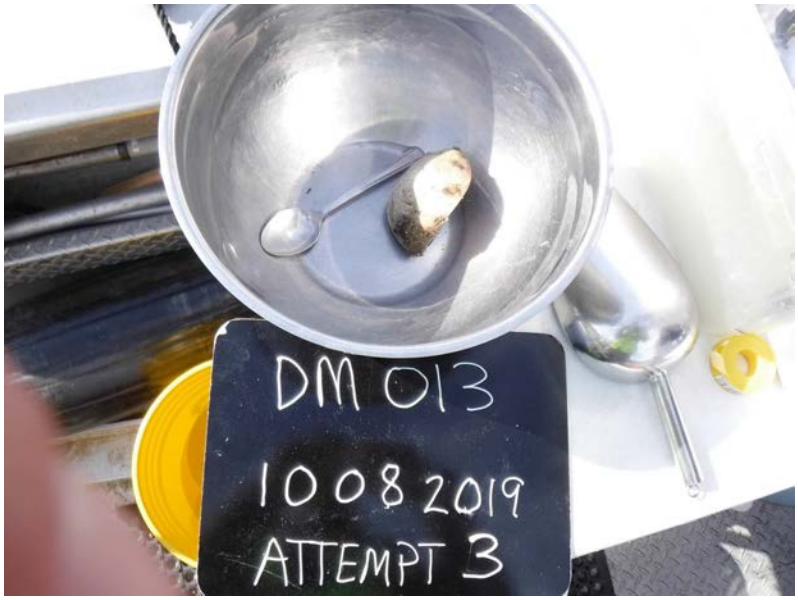
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001_1.JPG



Original Photo Name: DSCF0001.JPG

Photo No.

DM013.2

Photo Taken: 10/8/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DSCF0001.JPG

Photo No.

DM014.1

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DM014_Cayuse_20191017_093241A.jpg

Photo No.

DM014.2

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

Original Photo Name: DSCF0018.JPG

Photo No.

DM015.1

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0019.JPG

Photo No.

DM015.2

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0020.JPG

Photo No.

DM015.3

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0021.JPG

Photo No.

DM015.4

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0022.JPG

Photo No.

DM015.5

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0023.JPG

Photo No.

DM015.6

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0024.JPG

Photo No.

DM015.7

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #7

Notes:

Rejected

Original Photo Name: DSCF0025.JPG

Photo No.

DM015.8

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #8

Notes:

In Hamon

Original Photo Name: P1020042.jpg

Photo No.

DM015.9

Photo Taken: 9/20/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

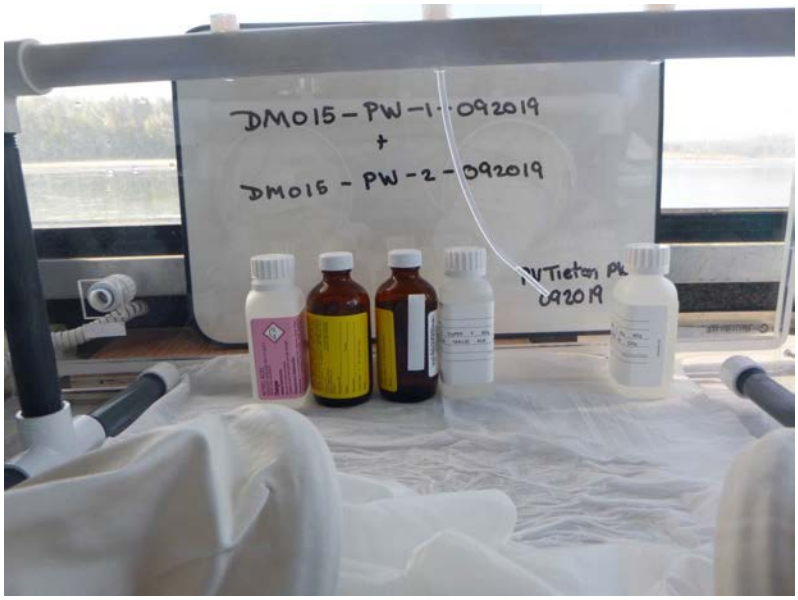


Photo No.

DM015.10

Photo Taken: 9/20/2019

Vessel: Tieton

Media Description:

Filled Sample Bottles

Notes:

DM015-PW-1-092019 and DM015-PW-2-092019 Collected

Original Photo Name: P1020043.jpg

Photo No.

DM016.1

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Original Photo Name: DSCF0002.JPG

Photo No.

DM016.2

Photo Taken: 10/10/2019

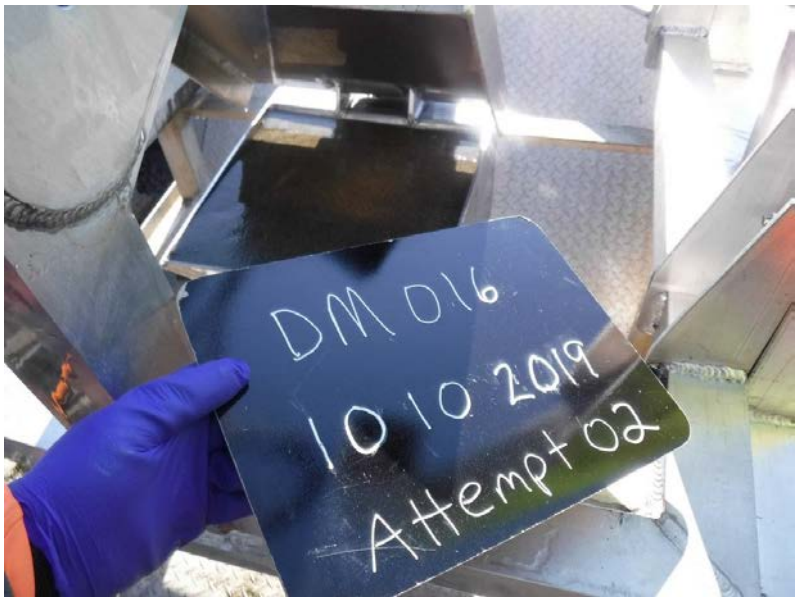
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon



Original Photo Name: DSCF0003.JPG

Photo No.

DM016.3

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0004.JPG

Photo No.

DM016.4

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DSCF0005.JPG

Photo No.

DM016.5

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Rejected

Original Photo Name: DSCF0006.JPG

Photo No.

DM016.6

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon

Original Photo Name: DSCF0007.JPG

Photo No.

DM016.7

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Hamon

Original Photo Name: DSCF0008.JPG

Photo No.

DM016.8

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #8

Notes:

In Hamon

Original Photo Name: DSCF0010.JPG

Photo No.

DM016.9

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #9

Notes:

Rejected

Original Photo Name: DSCF0011.JPG

Photo No.

DM016.10

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #10

Notes:

Rejected

Original Photo Name: DSCF0012.JPG

Photo No.

DM016.11

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #11

Notes:

Rejected

Original Photo Name: DSCF0013.JPG

Photo No.

DM016.12

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #12

Notes:

In Hamon

Original Photo Name: DSCF0014.JPG

Photo No.

DM016.13

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #12

Notes:

In Lexan Tub (Duplicate)

Original Photo Name: DSCF0015.JPG

Photo No.

DM016.14

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #13

Notes:

Rejected

Original Photo Name: DSCF0016.JPG

Photo No.

DM016.15

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #14

Notes:

Rejected

Original Photo Name: DSCF0017.JPG

Photo No.

DM016.16

Photo Taken: 10/10/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #15

Notes:

In Hamon

Original Photo Name: DSCF0009.JPG

Photo No.

DM016.17

Photo Taken: 10/10/2019

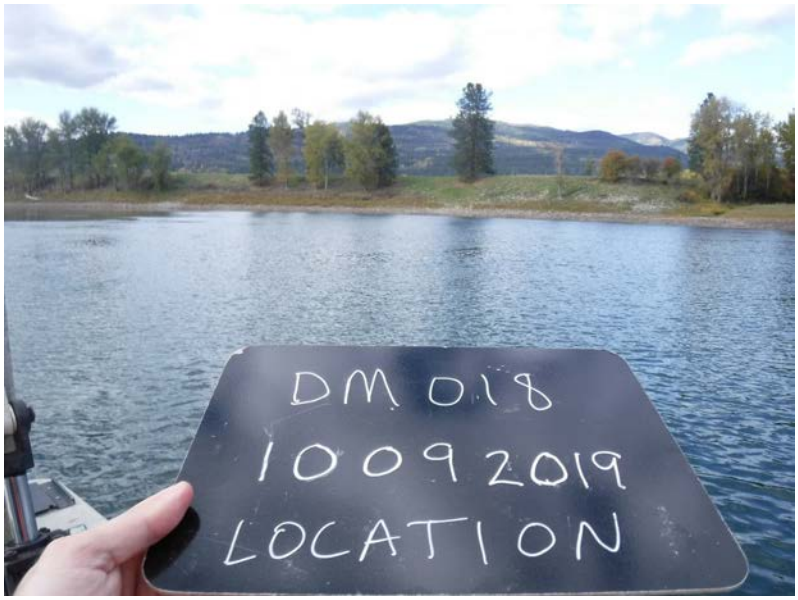
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: DSCF0007.JPG

Photo No.

DM018.1

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0008.JPG

Photo No.

DM018.2

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0010.JPG

Photo No.

DM018.3

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Lexan Tub

Original Photo Name: DSCF0009.JPG

Photo No.

DM018.4

Photo Taken: 10/9/2019

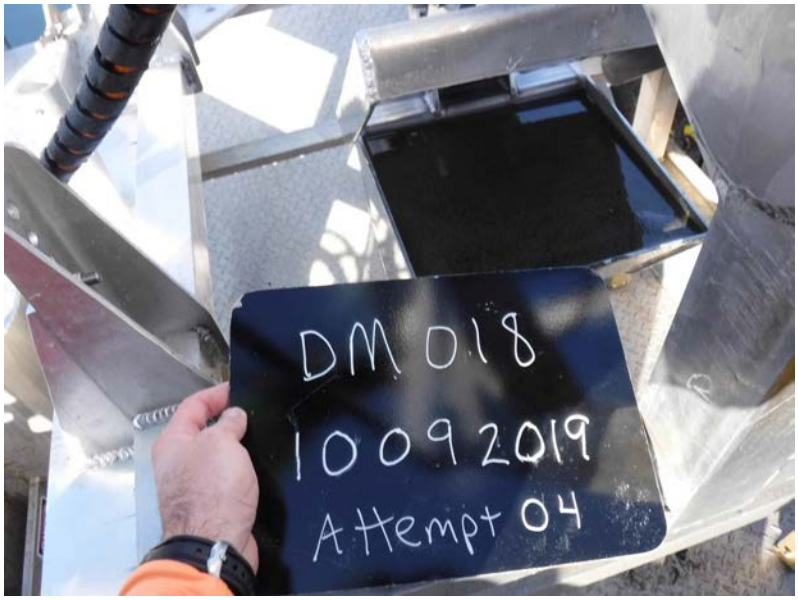
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon



Original Photo Name: DSCF0011.JPG

Photo No.

DM018.5

Photo Taken: 10/9/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Hamon

Original Photo Name: P1020045.jpg

Photo No.

DM018.6

Photo Taken: 9/20/2019

Vessel: Tieton

Media Description:

Porewater Equipment

Notes:

PW Sampling Equipment

Original Photo Name: DSCF0008.JPG

Photo No.

DM019.1

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0009.JPG

Photo No.

DM019.2

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0010.JPG

Photo No.

DM019.3

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0011.JPG

Photo No.

DM019.4

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0012.JPG

Photo No.

DM019.5

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0013.JPG

Photo No.

DM019.6

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: DSCF0014.JPG

Photo No.

DM019.7

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0015.JPG

Photo No.

DM019.8

Photo Taken: 10/14/2019

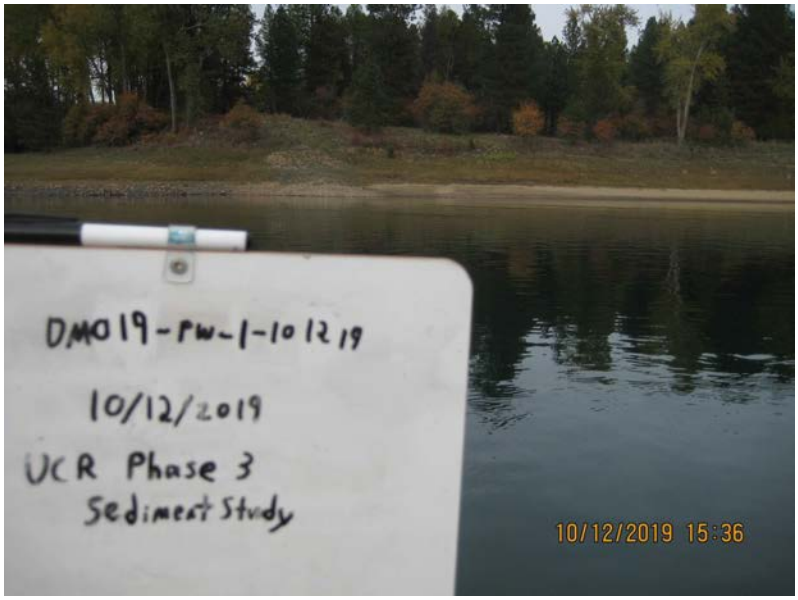
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Hamon



Original Photo Name: IMG_0543.JPG

Photo No.

DM019.9

Photo Taken: 10/12/2019

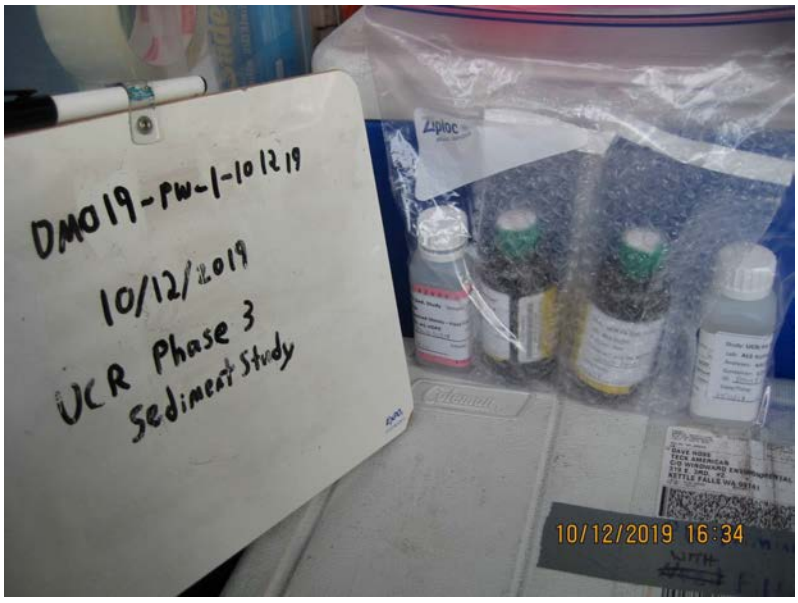
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0545.JPG

Photo No.

DM019.10

Photo Taken: 10/12/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Photo No.

DM020.1

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Photo No.

DM020.2

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0003.JPG

Photo No.

DM020.3

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0004.JPG

Photo No.

DM020.4

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0005.JPG

Photo No.

DM020.5

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0006.JPG

Photo No.

DM020.6

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0007.JPG

Photo No.

DM020.7

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Hamon

Original Photo Name: IMG_0550.JPG

Photo No.

DM020.8

Photo Taken: 10/14/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010015.jpg

Photo No.

DM022.1

Photo Taken: 9/21/2019

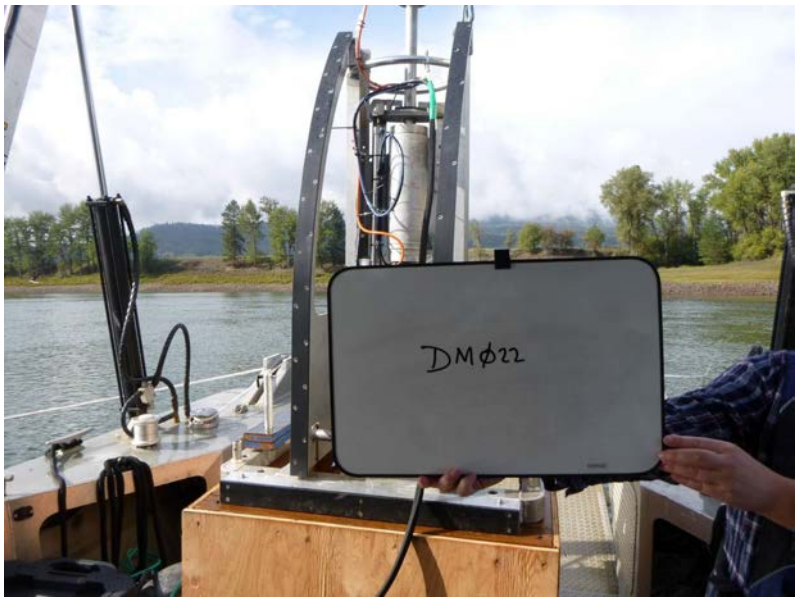
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020017.jpg

Photo No.

DM022.2

Photo Taken: 9/18/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Photo No.

DM022.3

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: P1010016.jpg

Photo No.

DM022.4

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1 and #2

Notes:

In Lexan Tub

Original Photo Name: P1010020.jpg

Photo No.

DM022.5

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: P1010019.jpg

Photo No.

DM022.6

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010018.jpg

Photo No.

DM022.7

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: P1010023.jpg

Photo No.

DM022.8

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Van Veen

Original Photo Name: P1010021.jpg

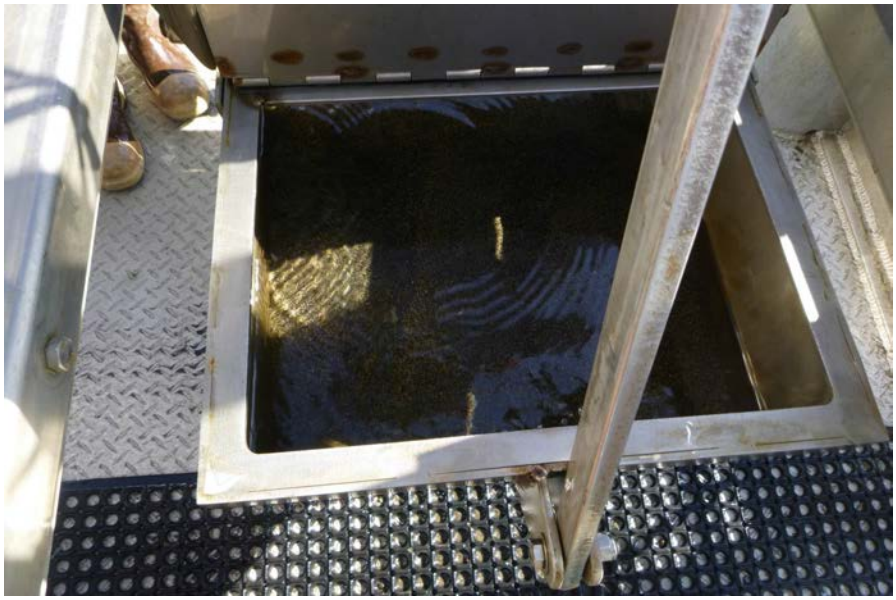


Photo No.

DM022.9

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Van Veen

Original Photo Name: P1010022.jpg

Photo No.

DM023.1

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010001.jpg

Original Photo Name: P1010002.jpg

Photo No.

DM023.2

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: P1010003.jpg

Photo No.

DM023.3

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Original Photo Name: P1010004.jpg

Photo No.

DM023.4

Photo Taken: 9/21/2019

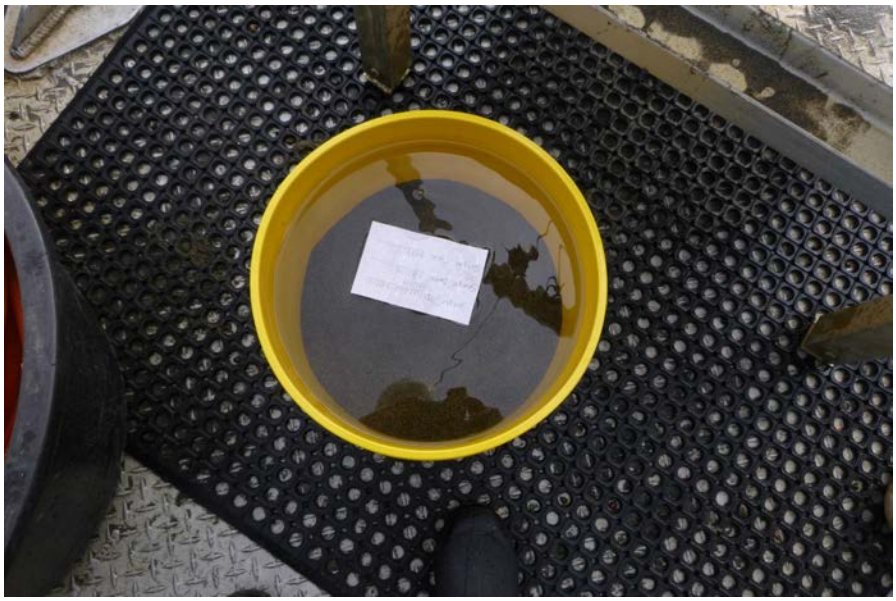
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen



Original Photo Name: P1010005.jpg

Photo No.

DM023.5

Photo Taken: 9/21/2019

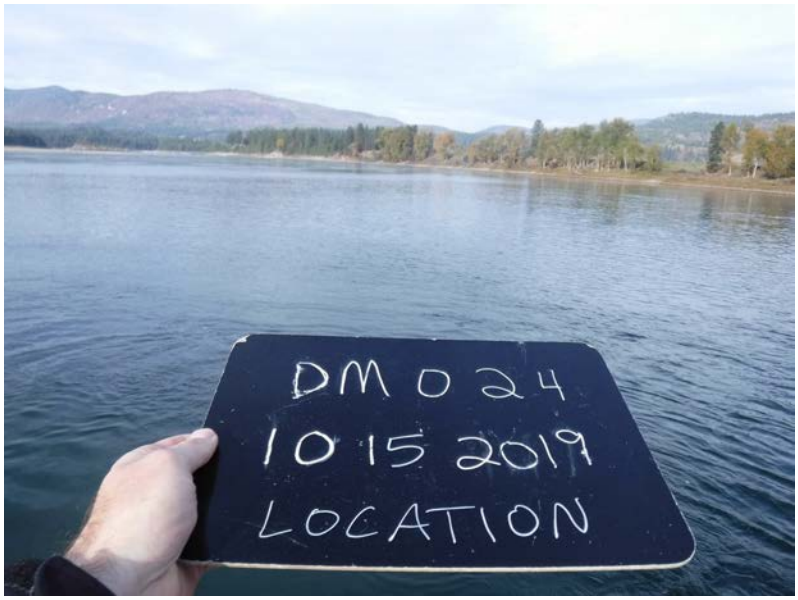
Vessel: Cayuse

Media Description:

BMI Sample

Notes:

In Bucket



Original Photo Name: DSCF0001.JPG

Photo No.

DM024.1

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Photo No.

DM024.2

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: DSCF0003.JPG

Photo No.

DM024.3

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: DSCF0004.JPG

Photo No.

DM024.4

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0005.JPG

Photo No.

DM024.5

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: DSCF0006.JPG

Photo No.

DM024.6

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0007.JPG

Photo No.

DM024.7

Photo Taken: 10/15/2019

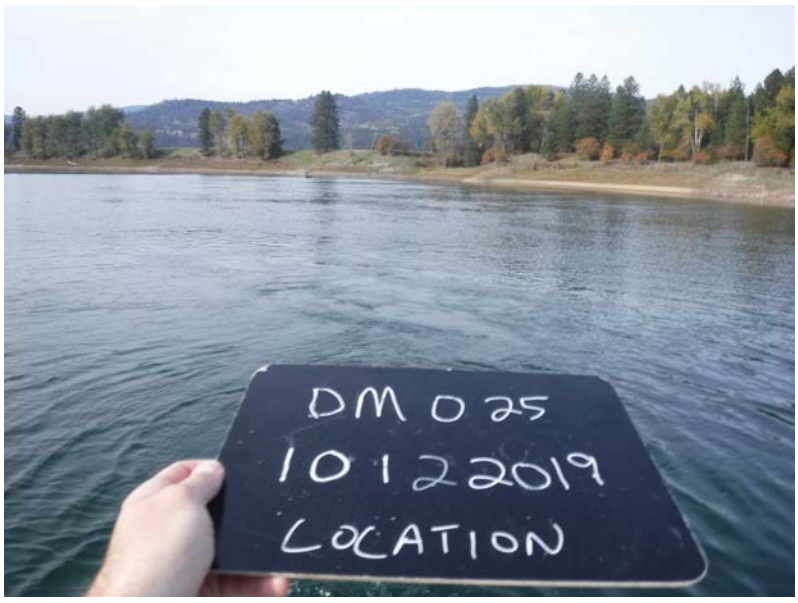
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Van Veen



Original Photo Name: DSCF0008.JPG

Photo No.

DM025.1

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0548.JPG

Photo No.

DM025.2

Photo Taken: 10/14/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0009.JPG

Photo No.

DM025.3

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0010.JPG

Photo No.

DM025.4

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0011.JPG

Photo No.

DM025.5

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: DSCF0012.JPG

Photo No.

DM025.6

Photo Taken: 10/12/2019

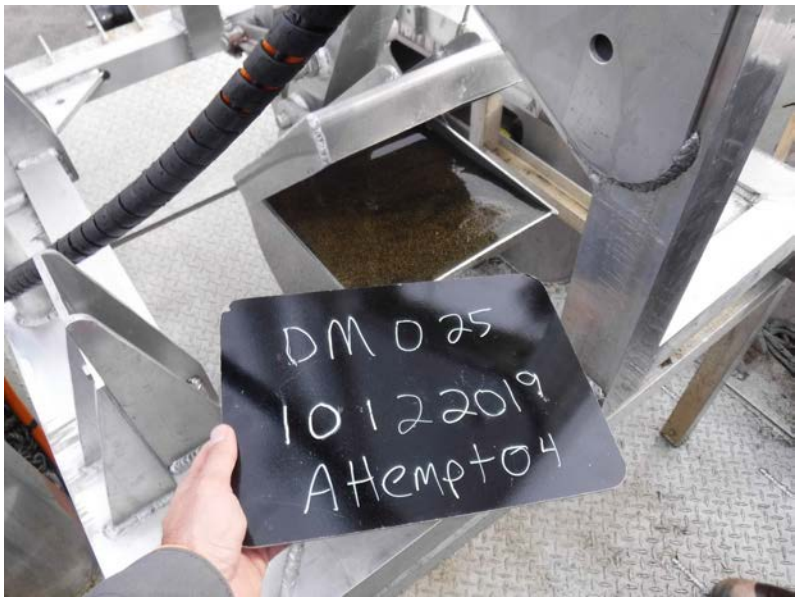
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: DSCF0013.JPG

Photo No.

DM025.7

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Hamon

Original Photo Name: P1010006.jpg

Photo No.

DM026.1

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010008.jpg

Photo No.

DM026.2

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Photo No.

DM026.3

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1 and #2

Notes:

In Lexan Tub

Original Photo Name: P1010011.jpg

Photo No.

DM026.4

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010010.jpg

Photo No.

DM026.5

Photo Taken: 9/21/2019

Vessel: Cayuse

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: P1010014.jpg

Photo No.

DM026.6

Photo Taken: 9/21/2019

Vessel: Cayuse

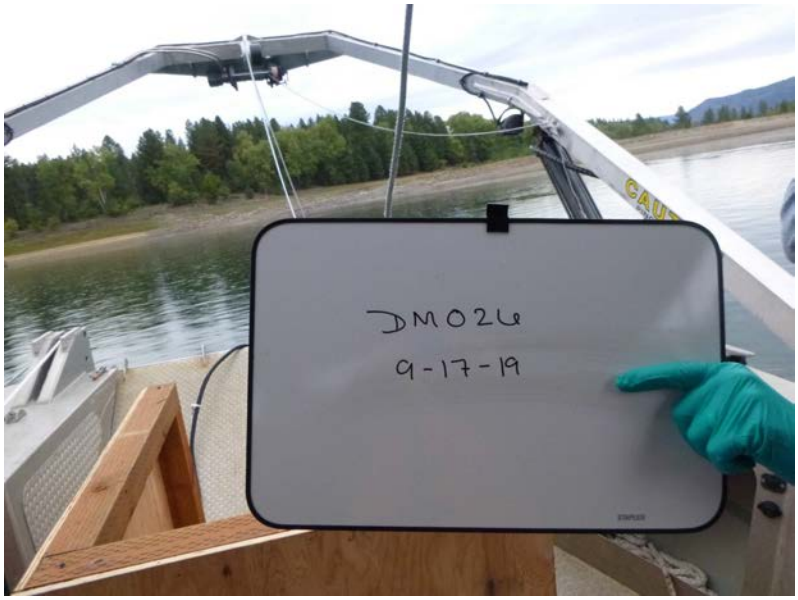
Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: P1010012.jpg



Original Photo Name: P1020008.JPG

Photo No.

DM026.7

Photo Taken: 9/17/2019

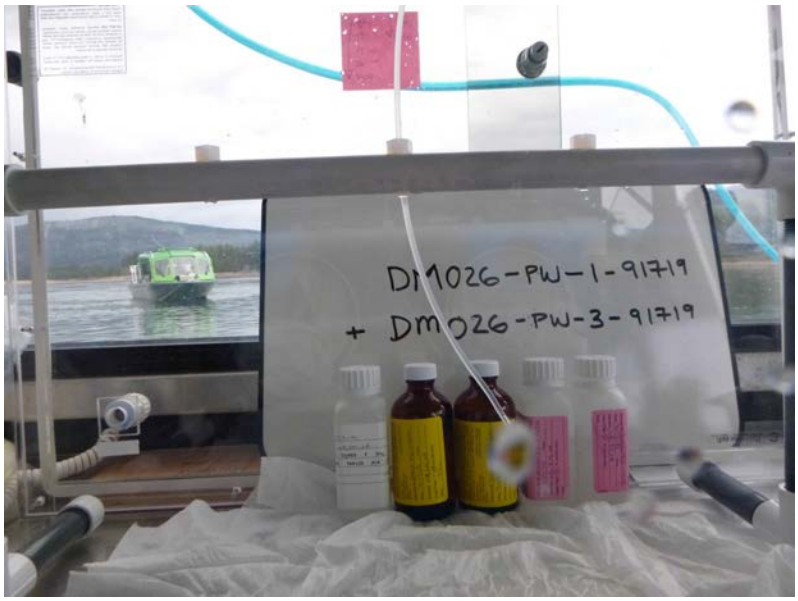
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020007.JPG

Photo No.

DM026.8

Photo Taken: 9/17/2019

Vessel: Tieton

Media Description:

Completed Sample Bottles

Notes:

DM026-PW-1-091719 and DM026-PW-3-091719 collected.

Original Photo Name: DSCF0016.JPG

Photo No.

DM027.1

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0017.JPG

Photo No.

DM027.2

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DSCF0018.JPG

Photo No.

DM027.3

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0019.JPG

Photo No.

DM027.4

Photo Taken: 10/14/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: DSCF0020.JPG

Photo No.

DM027.5

Photo Taken: 10/14/2019

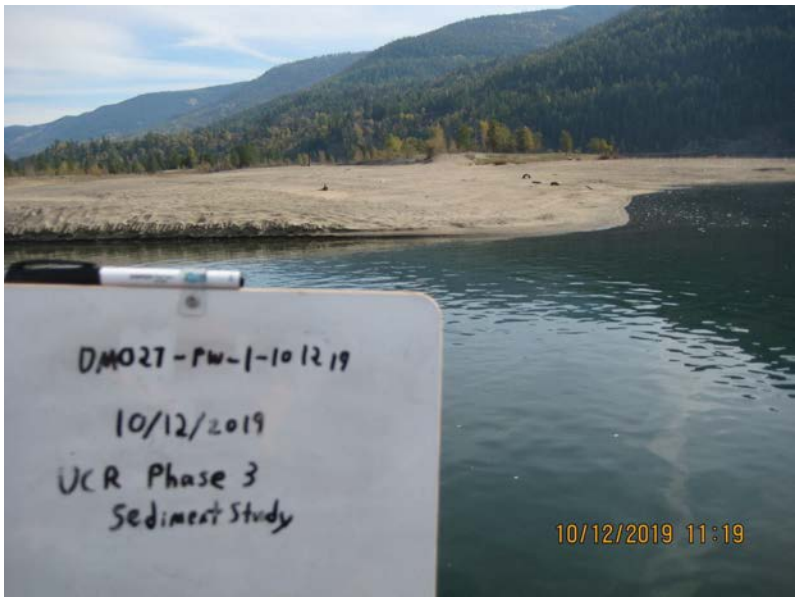
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Hamon



Original Photo Name: IMG_0540.JPG

Photo No.

DM027.6

Photo Taken: 10/12/2019

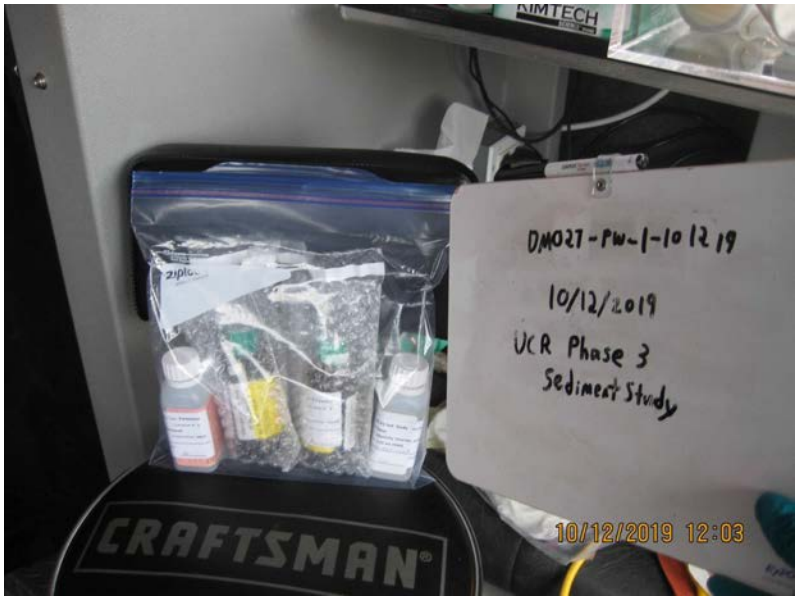
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0542.JPG

Photo No.

DM027.7

Photo Taken: 10/12/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0007.JPG

Photo No.

DM032.1

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0008.JPG

Photo No.

DM032.2

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: P1000540.jpg

Photo No.

DM033.1

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

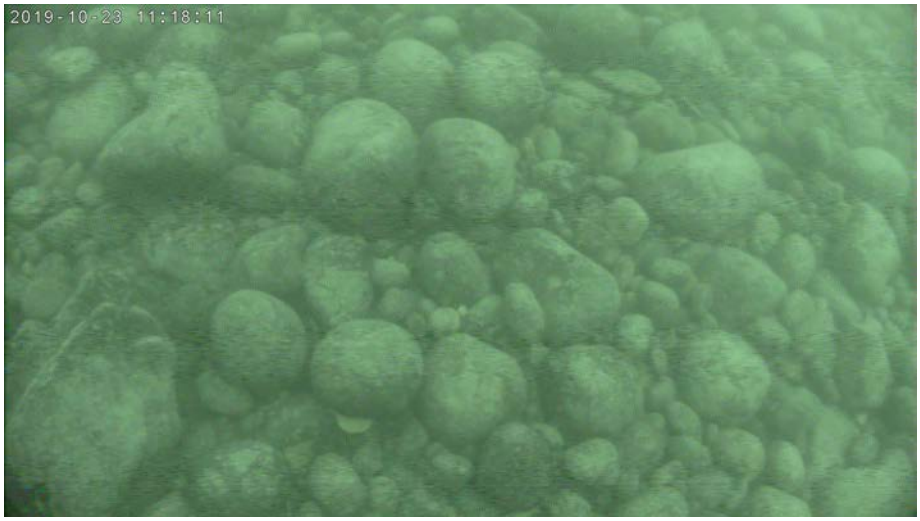


Photo No.

DM033.2

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DM033_20191023_1118_Strata.jpg

Photo No.

DM034.1

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000539.jpg

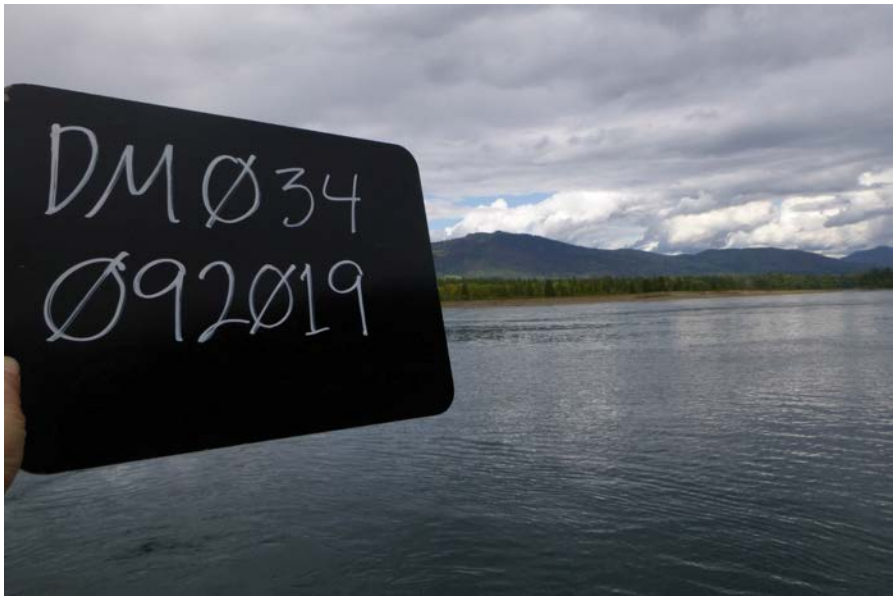


Photo No.

DM034.2

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000564.jpg

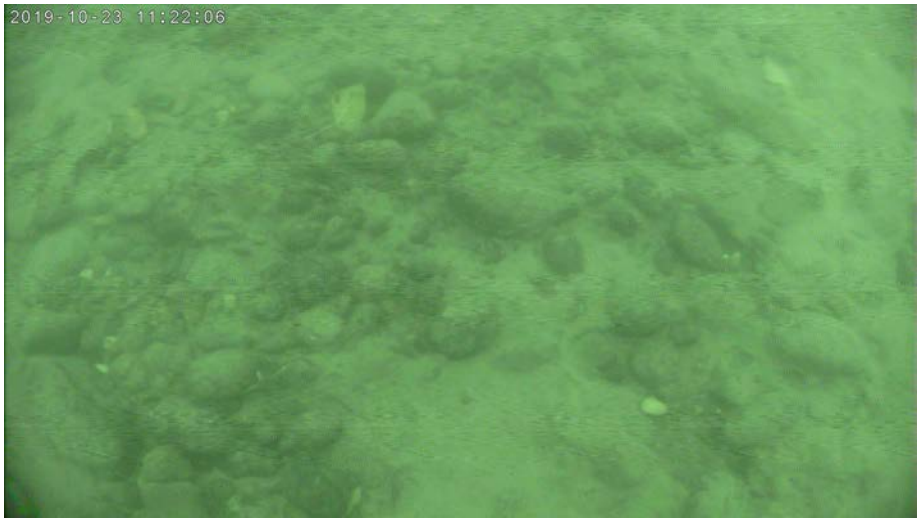


Photo No.

DM034.3

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DM034_20191023_1122_Strata.jpg

Photo No.

DM035.1

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000566.jpg

Photo No.

DM035.2

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Original Photo Name: DSCF0002.JPG

Photo No.

DM035.3

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0003.JPG

Photo No.

DM035.4

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0004.JPG

Photo No.

DM035.5

Photo Taken: 10/12/2019

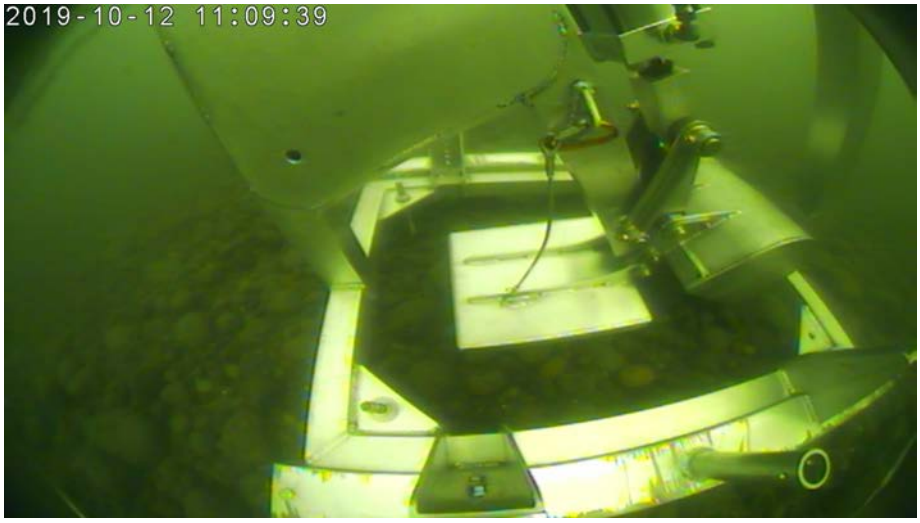
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected



Original Photo Name: DM035_Cayuse_20191012_1109_Strata.jpg

Photo No.

DM035.6

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0002.JPG

Photo No.

DM036.1

Photo Taken: 10/8/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Photo No.

DM036.2

Photo Taken: 10/18/2019

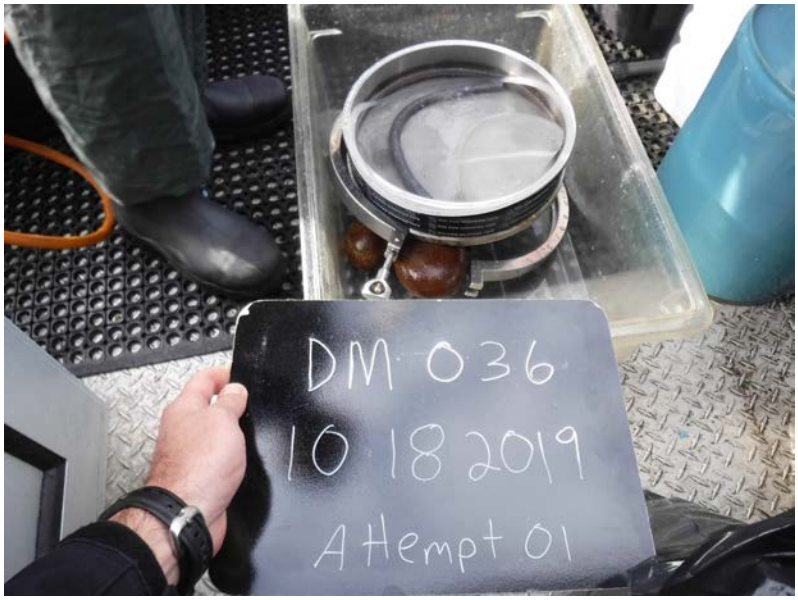
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0002.JPG

Photo No.

DM036.3

Photo Taken: 10/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0003.JPG

Photo No.

DM036.4

Photo Taken: 10/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0004.JPG

Photo No.

DM036.5

Photo Taken: 10/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Freeze Grab

Original Photo Name: DSCF0005.JPG

Photo No.

DM036.6

Photo Taken: 10/18/2019

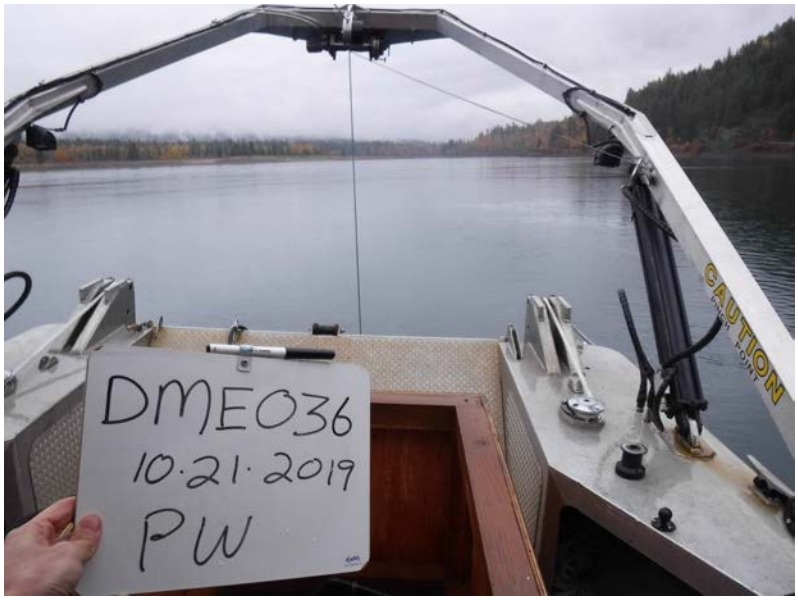
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

Freeze Grab



Original Photo Name: DSCF0003.JPG

Photo No.

DM036.7

Photo Taken: 10/21/2019

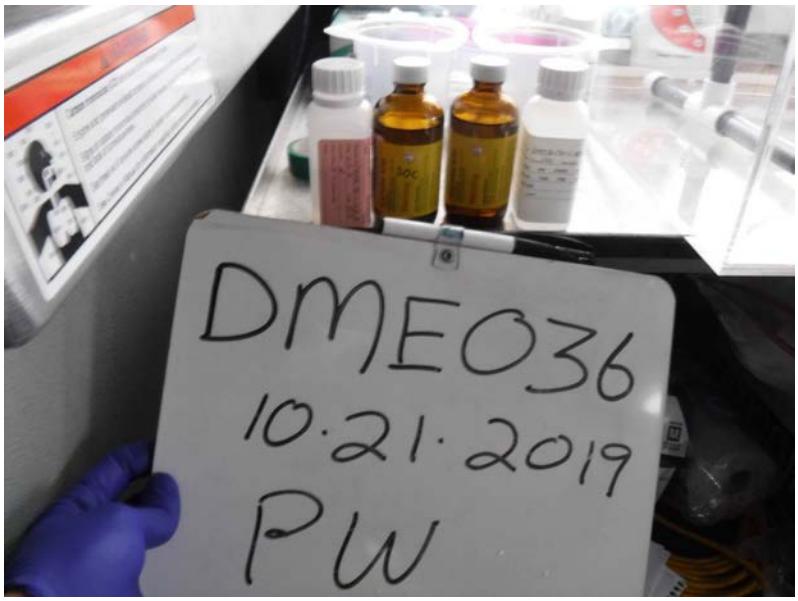
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0004.JPG

Photo No.

DM036.8

Photo Taken: 10/21/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

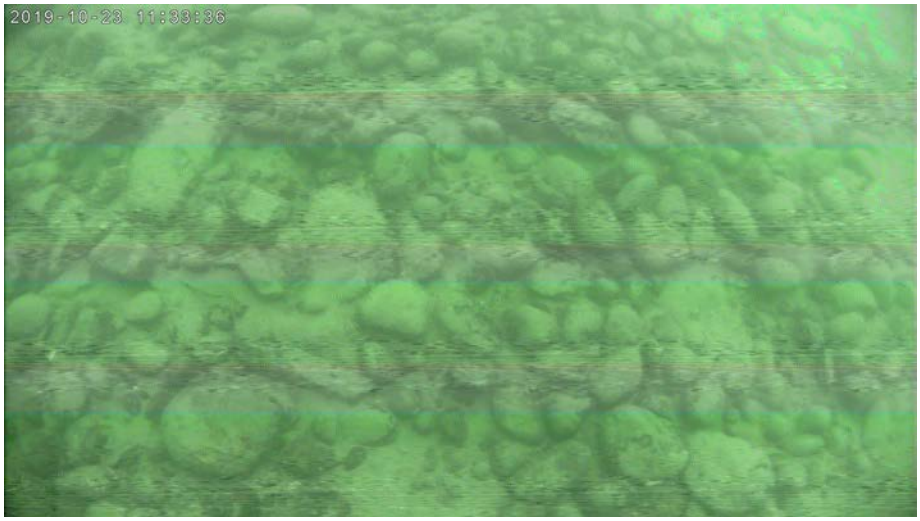


Photo No.

DM037.1

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DM037_20191023_1133_Strata.jpg

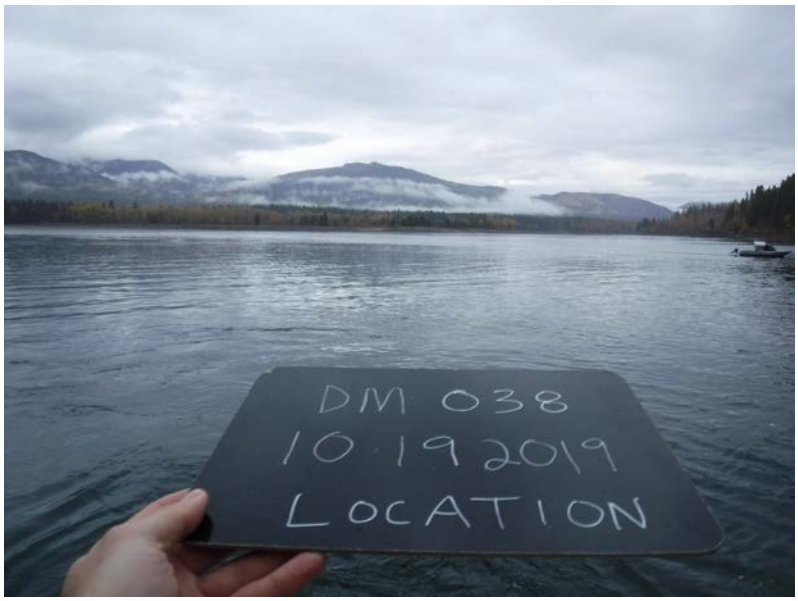


Photo No.

DM038.1

Photo Taken: 10/19/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0001.JPG

Original Photo Name: DSCF0002.JPG

Photo No.

DM038.2

Photo Taken: 10/19/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0003.JPG

Photo No.

DM038.3

Photo Taken: 10/19/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0004.JPG

Photo No.

DM038.4

Photo Taken: 10/19/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

Freeze Grab

Original Photo Name: DSCF0001.JPG

Photo No.

DM038.5

Photo Taken: 10/21/2019

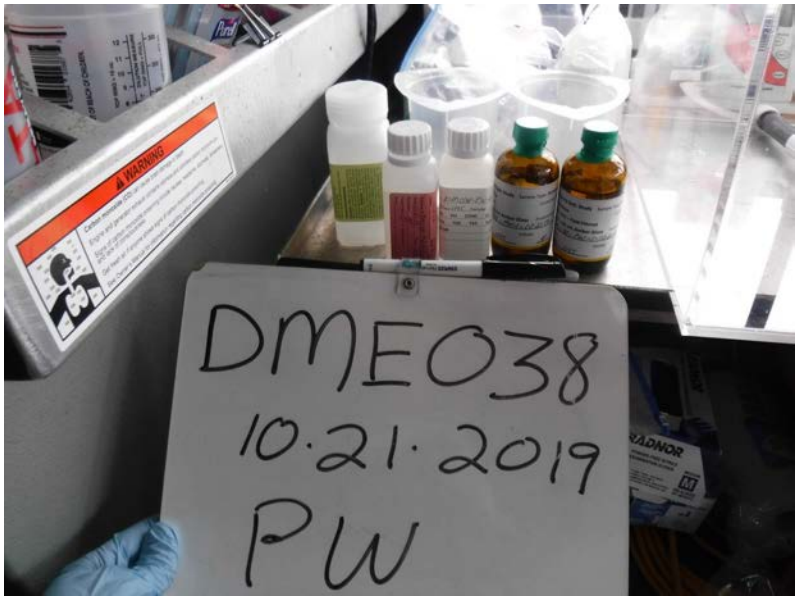
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0002.JPG

Photo No.

DM038.6

Photo Taken: 10/21/2019

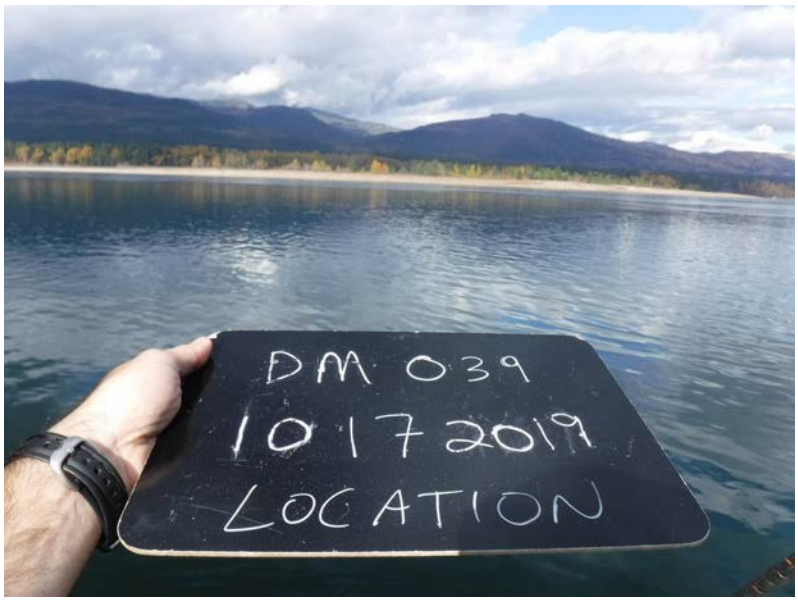
Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DSCF0009.JPG

Photo No.

DM039.1

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0010.JPG

Photo No.

DM039.2

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0011.JPG

Photo No.

DM039.3

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0012.JPG

Photo No.

DM039.4

Photo Taken: 10/17/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

Freeze Grab

Original Photo Name: DSCF0001.JPG

Photo No.

DM040.1

Photo Taken: 9/16/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.JPG

Photo No.

DM040.2

Photo Taken: 9/16/2019

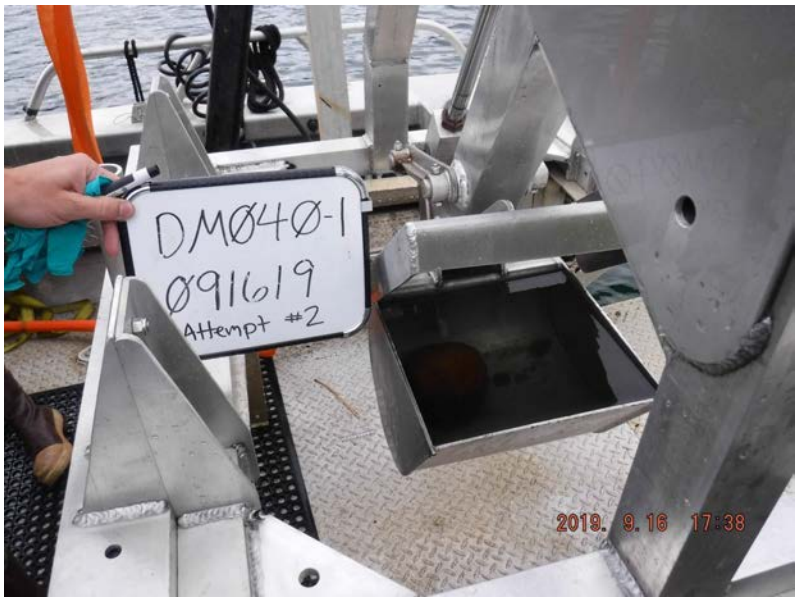
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DSCF0004.JPG

Photo No.

DM040.3

Photo Taken: 9/16/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0005.JPG

Photo No.

DM040.4

Photo Taken: 9/16/2019

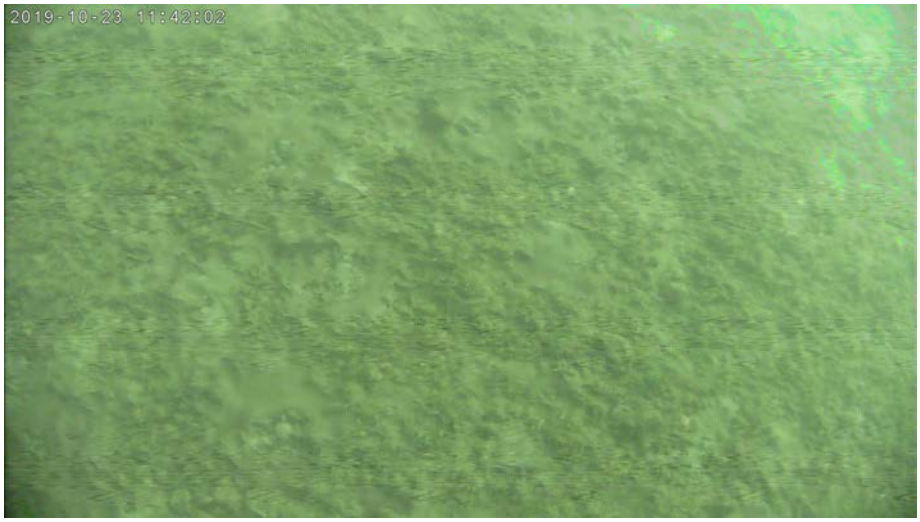
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected



Original Photo Name: DM040_20191023_1142_Strata.jpg

Photo No.

DM040.5

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Photo No.

DM041.1

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0003.jpg

Photo No.

DM041.2

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0004.jpg

Photo No.

DM041.3

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0006.jpg

Photo No.

DM041.4

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

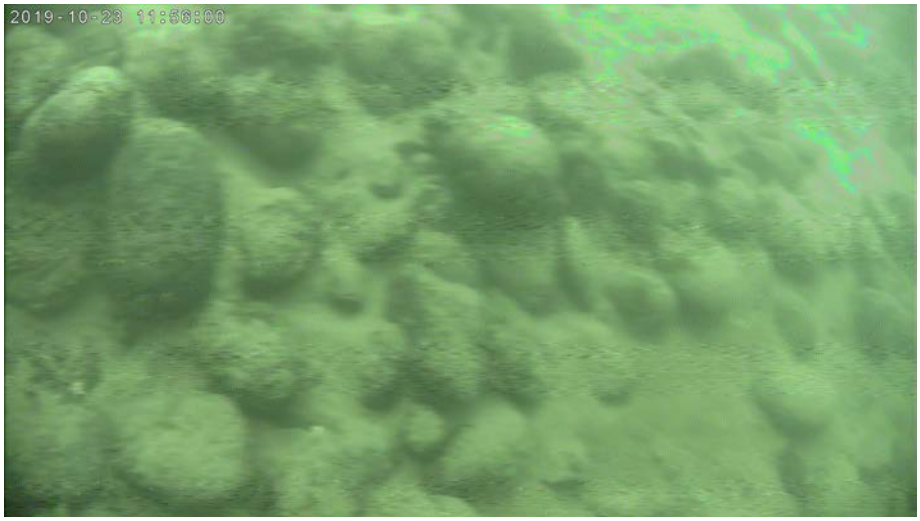


Photo No.

DM041.5

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DM041_20191023_1156_Strata.jpg

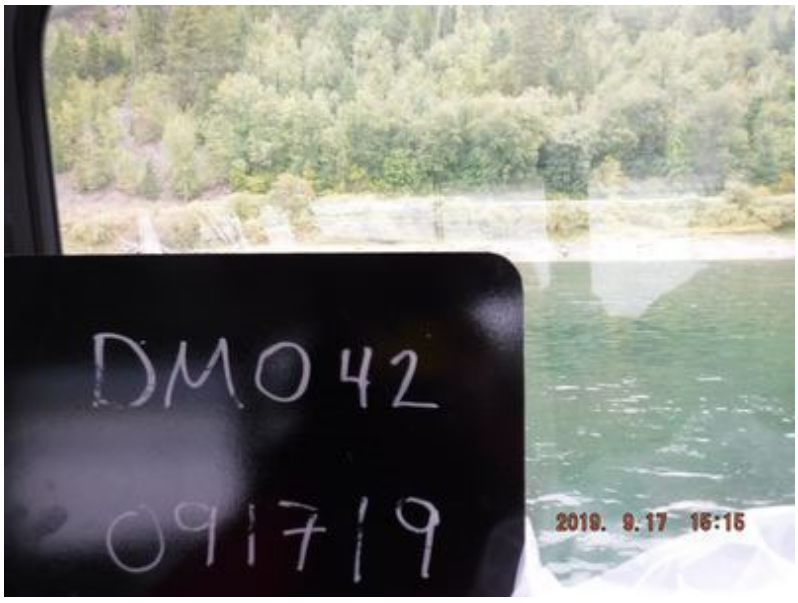


Photo No.

DM042.1

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0008.jpg

Original Photo Name: DSCF0007.jpg

Photo No.

DM042.2

Photo Taken: 9/17/2019

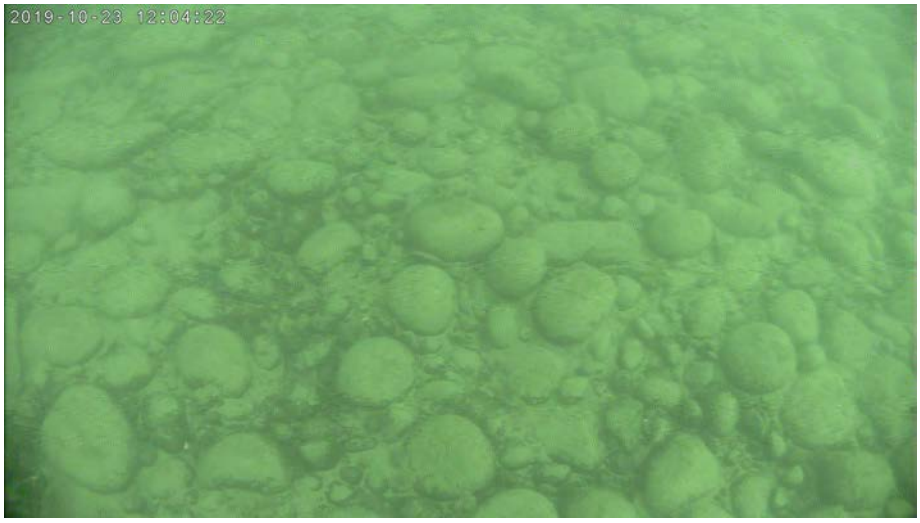
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DM042_20191023_1204_Strata.jpg

Photo No.

DM042.3

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0013.JPG

Photo No.

DM044.1

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0014.JPG

Photo No.

DM044.2

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0015.JPG

Photo No.

DM044.3

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DSCF0016.JPG

Photo No.

DM044.4

Photo Taken: 10/15/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DSCF0007.JPG

Photo No.

DM044.5

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Freeze Grab

Original Photo Name: DSCF0008.JPG

Photo No.

DM044.6

Photo Taken: 10/16/2019

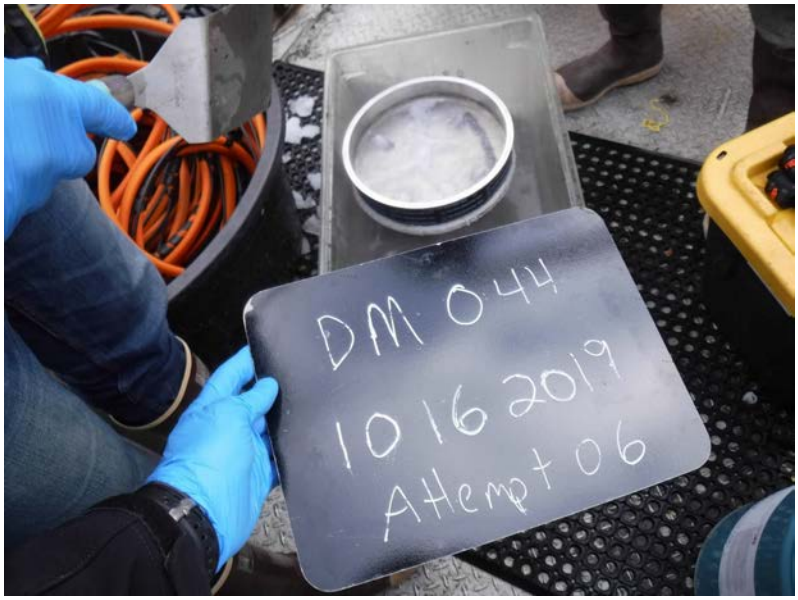
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Freeze Grab



Original Photo Name: DSCF0009.JPG

Photo No.

DM044.7

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

Freeze Grab

Original Photo Name: DSCF0010.JPG

Photo No.

DM044.8

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #7

Notes:

Freeze Grab

Original Photo Name: DSCF0011.JPG

Photo No.

DM044.9

Photo Taken: 10/16/2019

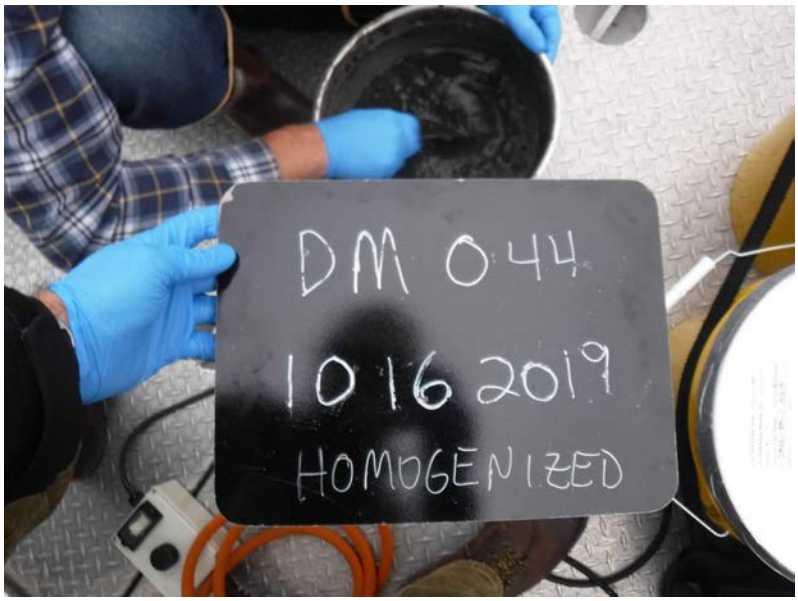
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #8

Notes:

Freeze Grab



Original Photo Name: DSCF0012.JPG

Photo No.

DM044.10

Photo Taken: 10/16/2019

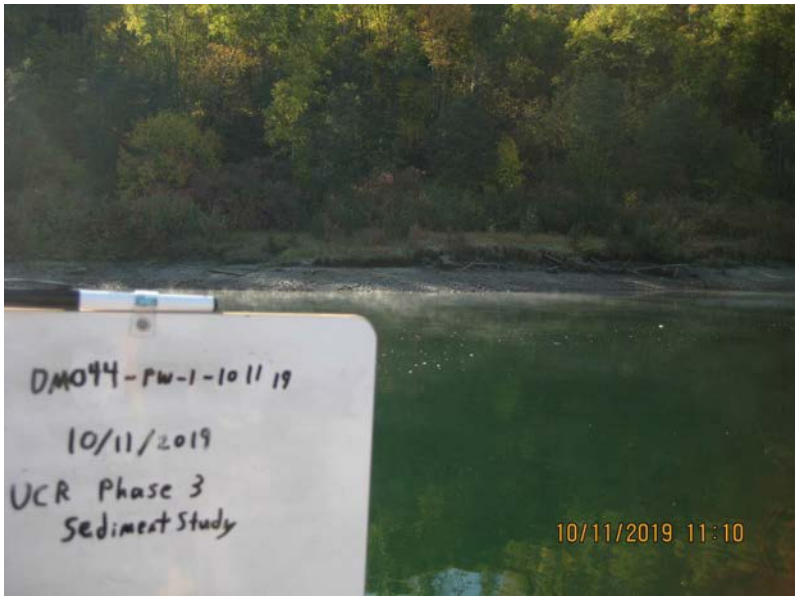
Vessel: Cayuse

Media Description:

BMI Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: IMG_0531.JPG

Photo No.

DM044.11

Photo Taken: 10/11/2019

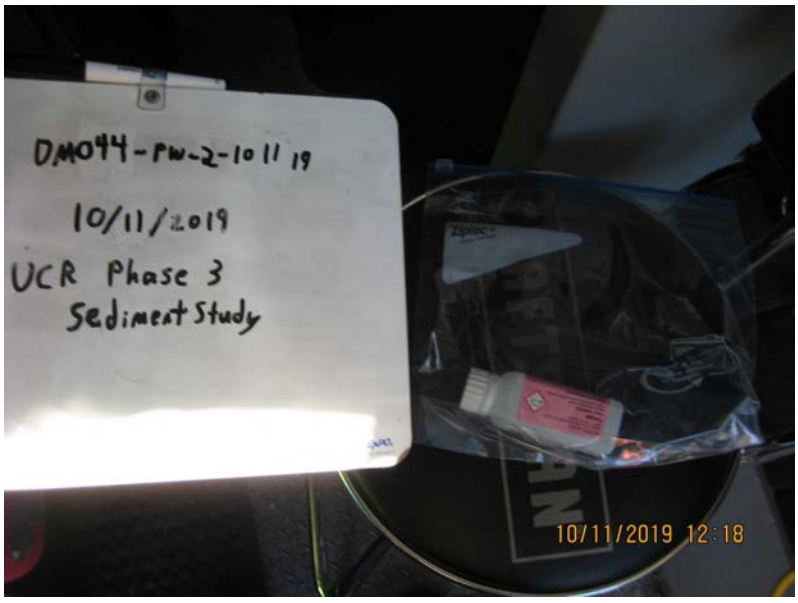
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0534.JPG

Photo No.

DM044.12

Photo Taken: 10/11/2019

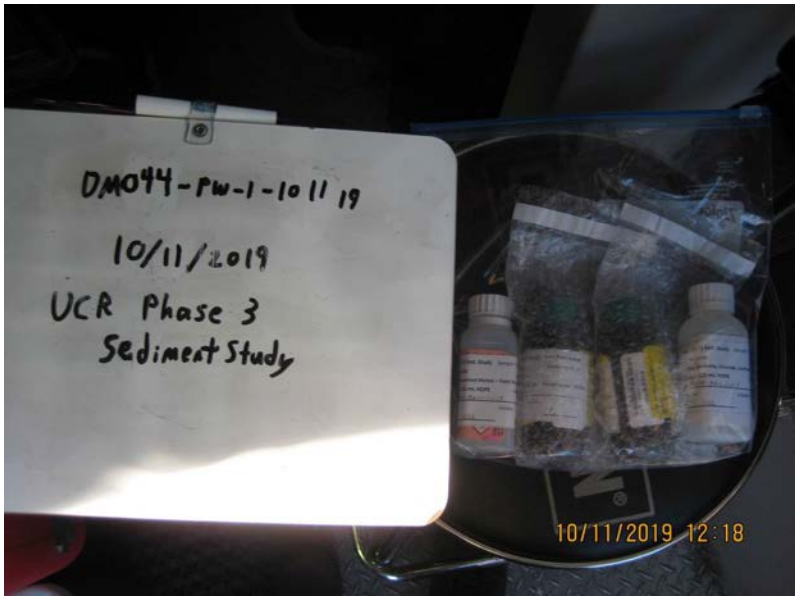
Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: IMG_0533.JPG

Photo No.

DM044.13

Photo Taken: 10/11/2019

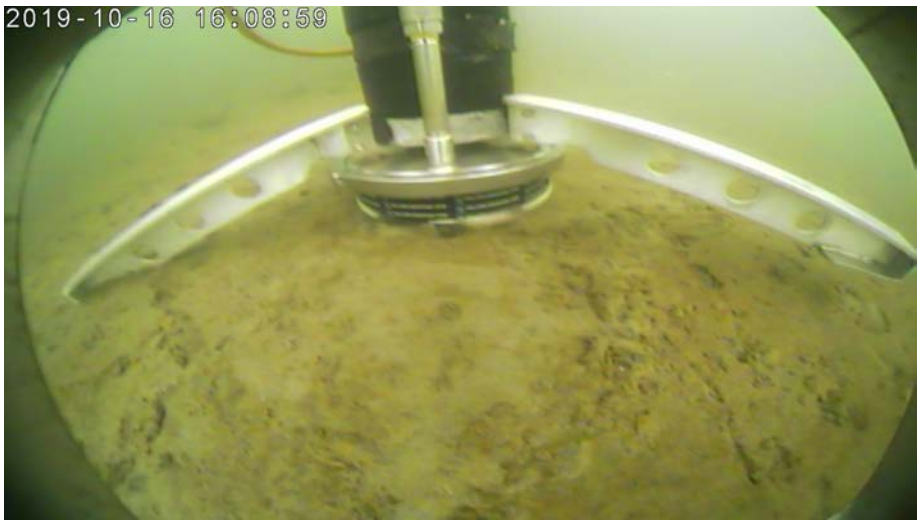
Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: DM044_Cayuse_20191016_1608_Strata.jpg

Photo No.

DM044.14

Photo Taken: 10/16/2019

Vessel: Tieton

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: P1000520.jpg

Photo No.

DM045.1

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000522.jpg

Photo No.

DM045.2

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: P1000525.jpg

Photo No.

DM045.3

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: P1000526.jpg

Photo No.

DM045.4

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: P1000527.jpg

Photo No.

DM045.5

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Lexan Tub

Original Photo Name: P1000529.jpg

Photo No.

DM045.6

Photo Taken: 9/19/2019

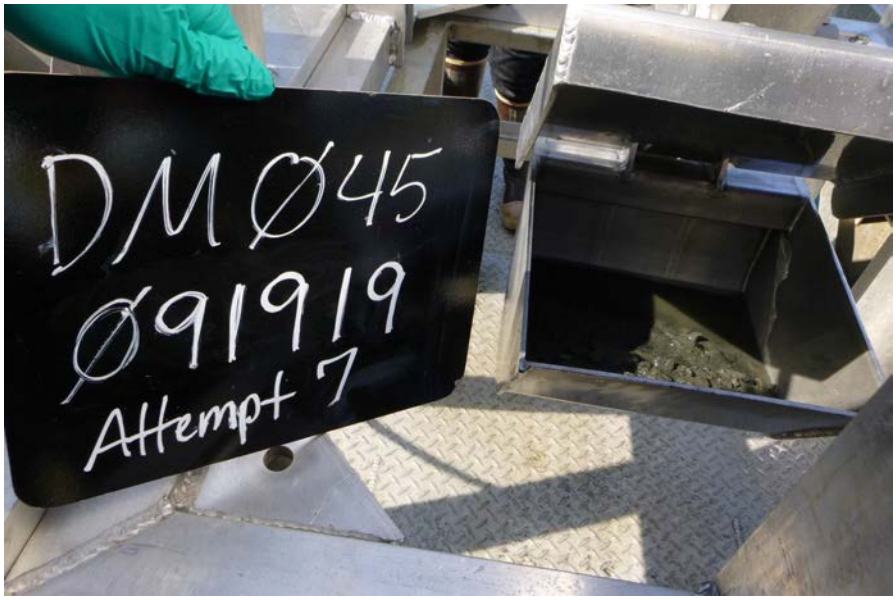
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Rejected



Original Photo Name: P1000530.jpg

Photo No.

DM045.7

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Hamon

Original Photo Name: P1000536.jpg

Photo No.

DM045.8

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: P1000532.jpg

Photo No.

DM045.9

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #8

Notes:

Rejected

Original Photo Name: P1000533.jpg

Photo No.

DM045.10

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #9

Notes:

In Hamon

Photo No.

DM045.11

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Filled Sample Jars and/or Bioassay Buckets

Notes:

N/A

Original Photo Name: P1000531.jpg

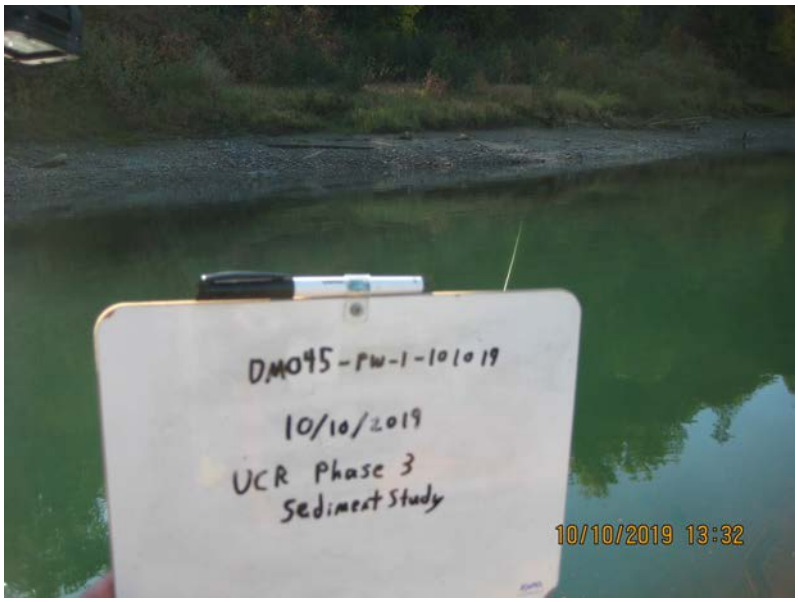


Photo No.

DM045.12

Photo Taken: 10/10/2019

Vessel: Tieton

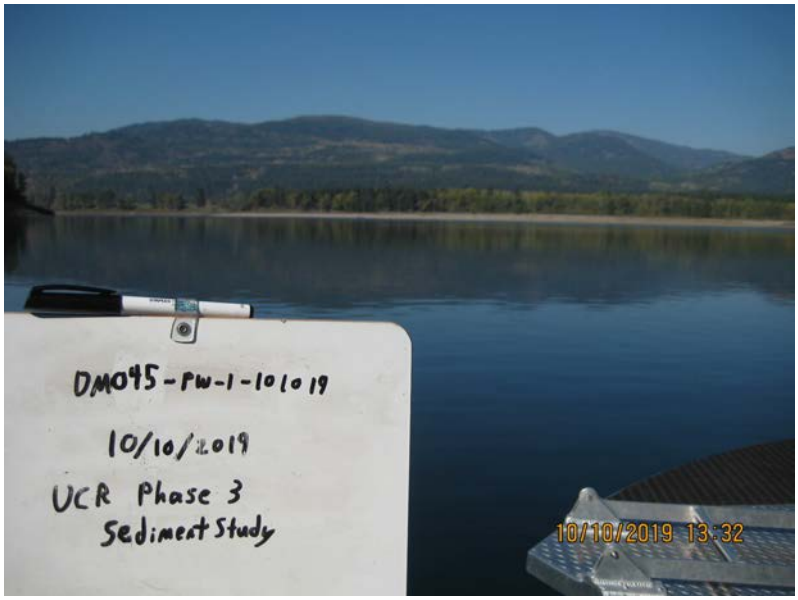
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0528.JPG



Original Photo Name: IMG_0529.JPG

Photo No.

DM045.13

Photo Taken: 10/10/2019

Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0530.JPG

Photo No.

DM045.14

Photo Taken: 10/10/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1000556.jpg

Photo No.

DM046.1

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000516.jpg

Photo No.

DM046.2

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000519.jpg

Photo No.

DM046.3

Photo Taken: 9/19/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: P1000557.jpg

Photo No.

DM046.4

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1000558.jpg

Photo No.

DM046.5

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: P1000563.jpg

Photo No.

DM046.6

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

BMI Sample

Notes:

In Bucket

Original Photo Name: P1000561.jpg

Photo No.

DM046.7

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: P1000560.jpg

Photo No.

DM046.8

Photo Taken: 9/20/2019

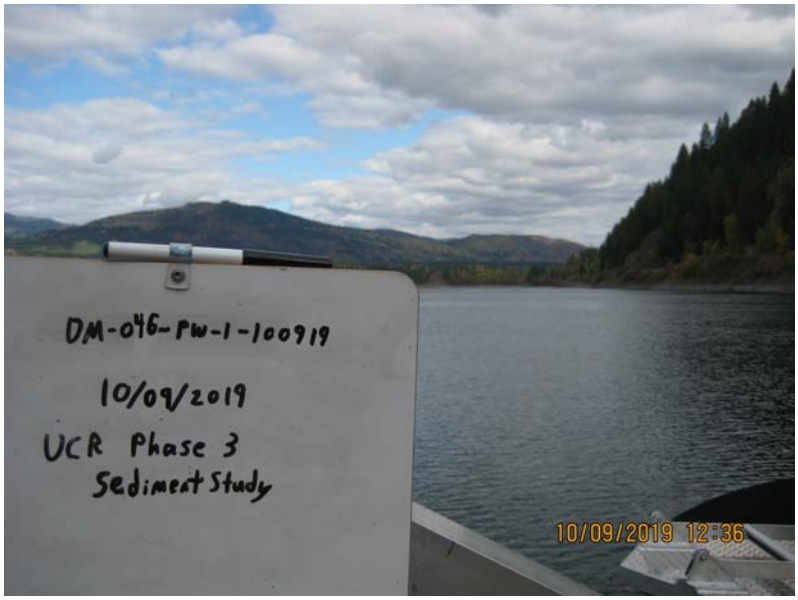
Vessel: Cayuse

Media Description:

Filled Sample Jars

Notes:

N/A



Original Photo Name: IMG_0522.JPG

Photo No.

DM046.9

Photo Taken: 10/9/2019

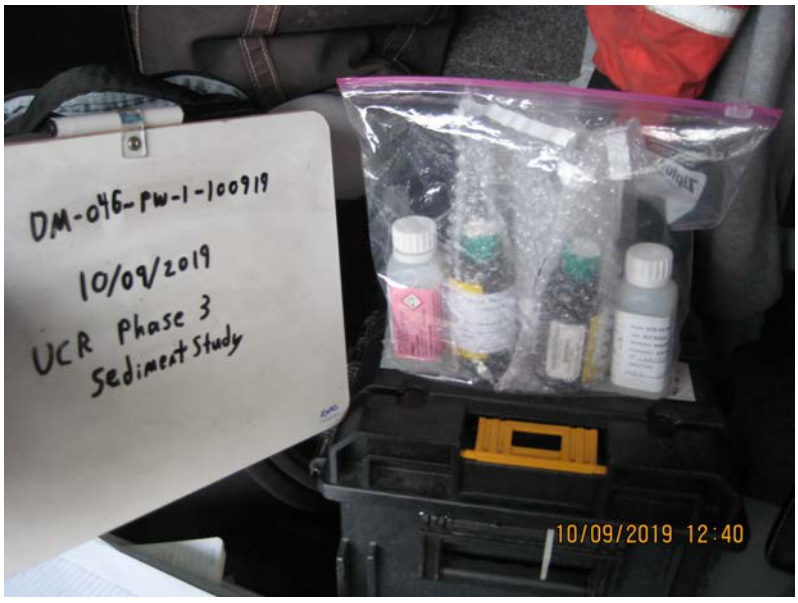
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0524.JPG

Photo No.

DM046.10

Photo Taken: 10/9/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0006.JPG

Photo No.

DM047.1

Photo Taken: 10/18/2019

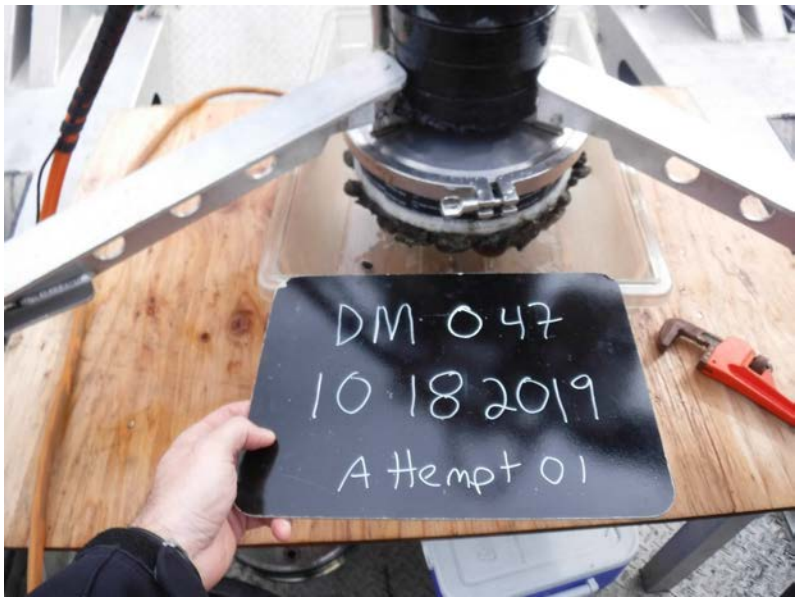
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0007.JPG

Photo No.

DM047.2

Photo Taken: 10/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Freeze Grab

Original Photo Name: DSCF0008.JPG

Photo No.

DM047.3

Photo Taken: 10/18/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #2

Notes:

Freeze Grab

Original Photo Name: DSCF0009.JPG

Photo No.

DM047.4

Photo Taken: 10/18/2019

Vessel: Cayuse

Media Description:

BMI Sample-Grab Attempt #3

Notes:

Freeze Grab

Original Photo Name: DSCF0015.jpg

Photo No.

DM048.1

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0016.jpg

Photo No.

DM048.2

Photo Taken: 9/17/2019

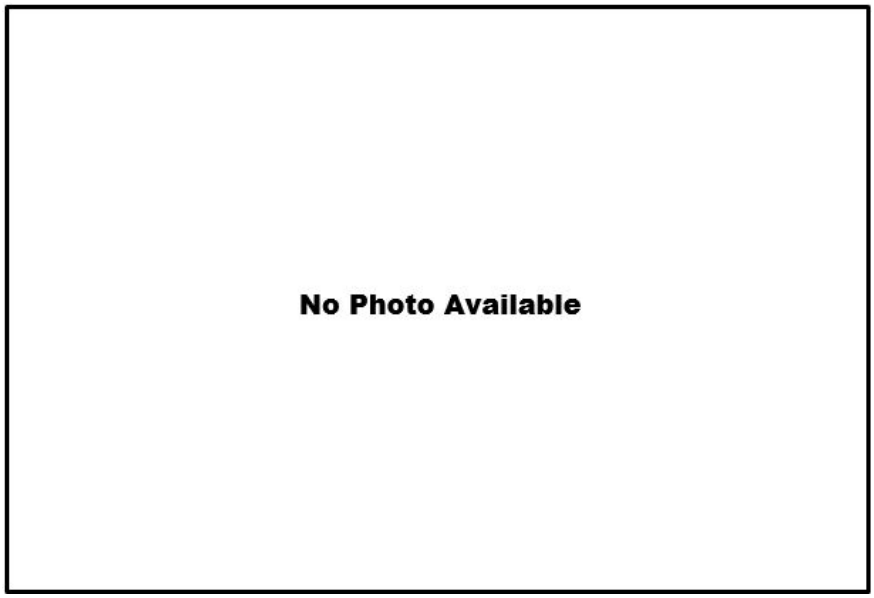
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DM048_NoPhotoAvailable_Placeholder.jpg

Photo No.

DM048.3

Photo Taken: 10/8/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

Photo Inadvertently Not Captured as part of Field Documentation

Original Photo Name: DSCF0036.jpg

Photo No.

DM049.1

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

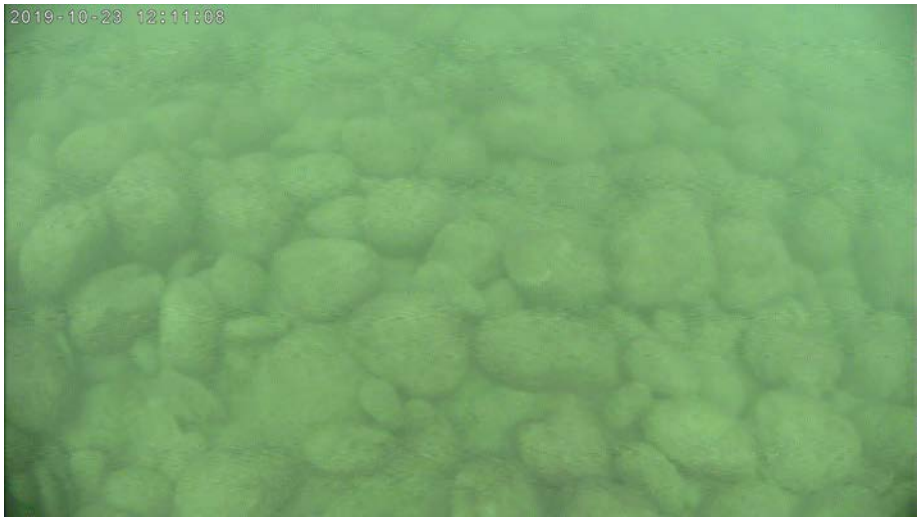


Photo No.

DM049.2

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DM049_20191023_1211_Strata.jpg

Photo No.

DM050.1

Photo Taken: 9/20/2019

Vessel: Cayuse

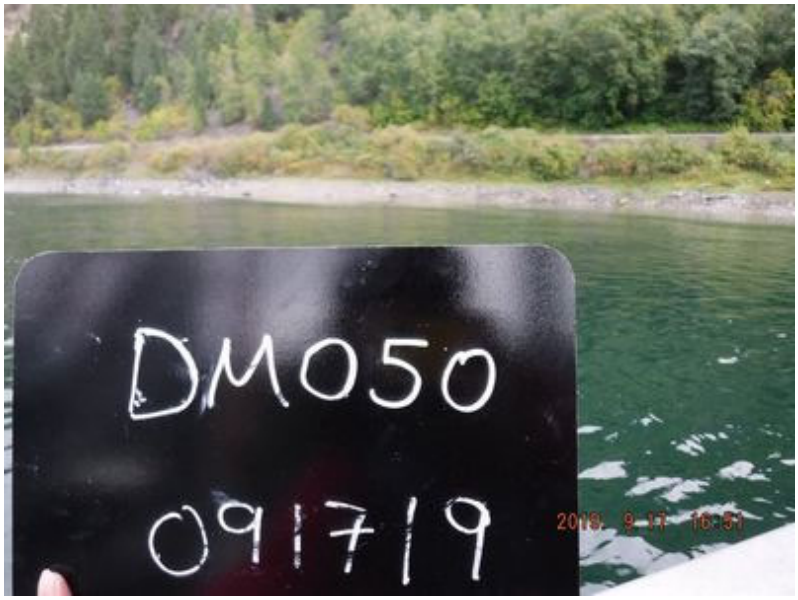
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000545.jpg



Original Photo Name: DSCF0017.jpg

Photo No.

DM050.2

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1000549.jpg

Photo No.

DM050.3

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Photo No.

DM050.4

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: P1000547.jpg

Photo No.

DM050.5

Photo Taken: 9/17/2019

Vessel: Cayuse

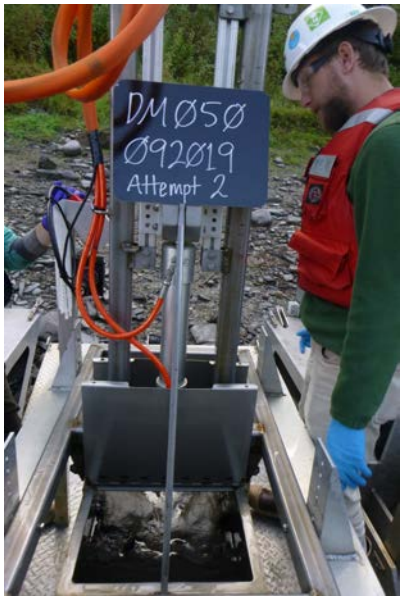
Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0018.jpg



Original Photo Name: P1000553.jpg

Photo No.

DM050.6

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1000554.jpg

Photo No.

DM050.7

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

BMI Sample

Notes:

In Bucket

Photo No.

DM050.8

Photo Taken: 9/20/2019

Vessel: Cayuse

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: P1000550.jpg

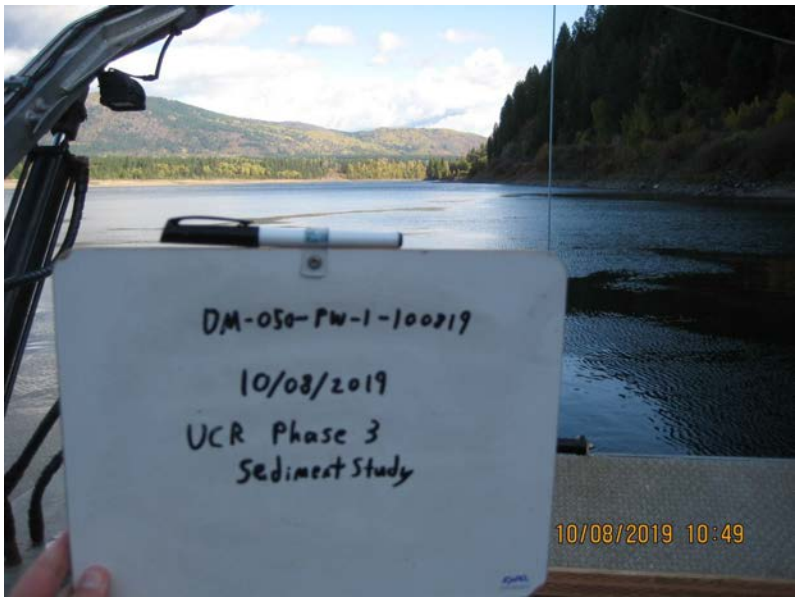


Photo No.

DM050.9

Photo Taken: 10/8/2019

Vessel: Tieton

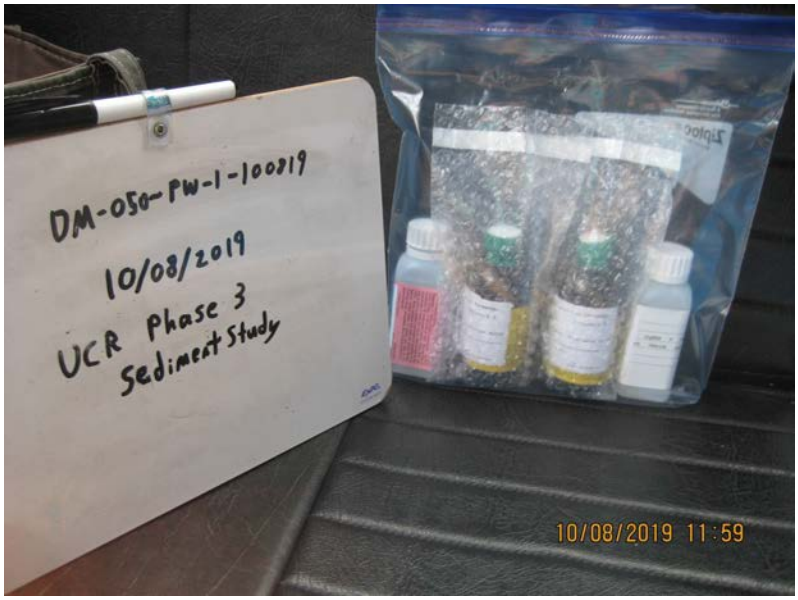
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: IMG_0519.JPG



Original Photo Name: IMG_0521.JPG

Photo No.

DM050.10

Photo Taken: 10/8/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0011.jpg

Photo No.

DM051.1

Photo Taken: 9/17/2019

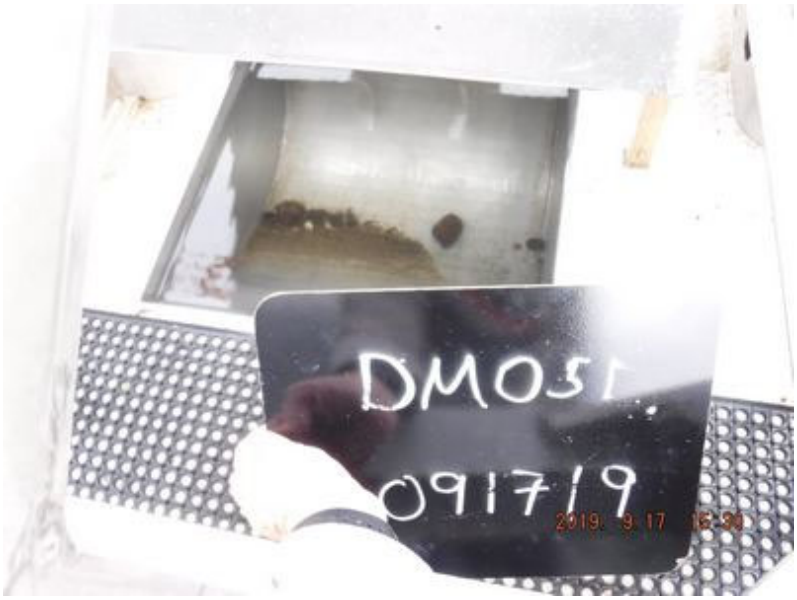
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DSCF0013.jpg

Photo No.

DM051.2

Photo Taken: 9/17/2019

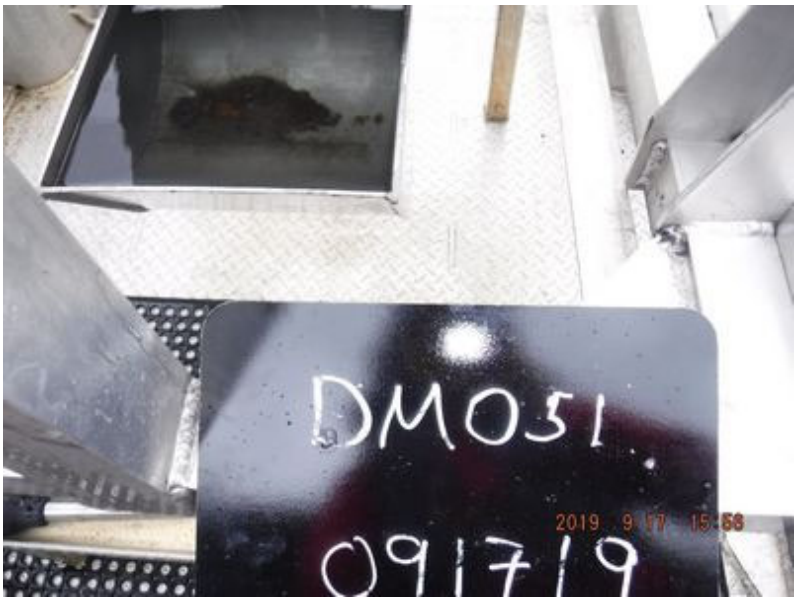
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DSCF0014.jpg

Photo No.

DM051.3

Photo Taken: 9/17/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

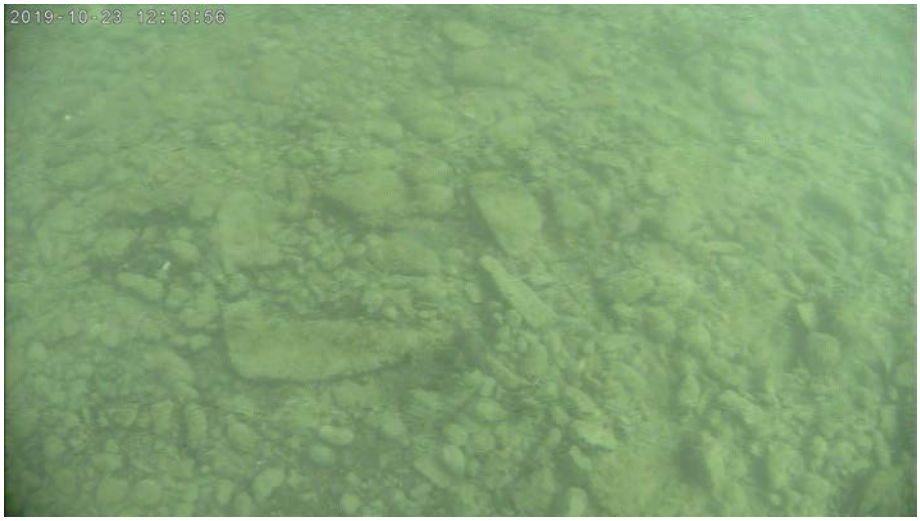


Photo No.

DM051.4

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DM051_20191023_1218_Strata.jpg

Photo No.

DM052.1

Photo Taken: 9/17/2019

Vessel: Cayuse

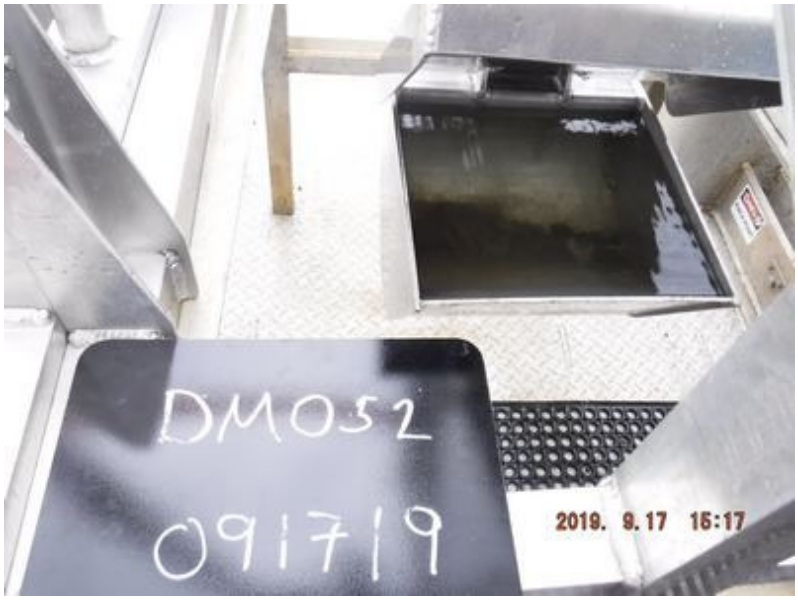
Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0009.jpg



Original Photo Name: DSCF0010.jpg

Photo No.

DM052.2

Photo Taken: 9/17/2019

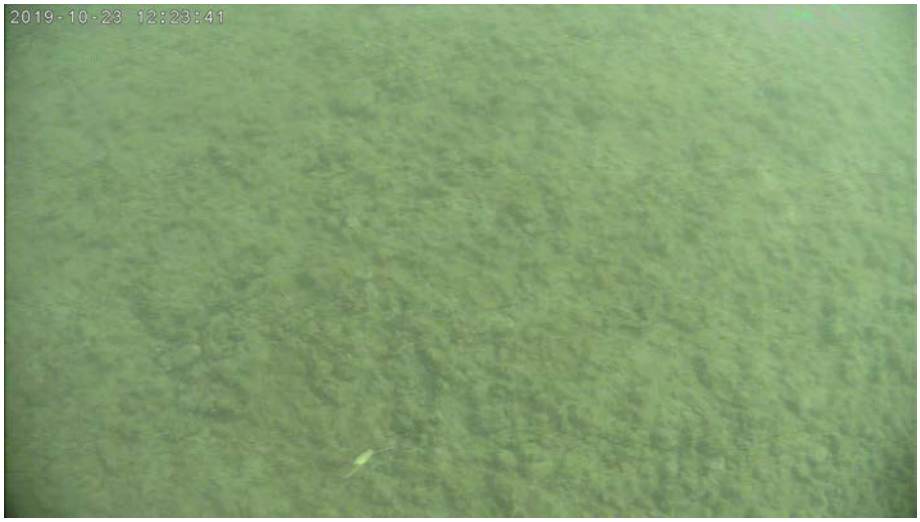
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DM052_20191023_1223_Strata.jpg

Photo No.

DM052.3

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0031.jpg

Photo No.

DM053.1

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0032.jpg

Photo No.

DM053.2

Photo Taken: 9/18/2019

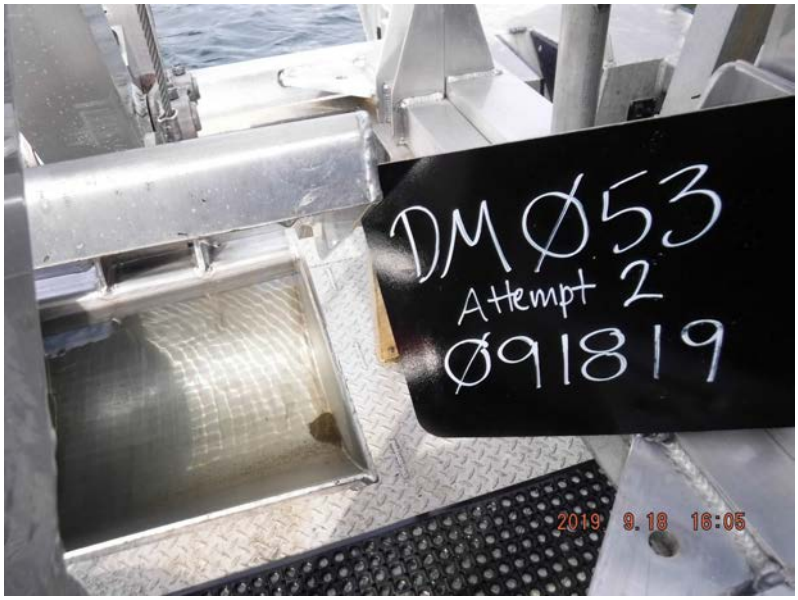
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DSCF0035.jpg

Photo No.

DM053.3

Photo Taken: 9/18/2019

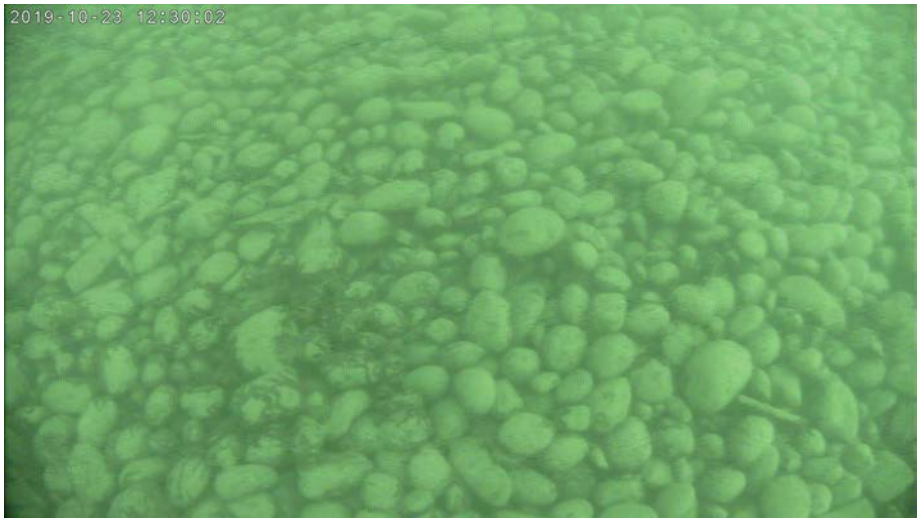
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected



Original Photo Name: DM053_20191023_1230_Strata.jpg

Photo No.

DM053.4

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: P1000538.jpg

Photo No.

DM054.1

Photo Taken: 9/19/2019

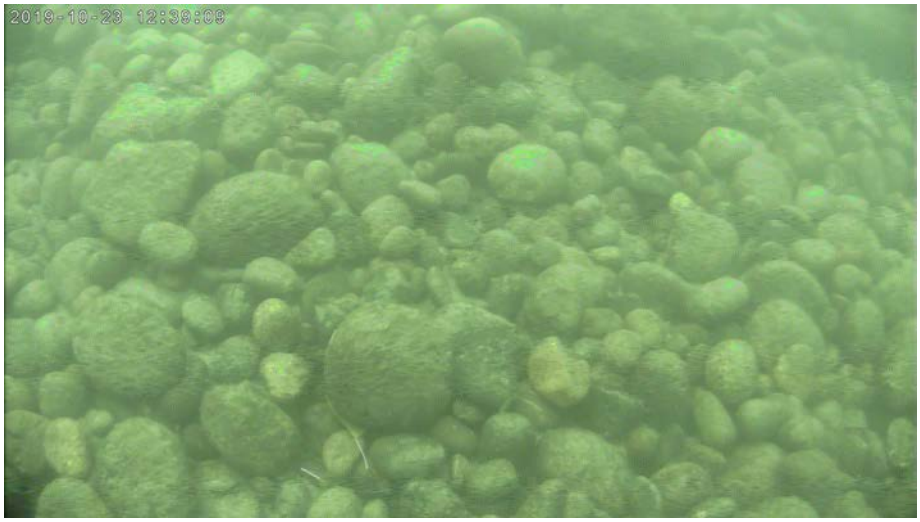
Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: DM054_20191023_1239_Strata.jpg

Photo No.

DM054.2

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

Original Photo Name: DSCF0001.jpg

Photo No.

DM057.1

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0005.jpg

Photo No.

DM057.2

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected

Original Photo Name: DSCF0008.jpg

Photo No.

DM057.3

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: DSCF0021.jpg

Photo No.

DM057.4

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: DSCF0013.jpg

Photo No.

DM057.5

Photo Taken: 9/18/2019

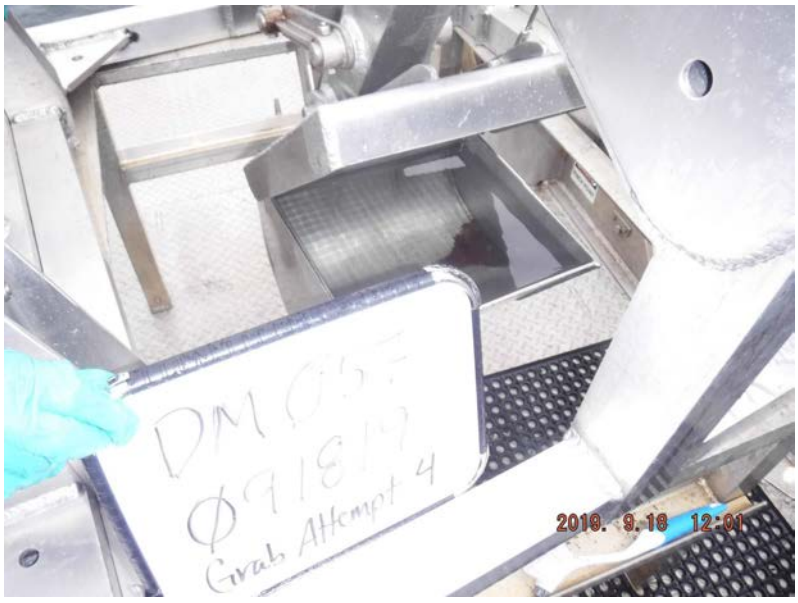
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected



Original Photo Name: DSCF0016.jpg

Photo No.

DM057.6

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0023.jpg

Photo No.

DM057.7

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Filled Sample Jars

Notes:

N/A

Original Photo Name: DSCF0005.JPG

Photo No.

DM061.1

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0005.JPG

Photo No.

DM061.2

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DM061_DSCF0001.JPG

Photo No.

DM061.3

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: DM061_DSCF0002.JPG

Photo No.

DM061.4

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

Rejected

Original Photo Name: DM061_DSCF0003.JPG

Photo No.

DM061.5

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

Rejected

Original Photo Name: DM061_DSCF0004.JPG

Photo No.

DM061.6

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DM061_DSCF0005.JPG

Photo No.

DM061.7

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

Rejected

Original Photo Name: DSCF0006.JPG

Photo No.

DM061.8

Photo Taken: 10/16/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Van Veen

Original Photo Name: DSCF0007.JPG

Photo No.

DM061.9

Photo Taken: 10/12/2019

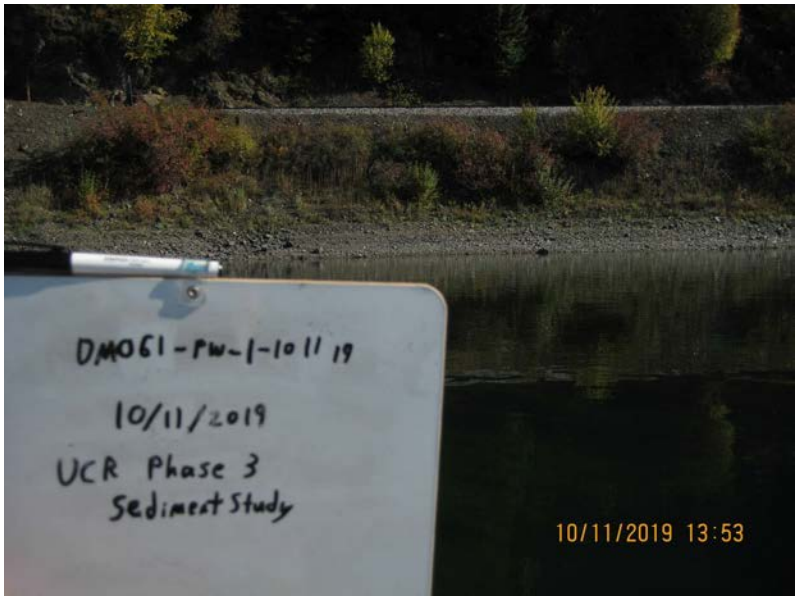
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: IMG_0535.JPG

Photo No.

DM061.10

Photo Taken: 10/11/2019

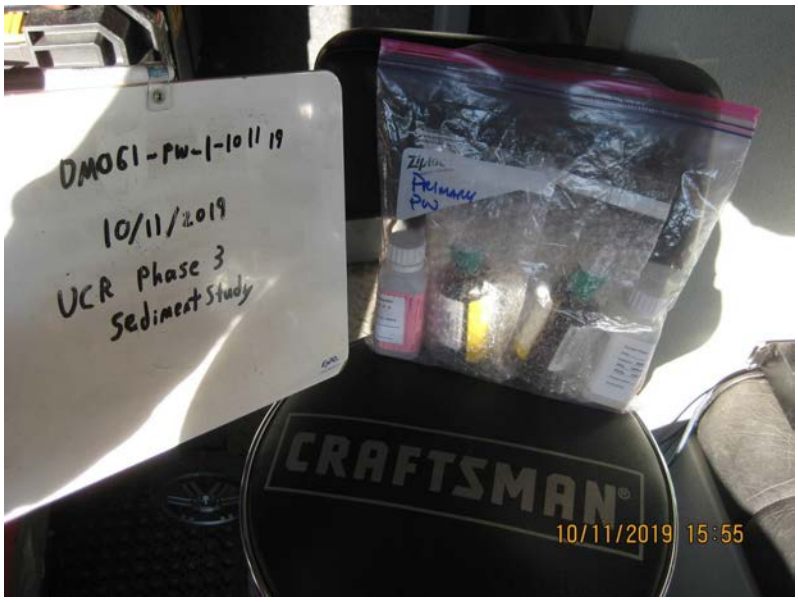
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: IMG_0539.JPG

Photo No.

DM061.11

Photo Taken: 10/11/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: DSCF0006.JPG

Photo No.

DM061.12

Photo Taken: 10/12/2019

Vessel: Cayuse

Media Description:

Sediment Sample

Notes:

N/A

Original Photo Name: DSCF0025.jpg

Photo No.

DM066.1

Photo Taken: 9/18/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: DSCF0027.jpg

Photo No.

DM066.2

Photo Taken: 9/18/2019

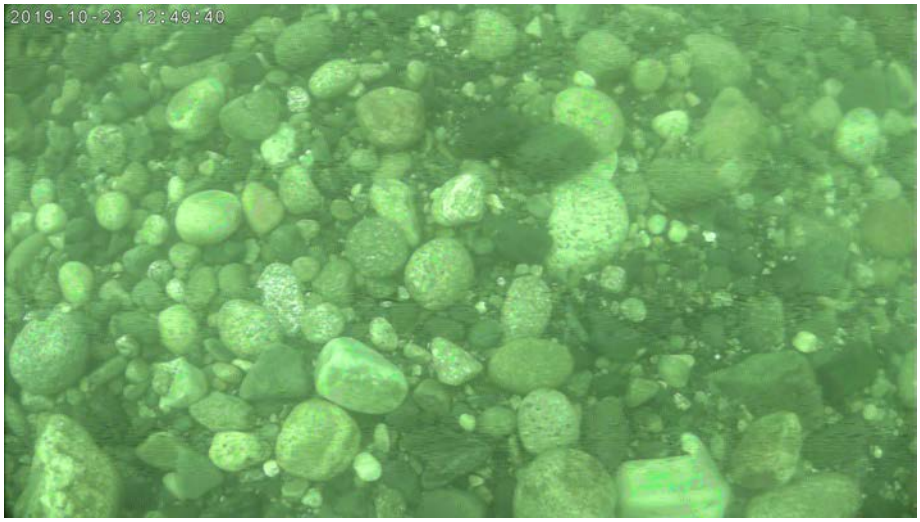
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

Rejected



Original Photo Name: DM066_20191023_1249_Strata.jpg

Photo No.

DM066.3

Photo Taken: 10/23/2019

Vessel: Cayuse

Media Description:

Strata Photo

Notes:

N/A

PHOTO LOG

REFERENCE AREA

Original Photo Name: P1010086.jpg

Photo No.

REF001.1

Photo Taken: 9/28/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010089.jpg

Photo No.

REF001.2

Photo Taken: 9/28/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: P1010087.jpg

Photo No.

REF001.3

Photo Taken: 9/28/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010090.jpg

Photo No.

REF001.4

Photo Taken: 9/28/2019

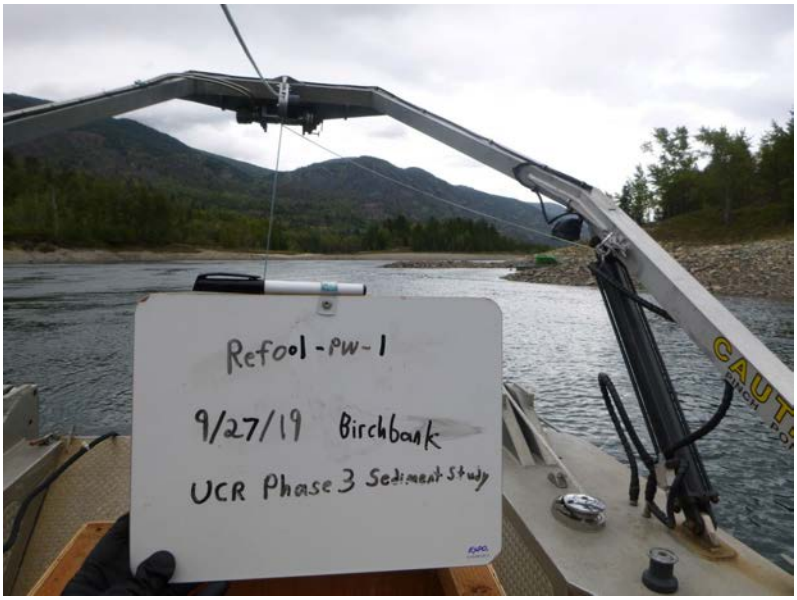
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen



Original Photo Name: P1020090.jpg

Photo No.

REF001.5

Photo Taken: 9/27/2019

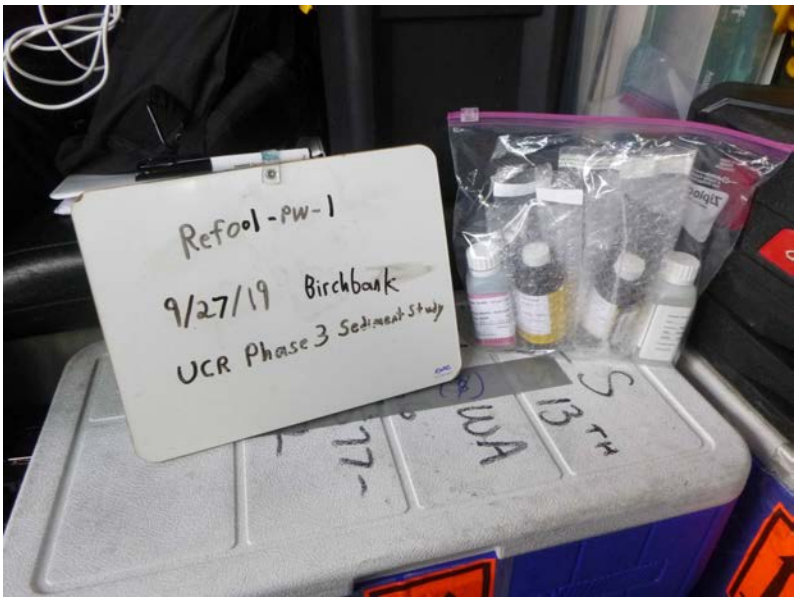
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020092.jpg

Photo No.

REF001.6

Photo Taken: 9/27/2019

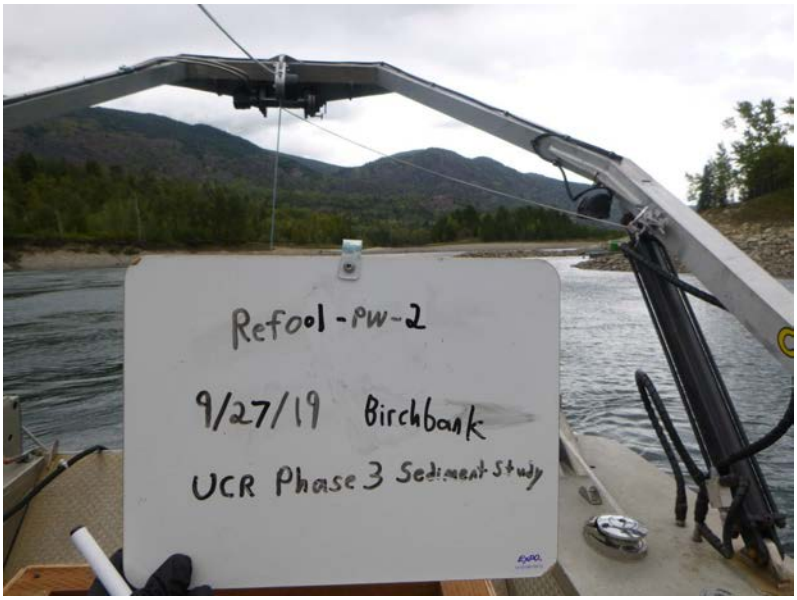
Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: P1020091.jpg

Photo No.

REF001.7

Photo Taken: 9/27/2019

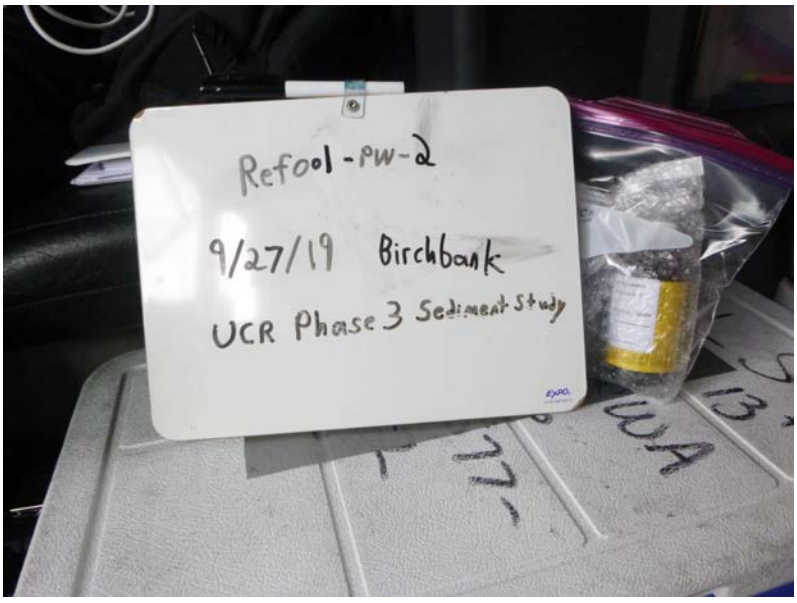
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020093.jpg

Photo No.

REF001.8

Photo Taken: 9/27/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010081.jpg

Photo No.

REF002.1

Photo Taken: 9/28/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010083.jpg

Photo No.

REF002.2

Photo Taken: 9/28/2019

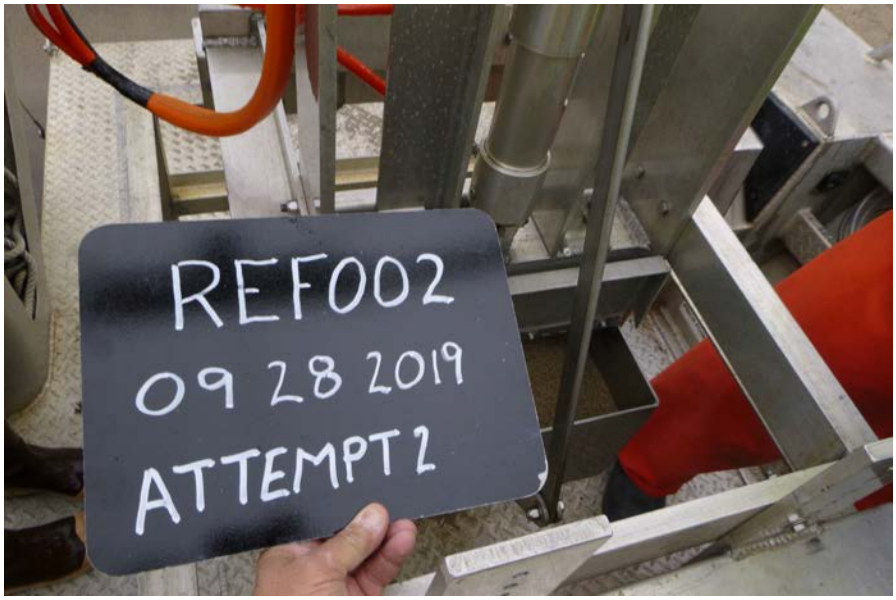
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub



Original Photo Name: P1010082.jpg

Photo No.

REF002.3

Photo Taken: 9/28/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010084.jpg

Photo No.

REF002.4

Photo Taken: 9/28/2019

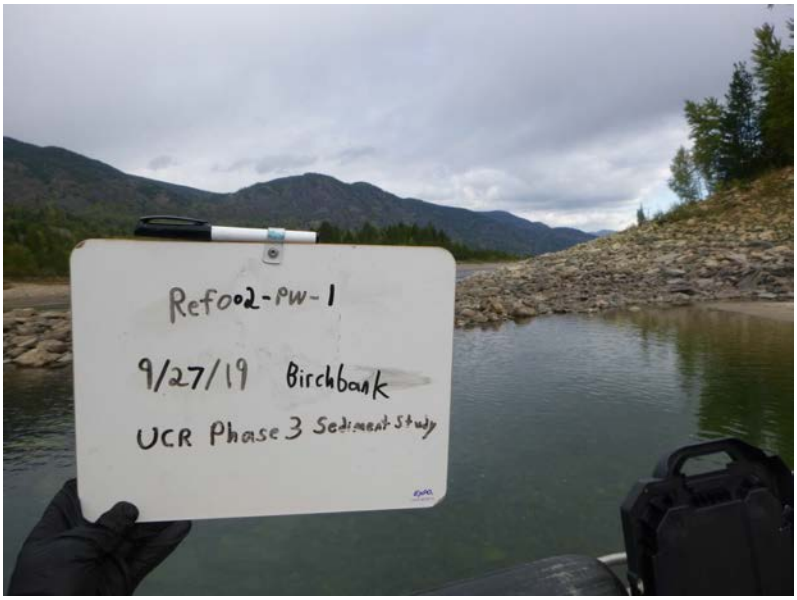
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #3

Notes:

In Van Veen



Original Photo Name: P1020088.jpg

Photo No.

REF002.5

Photo Taken: 9/27/2019

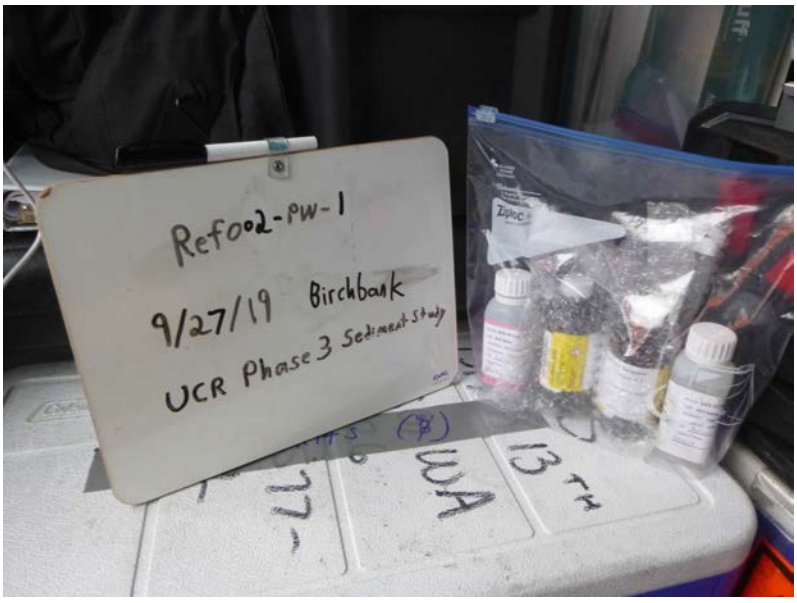
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020089.jpg

Photo No.

REF002.6

Photo Taken: 9/27/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010067.jpg

Photo No.

REF003.1

Photo Taken: 9/27/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010068.jpg

Photo No.

REF003.2

Photo Taken: 9/27/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

N/A

Original Photo Name: P1010069.jpg

Photo No.

REF003.3

Photo Taken: 9/27/2019

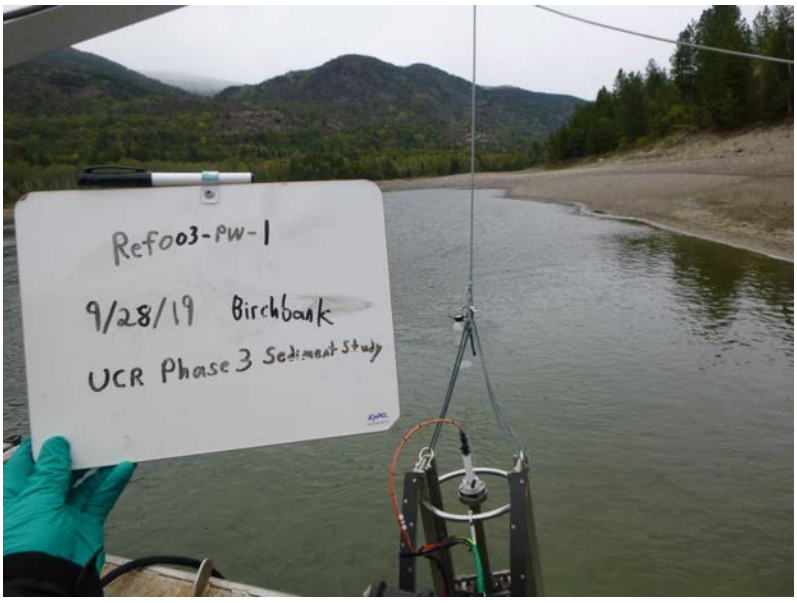
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: P1020101.jpg

Photo No.

REF003.4

Photo Taken: 9/28/2019

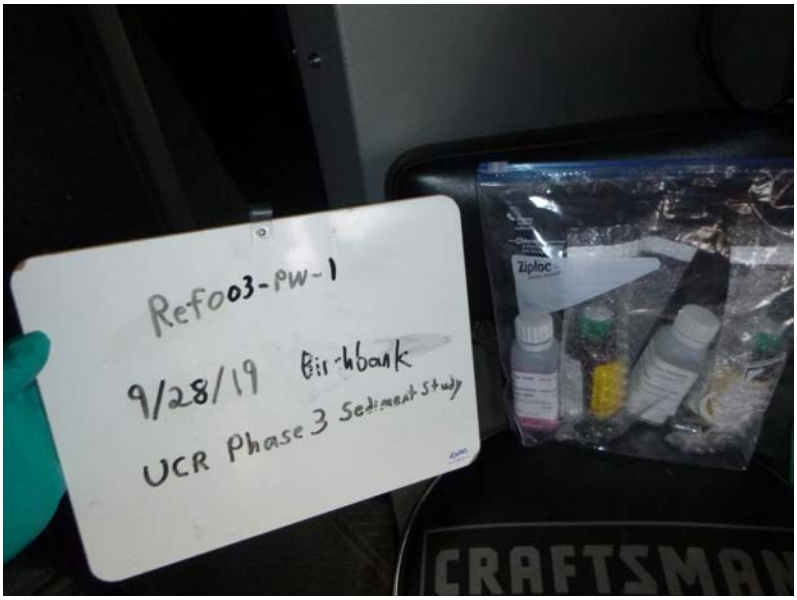
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020103.jpg

Photo No.

REF003.5

Photo Taken: 9/28/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1020102.jpg

Photo No.

REF003.6

Photo Taken: 9/28/2019

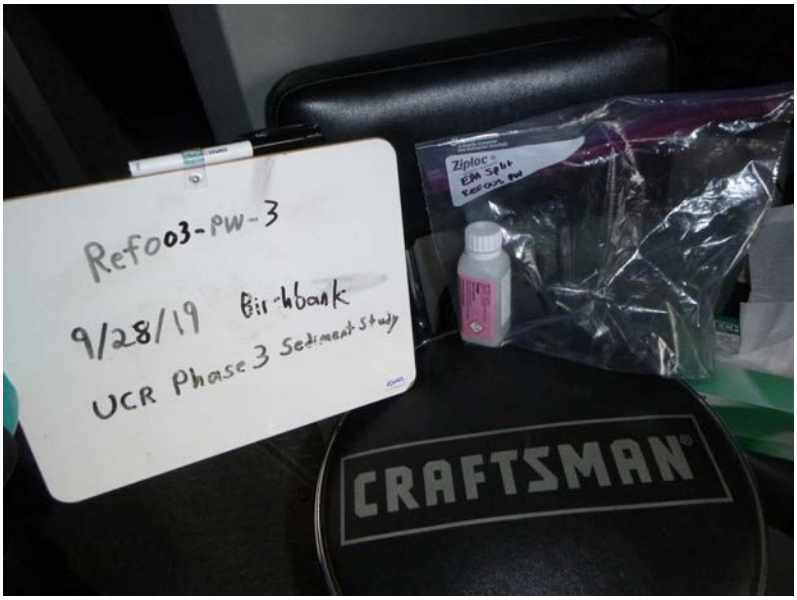
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020104.jpg

Photo No.

REF003.7

Photo Taken: 9/28/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010070.jpg

Photo No.

REF004.1

Photo Taken: 9/27/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Photo No.

REF004.2

Photo Taken: 9/27/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: P1010075.jpg

Photo No.

REF004.3

Photo Taken: 9/27/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Lexan Tub

Original Photo Name: P1010072.jpg

Original Photo Name: P1010071.jpg

Photo No.

REF004.4

Photo Taken: 9/27/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

N/A

Original Photo Name: P1010077.jpg

Photo No.

REF004.5

Photo Taken: 9/27/2019

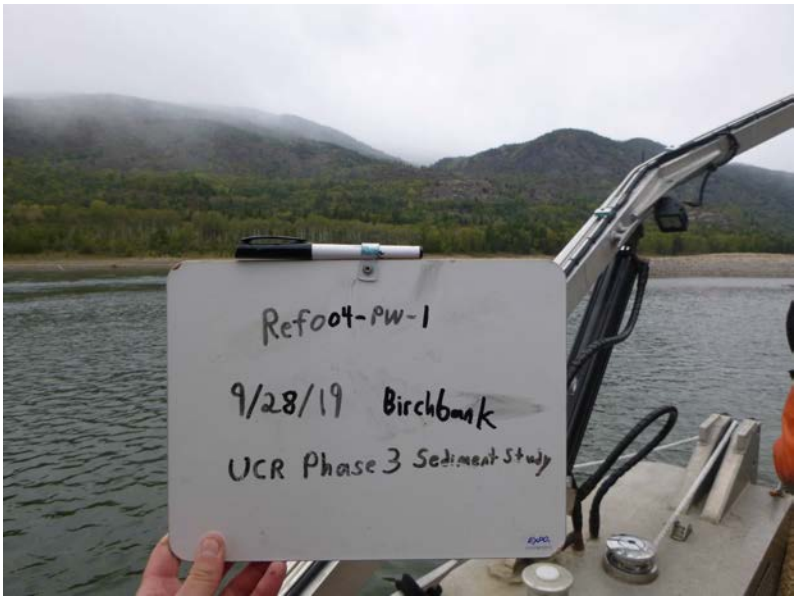
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

N/A



Original Photo Name: P1020105.jpg

Photo No.

REF004.6

Photo Taken: 9/28/2019

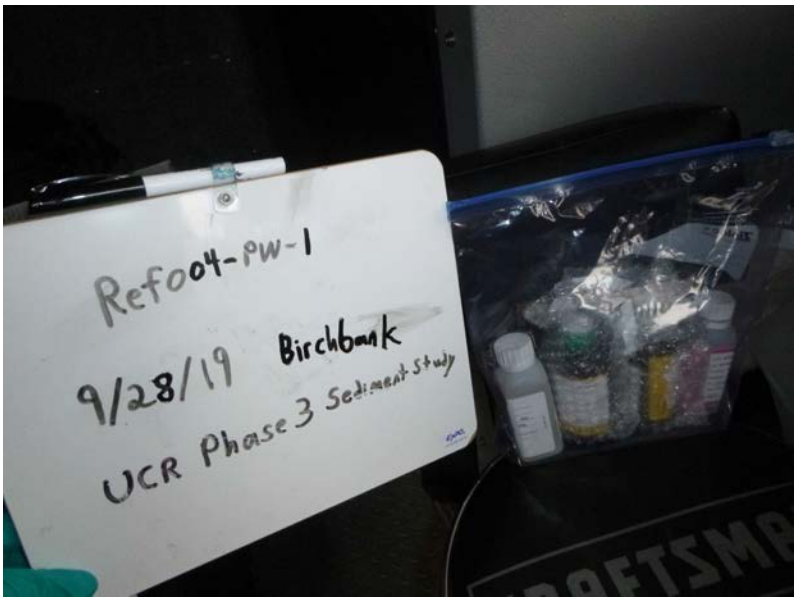
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020106.jpg

Photo No.

REF004.7

Photo Taken: 9/28/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010146.jpg

Photo No.

REF005.1

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010147.jpg

Photo No.

REF005.2

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: P1010148.jpg

Photo No.

REF005.3

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon

Original Photo Name: P1010149.jpg

Photo No.

REF005.4

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Hamon

Original Photo Name: P1010150.jpg

Photo No.

REF005.5

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #8

Notes:

In Hamon

Original Photo Name: P1010151.jpg

Photo No.

REF005.6

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #10

Notes:

In Hamon

Original Photo Name: P1010153.jpg

Photo No.

REF005.7

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #12

Notes:

In Hamon

Original Photo Name: P1010154.jpg

Photo No.

REF005.8

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #13

Notes:

In Hamon

Original Photo Name: P1010155.jpg

Photo No.

REF005.9

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #17

Notes:

In Hamon

Original Photo Name: P1010157.jpg

Photo No.

REF005.10

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #18

Notes:

In Hamon

Original Photo Name: P1010158.jpg

Photo No.

REF005.11

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #20

Notes:

In Hamon

Original Photo Name: P1010156.jpg

Photo No.

REF005.12

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1010159.jpg

Photo No.

REF005.13

Photo Taken: 10/3/2019

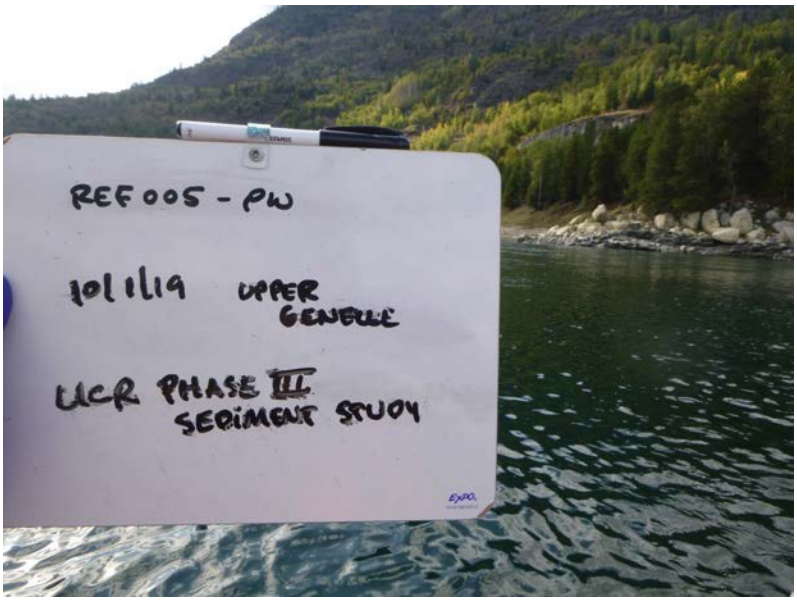
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #22

Notes:

In Hamon



Original Photo Name: P1020112.jpg

Photo No.

REF005.14

Photo Taken: 10/1/2019

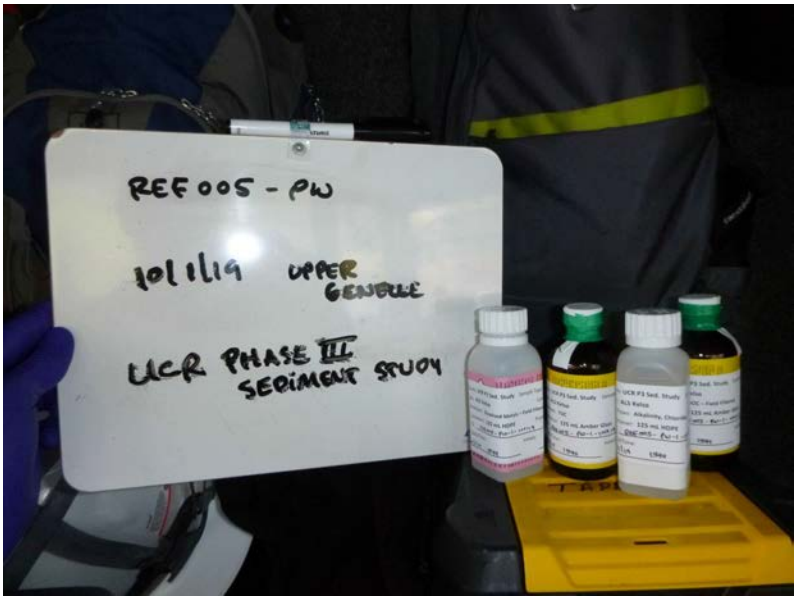
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020114.jpg

Photo No.

REF005.15

Photo Taken: 10/1/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010129.jpg

Photo No.

REF006.1

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010117.jpg

Photo No.

REF006.2

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010130.jpg

Photo No.

REF006.3

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: P1010131.jpg

Photo No.

REF006.4

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: P1010132.jpg

Photo No.

REF006.5

Photo Taken: 10/2/2019

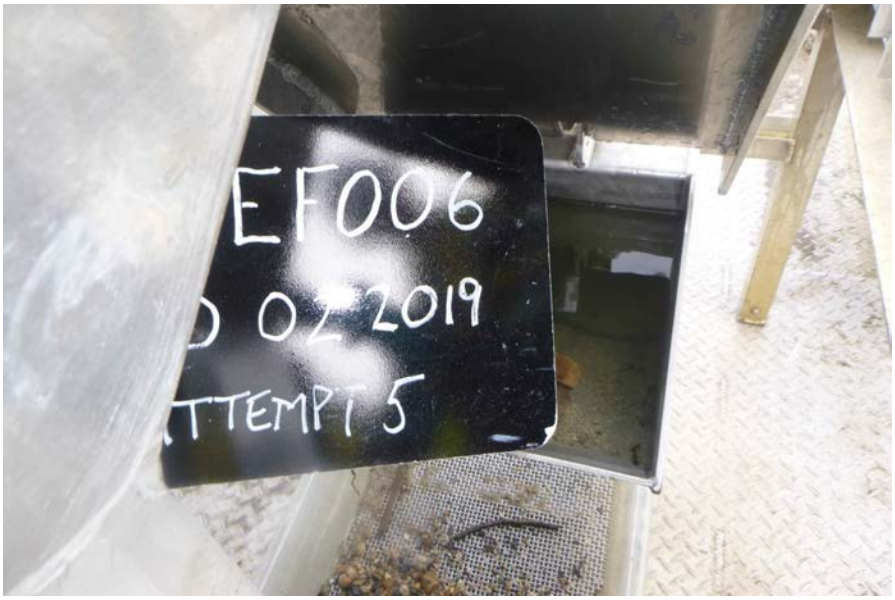
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon



Original Photo Name: P1010133.jpg

Photo No.

REF006.6

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: P1010135.jpg

Photo No.

REF006.7

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon

Original Photo Name: P1010137.jpg

Photo No.

REF006.8

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Hamon

Original Photo Name: P1010138.jpg

Photo No.

REF006.9

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #8

Notes:

In Hamon

Original Photo Name: P1010141.jpg

Photo No.

REF006.10

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #11

Notes:

In Hamon

Original Photo Name: P1010139.jpg

Photo No.

REF006.11

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1010140.jpg

Photo No.

REF006.12

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

BMI Sample- Gravel Fraction

Notes:

N/A

Original Photo Name: P1010136.jpg

Photo No.

REF006.13

Photo Taken: 10/2/2019

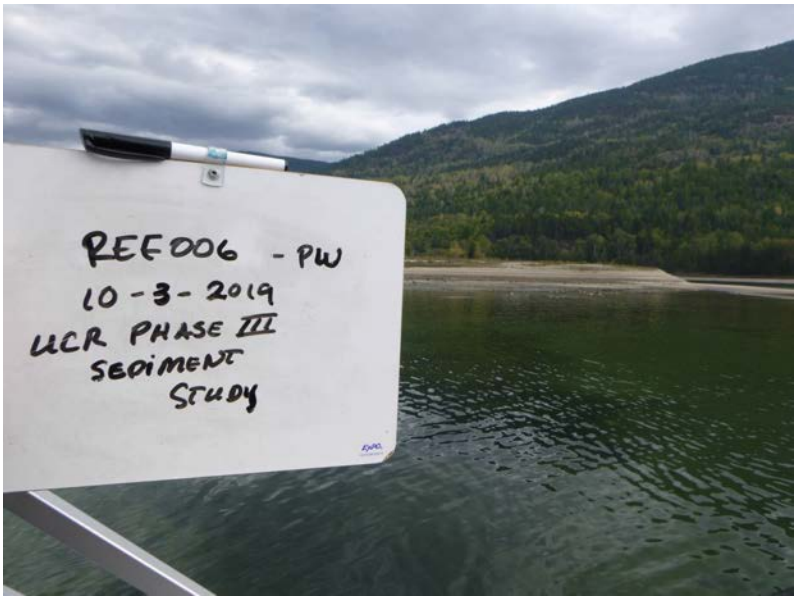
Vessel: Cayuse

Media Description:

BMI Sample- Gravel Fraction

Notes:

N/A



Original Photo Name: P1020131.jpg

Photo No.

REF006.14

Photo Taken: 10/3/2019

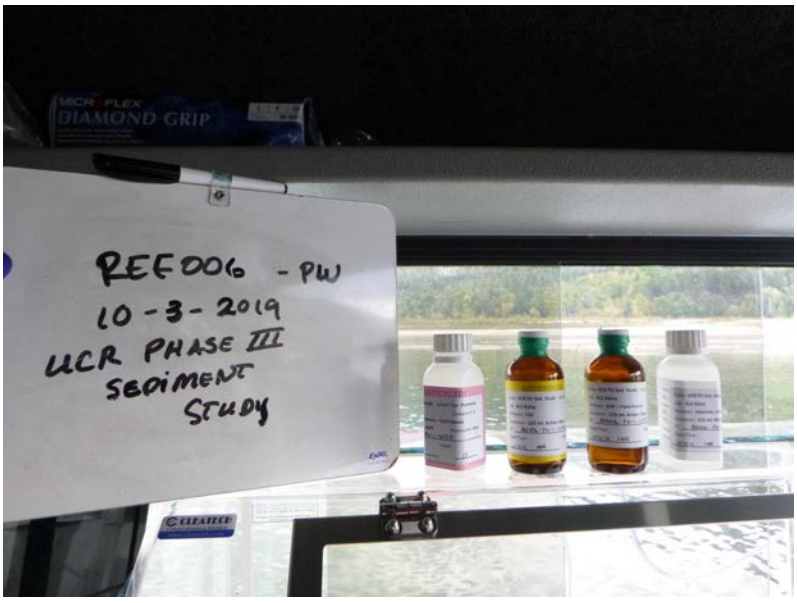
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020133.jpg

Photo No.

REF006.15

Photo Taken: 10/3/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010093.jpg

Photo No.

REF007.1

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010095.jpg

Photo No.

REF007.2

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Lexan Tub

Original Photo Name: P1010094.jpg

Photo No.

REF007.3

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: P1010096.jpg

Photo No.

REF007.4

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010098.jpg

Photo No.

REF007.5

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Van Veen

Original Photo Name: P1010097.jpg

Photo No.

REF007.6

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1 and #2

Notes:

In Lexan Tub

Original Photo Name: P1010099.jpg

Photo No.

REF008.1

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010100.jpg

Photo No.

REF008.2

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: P1010101.jpg

Photo No.

REF008.3

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: P1010102.jpg

Photo No.

REF008.4

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Van Veen

Original Photo Name: P1010103.jpg

Photo No.

REF008.5

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Lexan Tub

Original Photo Name: P1010104.jpg

Photo No.

REF008.6

Photo Taken: 9/30/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Van Veen

Original Photo Name: P1020109.jpg

Photo No.

REF008.7

Photo Taken: 10/1/2019

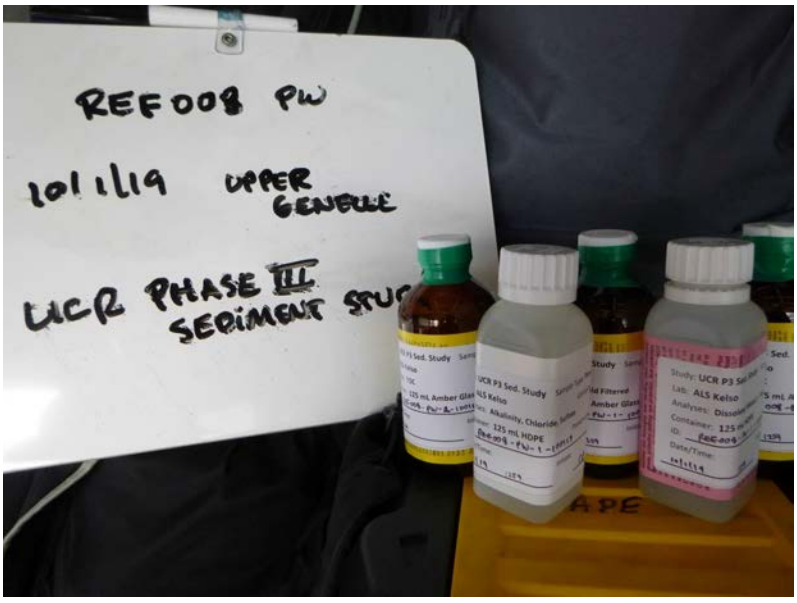
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020111.jpg

Photo No.

REF008.8

Photo Taken: 10/1/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010116.jpg

Photo No.

REF009.1

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010121.jpg

Photo No.

REF009A.1

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010122.jpg

Photo No.

REF009A.2

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: P1010123.jpg

Photo No.

REF009A.3

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: P1010124.jpg

Photo No.

REF009A.4

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: P1010125.jpg

Photo No.

REF009A.5

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1010127.jpg

Photo No.

REF009A.6

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #6

Notes:

Rejected

Original Photo Name: P1010128.jpg

Photo No.

REF009A.7

Photo Taken: 10/2/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #9

Notes:

In Hamon

Original Photo Name: P1020126.jpg

Photo No.

REF009A.8

Photo Taken: 10/3/2019

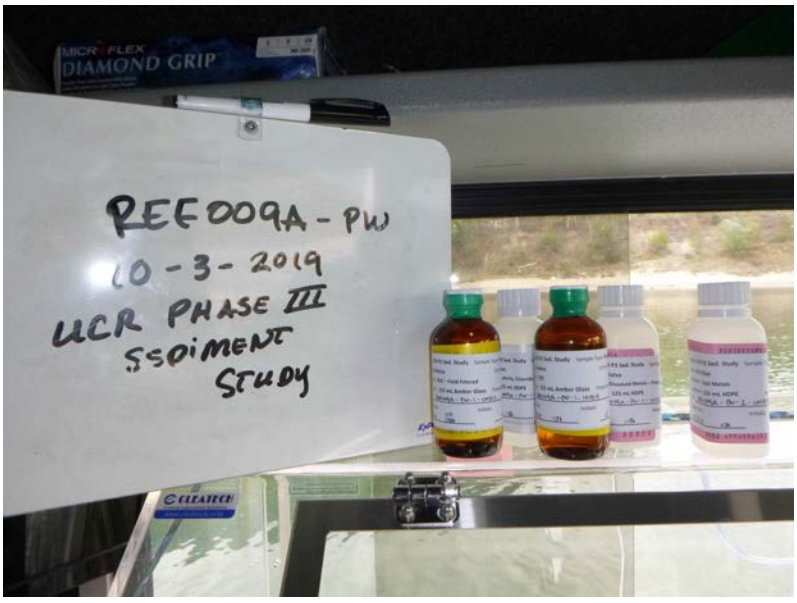
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020130.jpg

Photo No.

REF009A.9

Photo Taken: 10/3/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010160.jpg

Photo No.

REF010.1

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010161.jpg

Photo No.

REF010.2

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Hamon

Original Photo Name: P1010162.jpg

Photo No.

REF010.3

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Hamon

Original Photo Name: P1010163.jpg

Photo No.

REF010.4

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Hamon

Original Photo Name: P1010164.jpg

Photo No.

REF010.5

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: P1010165.jpg

Photo No.

REF010.6

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Hamon

Original Photo Name: P1010167.jpg

Photo No.

REF010.7

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Hamon

Original Photo Name: P1010168.jpg

Photo No.

REF010.8

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #8

Notes:

In Hamon

Original Photo Name: P1010169.jpg

Photo No.

REF010.9

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #9

Notes:

In Hamon

Original Photo Name: P1010170.jpg

Photo No.

REF010.10

Photo Taken: 10/3/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1010171.jpg

Photo No.

REF010.11

Photo Taken: 10/3/2019

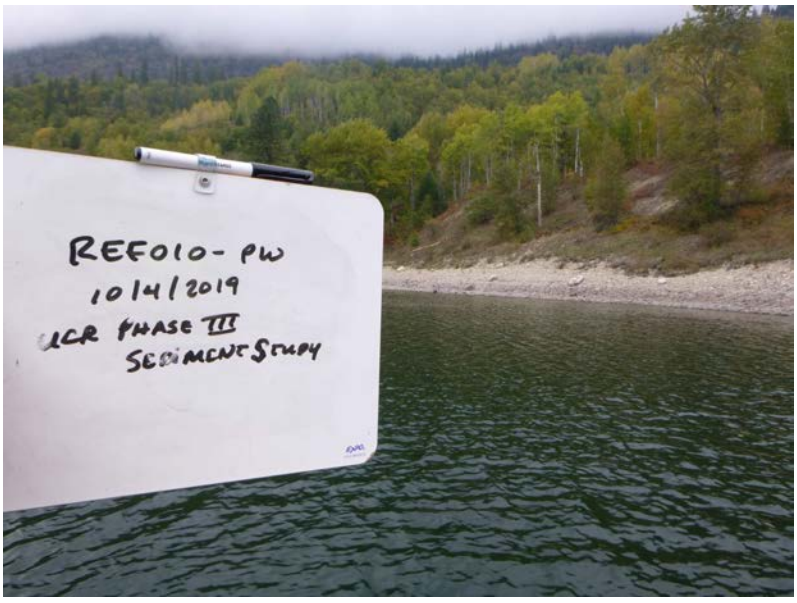
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #10

Notes:

In Hamon



Original Photo Name: P1020139.jpg

Photo No.

REF010.12

Photo Taken: 10/4/2019

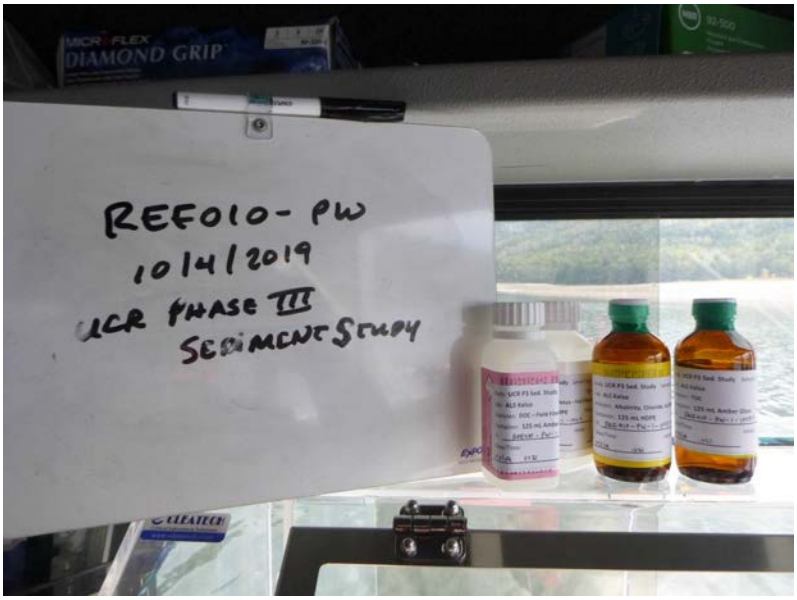
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020143.jpg

Photo No.

REF010.13

Photo Taken: 10/4/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010108.jpg

Photo No.

REF011.1

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010109.jpg

Photo No.

REF011.2

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: P1010110.jpg

Photo No.

REF011.3

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010112.jpg

Photo No.

REF011.4

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Van Veen

Original Photo Name: P1010113.jpg

Photo No.

REF011.5

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab - Field Duplicate

Notes:

In Lexan Tub

Original Photo Name: P1010111.jpg

Photo No.

REF011.6

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1010114.jpg

Photo No.

REF011.7

Photo Taken: 10/1/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #5

Notes:

In Van Veen

Original Photo Name: P1010115.jpg

Photo No.

REF011.8

Photo Taken: 10/1/2019

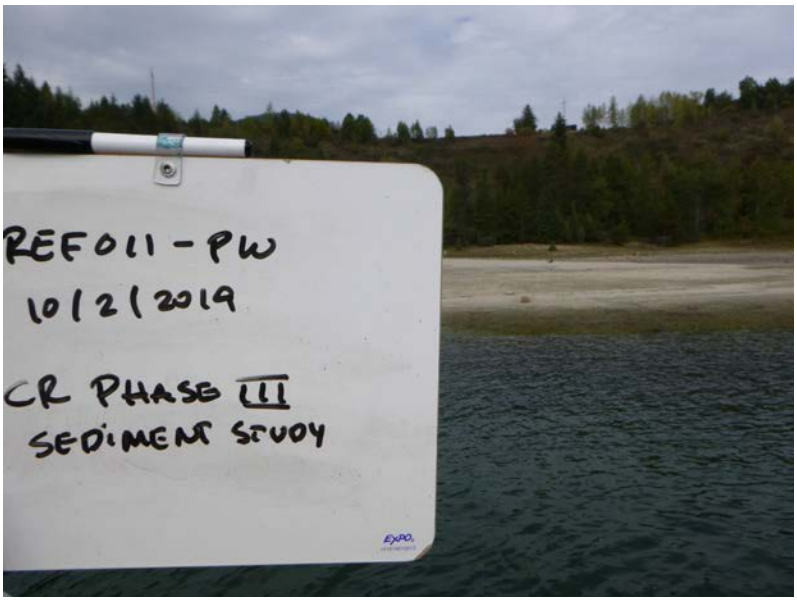
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #6

Notes:

In Van Veen



Original Photo Name: P1020117.jpg

Photo No.

REF011.9

Photo Taken: 10/2/2019

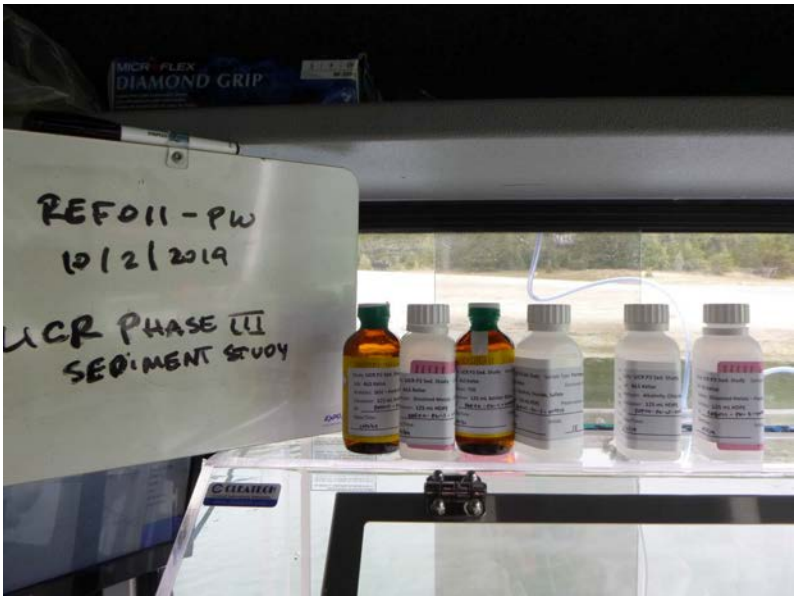
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020120.jpg

Photo No.

REF011.10

Photo Taken: 10/2/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010176.jpg

Photo No.

REF012.1

Photo Taken: 10/4/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010177.jpg

Photo No.

REF012.2

Photo Taken: 10/4/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Hamon

Original Photo Name: P1010178.jpg

Photo No.

REF012.3

Photo Taken: 10/4/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

Hand Dig

Original Photo Name: P1010181.jpg

Photo No.

REF012.4

Photo Taken: 10/4/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

Hand Dig

Original Photo Name: P1010180.jpg

Photo No.

REF012.5

Photo Taken: 10/4/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1020121.jpg

Photo No.

REF012.6

Photo Taken: 10/2/2019

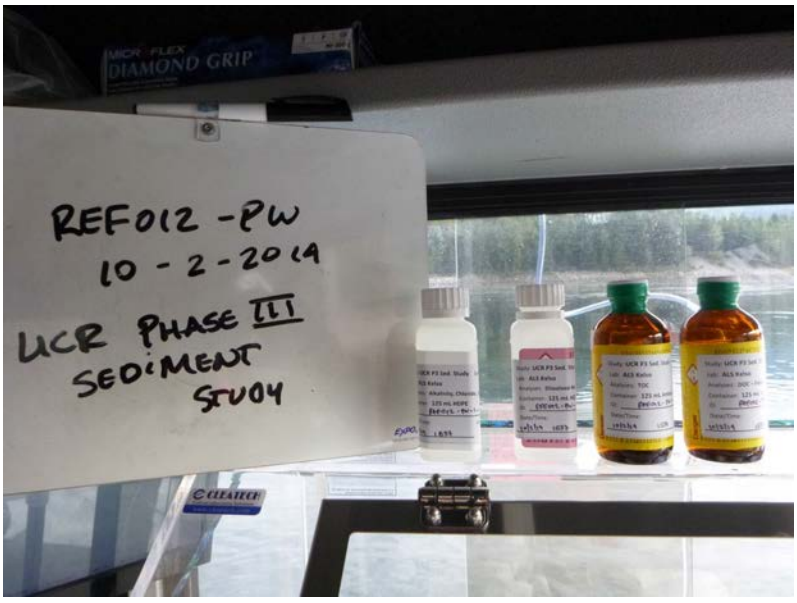
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020125.jpg

Photo No.

REF012.7

Photo Taken: 10/2/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010025.jpg

Photo No.

REF013.1

Photo Taken: 9/24/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010026.jpg

Photo No.

REF013.2

Photo Taken: 9/24/2019

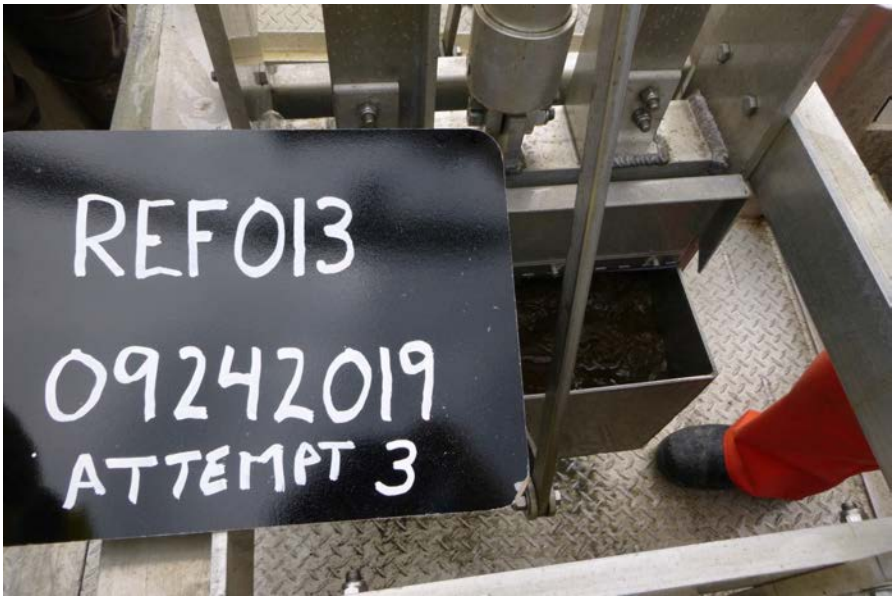
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen



Original Photo Name: P1010027.jpg

Photo No.

REF013.3

Photo Taken: 9/24/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: P1010028.jpg

Photo No.

REF013.4

Photo Taken: 9/24/2019

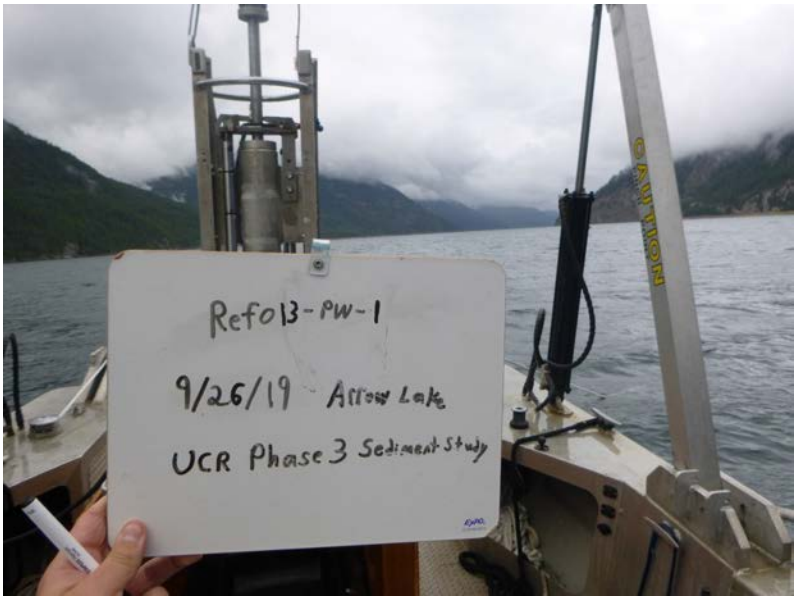
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Van Veen



Original Photo Name: P1020083.jpg

Photo No.

REF013.5

Photo Taken: 9/26/2019

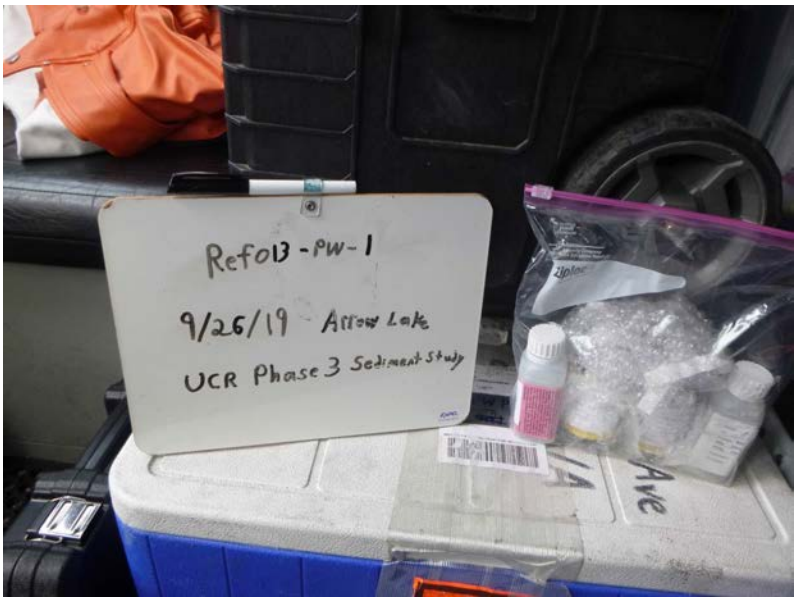
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020085.jpg

Photo No.

REF013.6

Photo Taken: 9/26/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010057.jpg

Photo No.

REF014.1

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010058.jpg

Photo No.

REF014.2

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: P1010059.jpg

Photo No.

REF014.3

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Van Veen

Original Photo Name: P1010060.jpg

Photo No.

REF014.4

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Van Veen

Original Photo Name: P1010061.jpg

Photo No.

REF014.5

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #9

Notes:

In Van Veen

Original Photo Name: P1010062.jpg

Photo No.

REF014.6

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #11

Notes:

In Van Veen

Original Photo Name: P1010064.jpg

Photo No.

REF014.7

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #12

Notes:

In Van Veen

Original Photo Name: P1010063.jpg

Photo No.

REF014.8

Photo Taken: 9/26/2019

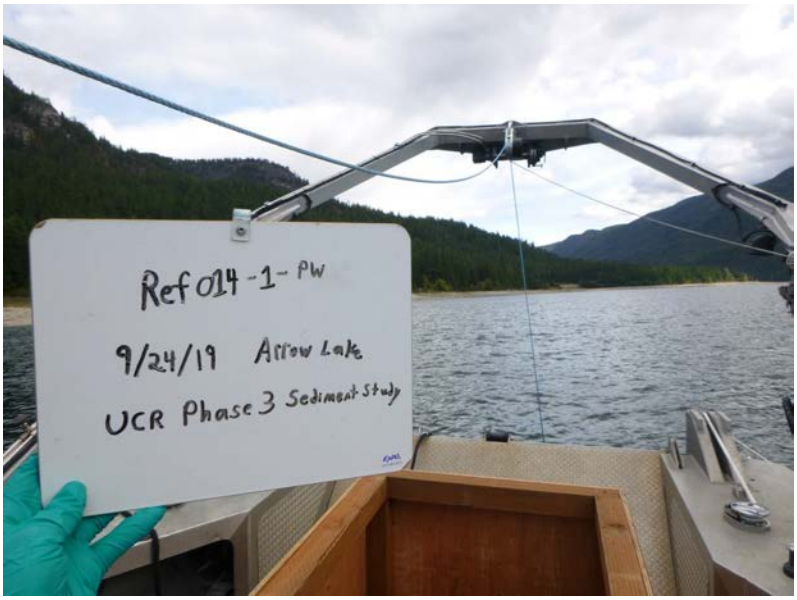
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: P1020064.jpg

Photo No.

REF014.9

Photo Taken: 9/24/2019

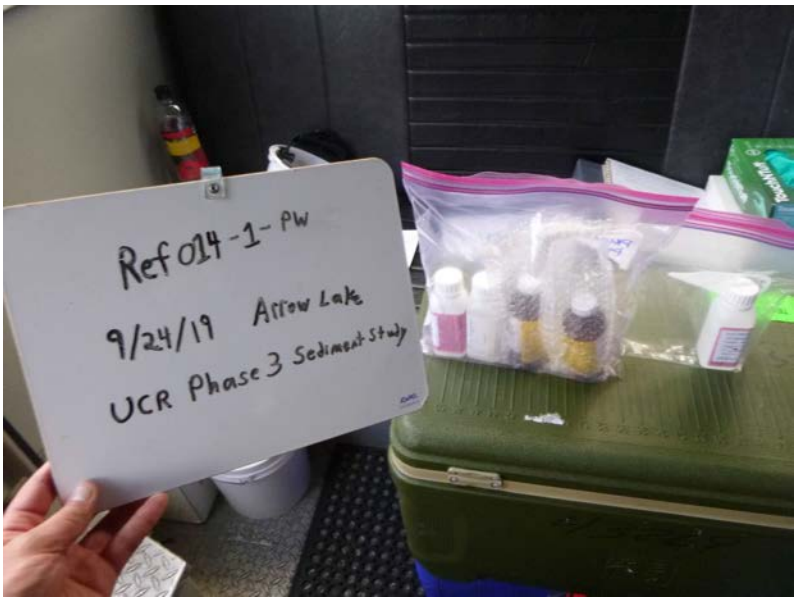
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020066.jpg

Photo No.

REF014.10

Photo Taken: 9/24/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010029.jpg

Photo No.

REF015.1

Photo Taken: 9/24/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010051.jpg

Photo No.

REF015.2

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010030.jpg

Photo No.

REF015.3

Photo Taken: 9/24/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010052.jpg

Photo No.

REF015.4

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Van Veen

Original Photo Name: P1010053.jpg

Photo No.

REF015.5

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Van Veen

Original Photo Name: P1010054.jpg

Photo No.

REF015.6

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Van Veen

Original Photo Name: P1010055.jpg

Photo No.

REF015.7

Photo Taken: 9/26/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1010031.jpg

Photo No.

REF015.8

Photo Taken: 9/24/2019

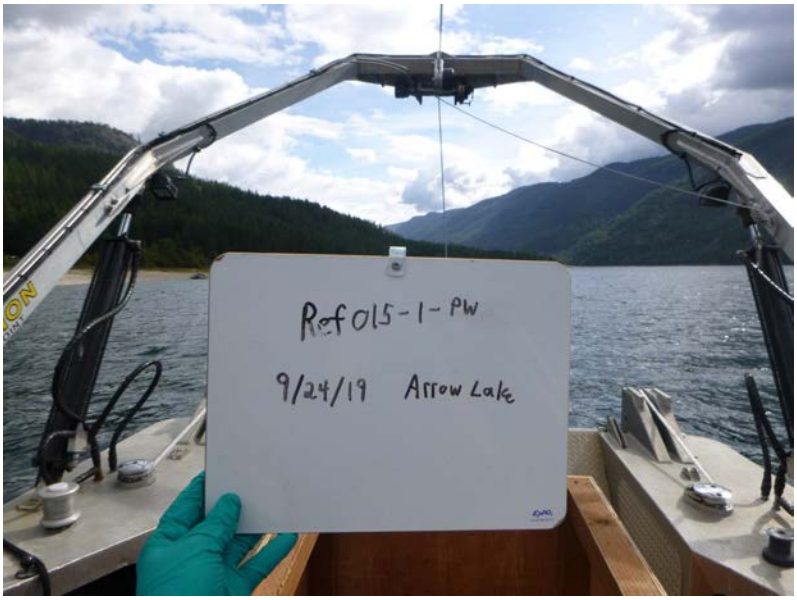
Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #4

Notes:

In Van Veen



Original Photo Name: P1020062.jpg

Photo No.

REF015.9

Photo Taken: 9/24/2019

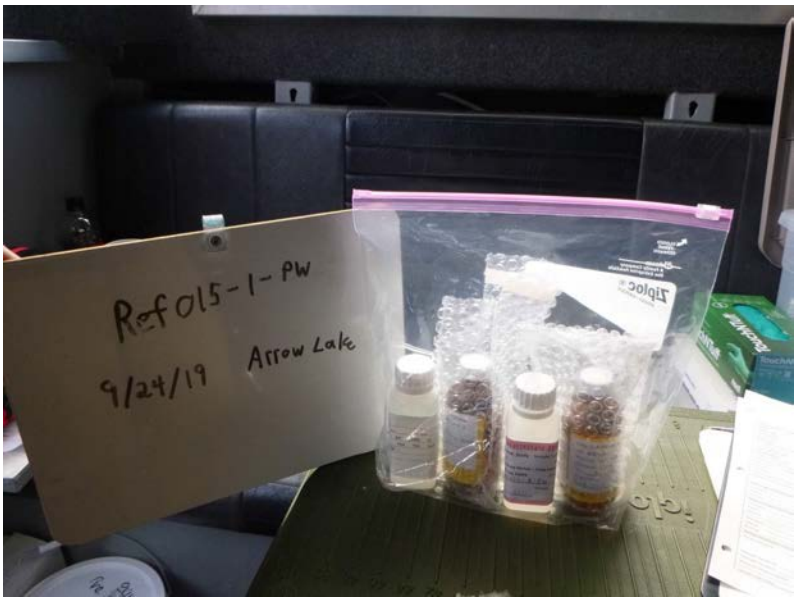
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020063.jpg

Photo No.

REF015.10

Photo Taken: 9/24/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010039.jpg

Photo No.

REF016.1

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010040.jpg

Photo No.

REF016.2

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: P1010041.jpg

Photo No.

REF016.3

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010044.jpg

Photo No.

REF016.4

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #3

Notes:

In Van Veen

Original Photo Name: P1010042.jpg

Photo No.

REF016.5

Photo Taken: 9/25/2019

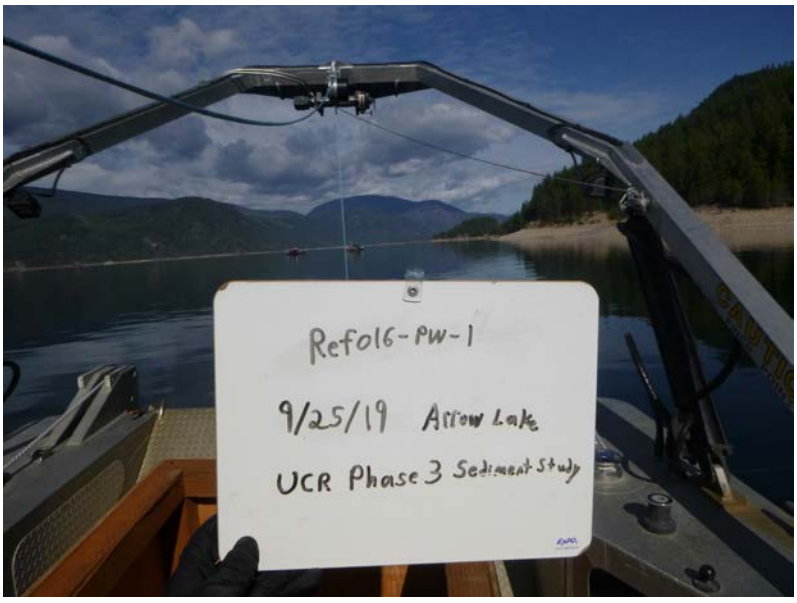
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: P1020067.jpg

Photo No.

REF016.6

Photo Taken: 9/25/2019

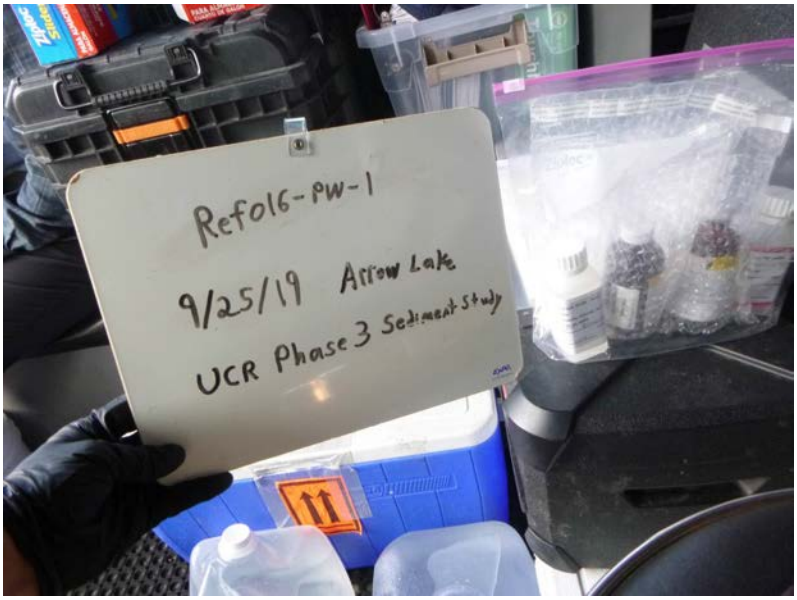
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020068.jpg

Photo No.

REF016.7

Photo Taken: 9/25/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010045.jpg

Photo No.

REF017.1

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010046.jpg

Photo No.

REF017.2

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #1

Notes:

In Van Veen

Original Photo Name: P1010047.jpg

Photo No.

REF017.3

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #2

Notes:

In Van Veen

Original Photo Name: P1010048.jpg

Photo No.

REF017.4

Photo Taken: 9/25/2019

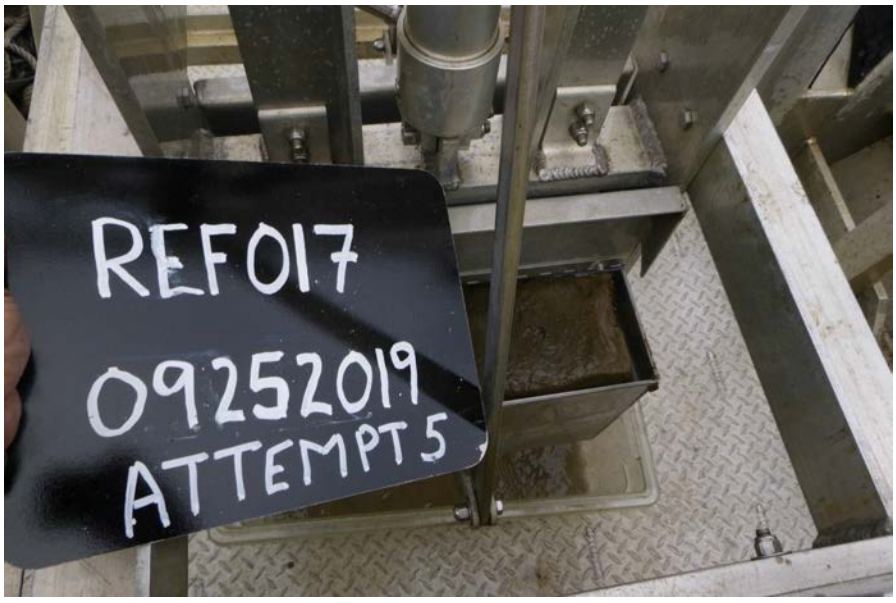
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Van Veen



Original Photo Name: P1010050.jpg

Photo No.

REF017.5

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #5

Notes:

In Van Veen

Original Photo Name: P1010049.jpg

Photo No.

REF017.6

Photo Taken: 9/25/2019

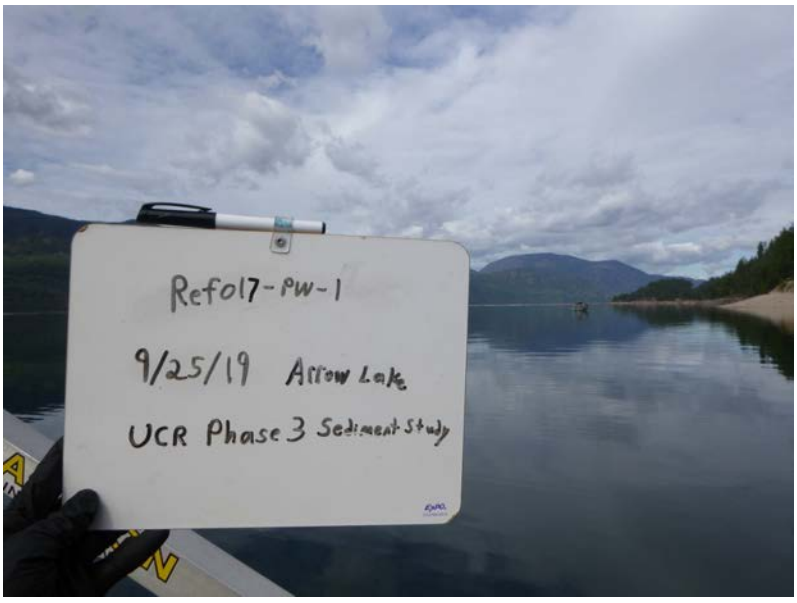
Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub



Original Photo Name: P1020069.jpg

Photo No.

REF017.7

Photo Taken: 9/25/2019

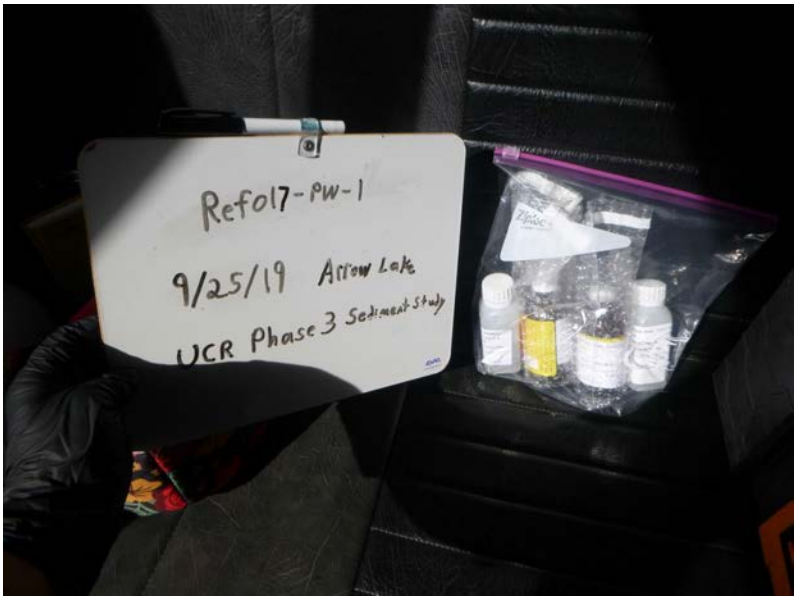
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020071.jpg

Photo No.

REF017.8

Photo Taken: 9/25/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

Original Photo Name: P1010032.jpg

Photo No.

REF018.1

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sample Location Overview

Notes:

N/A

Original Photo Name: P1010033.jpg

Photo No.

REF018.2

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #4

Notes:

In Van Veen

Original Photo Name: P1010034.jpg

Photo No.

REF018.3

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #6

Notes:

In Van Veen

Original Photo Name: P1010035.jpg

Photo No.

REF018.4

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempt #7

Notes:

In Van Veen

Original Photo Name: P1010036.jpg

Photo No.

REF018.5

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

Sediment Sample Grab Attempts

Notes:

In Lexan Tub

Original Photo Name: P1010038.jpg

Photo No.

REF018.6

Photo Taken: 9/25/2019

Vessel: Cayuse

Media Description:

BMI Sample- Grab Attempt #8

Notes:

In Van Veen

Original Photo Name: P1020072.jpg

Photo No.

REF018.7

Photo Taken: 9/25/2019

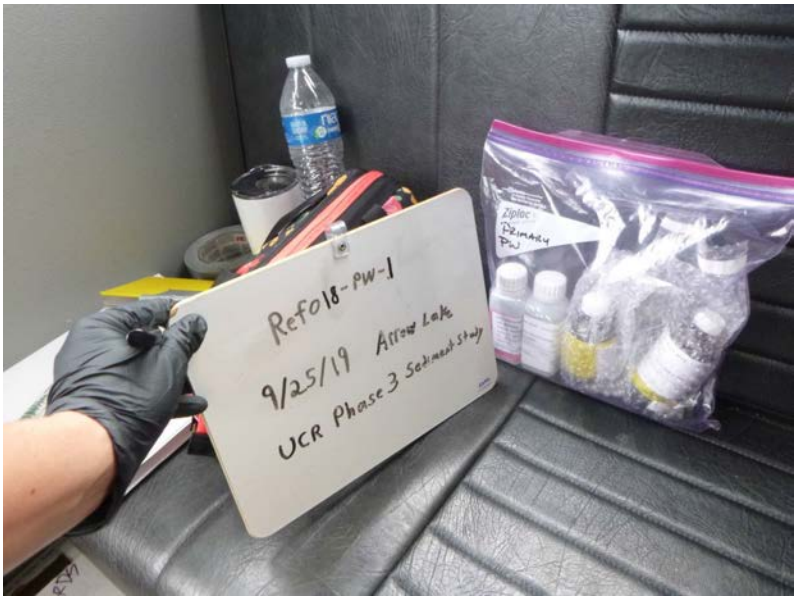
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020075.jpg

Photo No.

REF018.8

Photo Taken: 9/25/2019

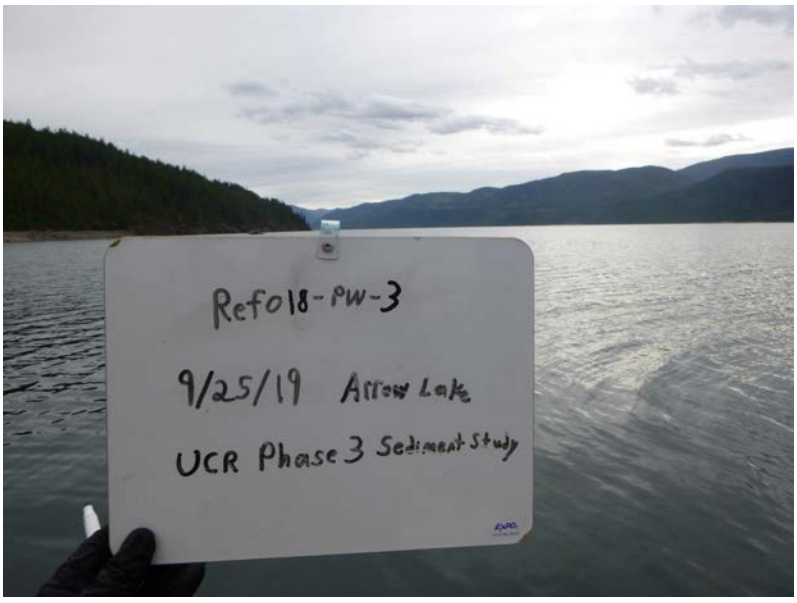
Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: P1020073.jpg

Photo No.

REF018.9

Photo Taken: 9/25/2019

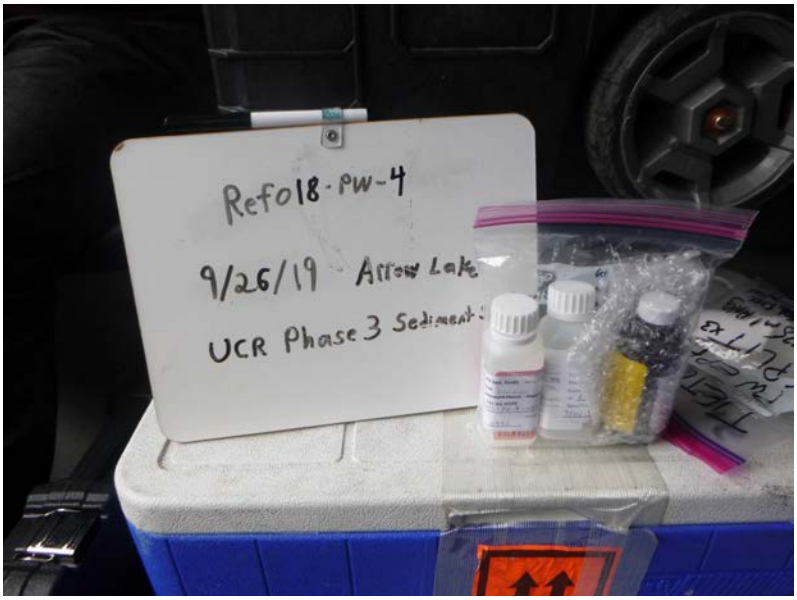
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020084.jpg

Photo No.

REF018.10

Photo Taken: 9/26/2019

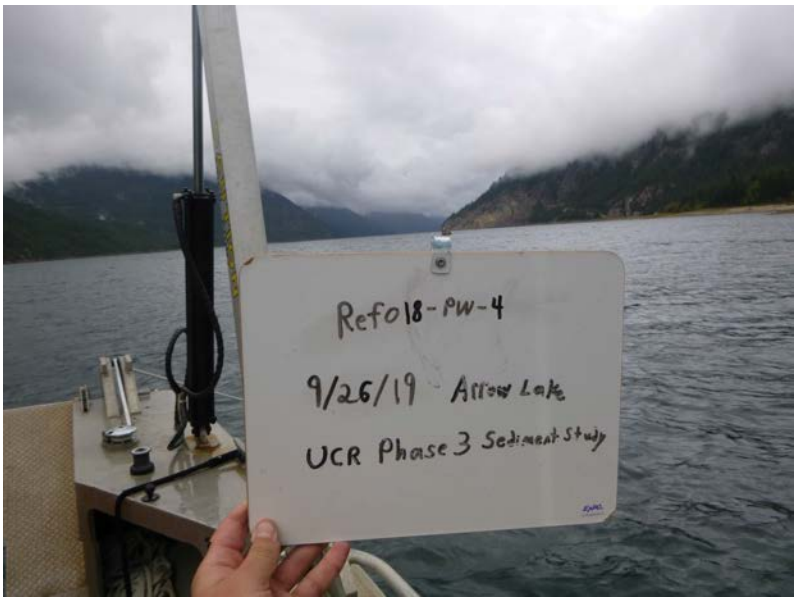
Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A



Original Photo Name: P1020082.jpg

Photo No.

REF018.11

Photo Taken: 9/26/2019

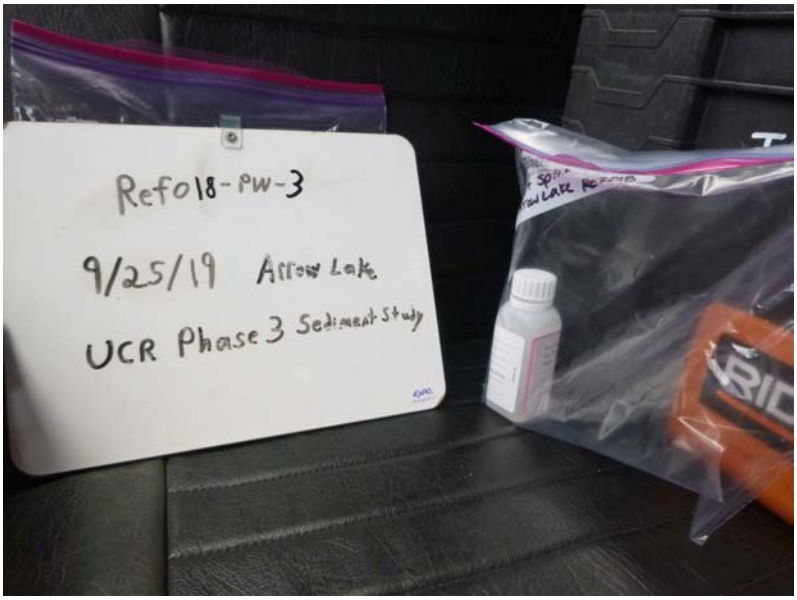
Vessel: Tieton

Media Description:

Sample Location Overview

Notes:

N/A



Original Photo Name: P1020074.jpg

Photo No.

REF018.12

Photo Taken: 9/25/2019

Vessel: Tieton

Media Description:

Sample Bottles Filled

Notes:

N/A

PHOTO LOG

Original Photo Name: 93639.jpg

Photo No.

1

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Vibra-frame Trident probe sampler

Original Photo Name: 94498.jpg

Photo No.

2

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Pneumatic drive-frame Trident probe sampler

PHOTO LOG

Original Photo Name: 94550.jpg

Photo No.

3

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Direct-push Trident sampler probe with integrated temperature and conductivity sensors

Original Photo Name: 94547.jpg

Photo No.

4

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Preparing pneumatic drive-frame Trident sampler for deployment

PHOTO LOG

Photo No.

5

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Pneumatic drive-frame Trident sampler hoisted on davit for deployment

Original Photo Name: 94514_1.png

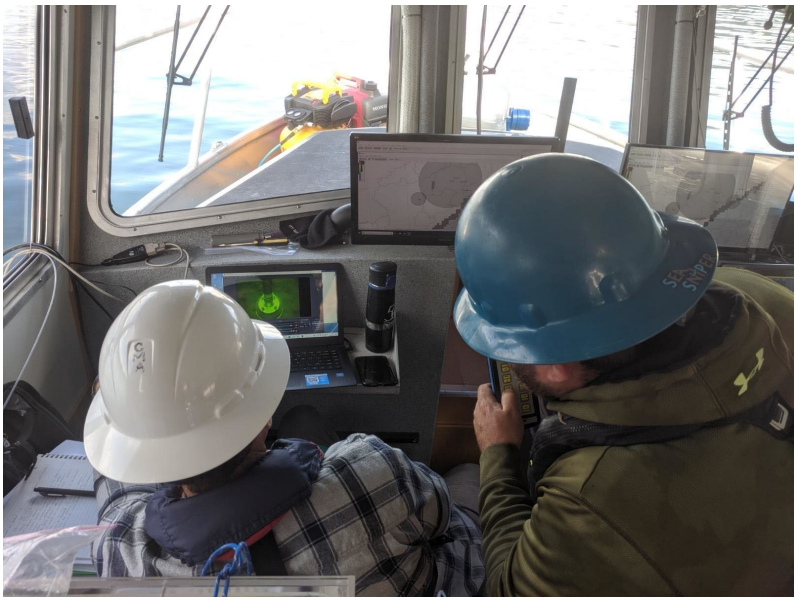


Photo No.

6

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Operator and oversight personnel viewing video feed from underwater camera attached to the Trident sampler

Original Photo Name: 94500_1.png

PHOTO LOG

Original Photo Name: 94487.jpg

Photo No.

7

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Video feed on display screen aboard vessel from underwater camera attached to the Trident sampler

Original Photo Name: 93633.jpg

Photo No.

8

Photo Taken: 09/17/2019

Vessel: Yeti

Notes:

Glovebox aboard vessel for filling porewater sampling bottles without exposure to oxygen

Appendix I

Equipment Rinsate Blank Collection Forms

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: CB005-SE-4-101819

Sampling Vessel: Ingalls

Date Collected: 10-18-19

Time Collected: 1115

Samplers: Michaela McCoog

 # Sample Containers: 1
(unfiltered Sample)

Equipment Evaluated: Scoop

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A:	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc
TAL Metals using EPA Method 6010C:	calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
CB005

Additional Notes or Photos

Field Supervisor Initials JES **Date:** 10.18.19

Sample Lead Initials MM **Date:** 10-18-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: CB010 - SE-4-101219 **Sampling Vessel:** Ingalls

Date Collected: 10-12-19 **Time Collected:** 1622

Samplers: Michaela McCoog **# Sample Containers:** 1
(unfiltered Sample)

Equipment Evaluated: Bowl ~~Human Sampler~~

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
CB039, CB005, CB009, CB010

Additional Notes or Photos

Field Supervisor Initials MM **Date:** 10-12-19

Sample Lead Initials [illegible] **Date:** 10-12-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: DM025-SE-4-101219 **Sampling Vessel:** Cayuse

Date Collected: 10-12-19 **Time Collected:** 1550

Samplers: DH **# Sample Containers:** 1
(unfiltered Sample)

Equipment Evaluated: Hamon Grab **Requested Analyses:** [X] Total TAL Metals (EPA 6020A)

[X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
DM002, DM018, DM016, DM015, DM010, DM008
DM061, DM025

Additional Notes or Photos

Field Supervisor Initials DK **Date:** 10/12/19

Sample Lead Initials CM **Date:** 10/12/19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: DM038-BMI-4-101919 **Sampling Vessel:** RV Cayuse

Date Collected: 10-19-19 **Time Collected:** 1210

Samplers: AP, SH **# Sample Containers:** 1
(unfiltered Sample)

Equipment Evaluated: Freeze Grab Sampler

Requested Analyses: [X] Total TAL Metals (EPA 6020A)

[X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A:	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc
TAL Metals using EPA Method 6010C:	calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:

DM038

Additional Notes or Photos

N/A

Field Supervisor Initials DM **Date:** 10/19/19

Sample Lead Initials SH **Date:** 10-19-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 J.A.P. 2-21-20

Sample Id: DM050-SE-4-092019 **Sampling Vessel:** RV Cayuse

Date Collected: 9-20-19 **Time Collected:** 1150

Samplers: SH, KM **# Sample Containers:** 6
(unfiltered Sample)

Equipment Evaluated: Large SS scoop **Requested Analyses:** [X] Total TAL Metals (EPA 6020A)

[X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:

~~DM050-BHT-4-092019~~ JAP 2.21.20
~~SE~~ ~~DY 9/23/19~~
DM046
DM050

Additional Notes or Photos

SEKK 091919

~~Collected additional bottles- TOC, DOC, sulfate, sulfide~~

collected LL metals bottles DM

Field Supervisor Initials DM **Date:** 9-20-19

Sample Lead Initials SH **Date:** 9-20-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: EV013-SE-4-091319

Sampling Vessel: Tieton

Date Collected: 9-13-2019

Time Collected: 1430

Samplers: NM + AP

 # Sample Containers: 1
(unfiltered Sample)

Equipment Evaluated: SS spoon

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A:	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc
TAL Metals using EPA Method 6010C:	calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:

EV013 + EV012

Additional Notes or Photos

Sampling work done on RV Tieton.
Field ~~logbooks~~ notes are in RV Cayuse logbook.

J.A.P. 2-21-20

Field Supervisor Initials JP **Date:** 9-13-19

Sample Lead Initials NM **Date:** 9-13-2019

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: EV020-SE-4-100219 **Sampling Vessel:** Ingalls

Date Collected: 10/02/2019 **Time Collected:** 14:15

Samplers: NM, ASB **# Sample Containers:** 1
(unfiltered Sample)

Equipment Evaluated: Freeze Grab & SS Bowl **Requested Analyses:**

- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A:	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc
TAL Metals using EPA Method 6010C:	calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:

EV020

Additional Notes or Photos

Field Supervisor Initials NM **Date:** 10/2

Sample Lead Initials AL **Date:** 10/2

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: EV060-SE-4-092119

Sampling Vessel: Ingalls

Date Collected: 09/21/19

Time Collected: 1431 (1225 on label)

Samplers: M. McCoog, M. Stegner

 # Sample Containers: 1
(unfiltered Sample)

Equipment Evaluated: Stainless Steel Scoop

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
EV060
EV027

Additional Notes or Photos
Decontaminated after EV027

Field Supervisor Initials NM **Date:** 9/21/19

Sample Lead Initials MM **Date:** 9-21-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: EV072-BMI-4-092619 **Sampling Vessel:** RV Ingalls

Date Collected: 9-26-19 **Time Collected:** SH 9-26-19 ~~1600~~ 1650

Samplers: SH **# Sample Containers:** 1 *(unfiltered Sample)*

Equipment Evaluated: Van Veen Sampler **Requested Analyses:**

- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
4-81-2019, 4-86-2019, EV001, EV052, ~~EV057~~ EV072 SH 9-26-19

Additional Notes or Photos
Taken from Van Veen sampler. BMI sample from station EV072 last.

Alconox + River and DI rinse prior to sampling

Field Supervisor Initials JAP **Date:** 2-21-20

Sample Lead Initials SH **Date:** 9-26-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Sediment Rinsate Sample Collection
FOR USE IN CANADA ONLY
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: REFO11-SE-4-100119 **Sampling Vessel:** Cayuse

Date Collected: 10-1-19 **Time Collected:** 1630

Samplers: DH MH **# Sample Containers:** 9

Analyte	# of Bottles	Bottle Type
Total Metals	1	125 mL poly container
PCBs	2	1000 L amber bottle, no preservative, not filtered
PAHs	2	500 mL amber bottles, no preservative, not filtered
Pesticides & PCB Congeners	4	125 mL amber bottles, no preservative, not filtered

Equipment Evaluated: 2 SCOOPS

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A, 6010C)
- [X] PCBs
- [X] PAHs
- [X] Pesticides & PCB Congeners

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date: PA

REFOO9, ~~REFOH~~ PA, ~~REFOO6 ALT~~

Additional Notes or Photos

Field Supervisor Initials AJH **Date:** 10-01-19

Sample Lead Initials DH **Date:** 10-01-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Sediment Rinsate Sample Collection
FOR USE IN CANADA ONLY
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698 09 26 19 DH 9/27/19

Sample Id: REF014-SE-4-~~09262019~~

Sampling Vessel: CAYUSE

Date Collected: 09 26 2019

Time Collected: 1422

Samplers: DH

 # Sample Containers: 9

Analyte	# of Bottles	Bottle Type
Total Metals	1	125 mL poly container
PCBs	2	1000 L amber bottle, no preservative, not filtered
PAHs	2	500 mL amber bottles, no preservative, not filtered
Pesticides & PCB Congeners	4	125 mL amber bottles, no preservative, not filtered

Equipment Evaluated: VAN VEEN Mixing Bowl + Funnel

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A, 6010C)
- [X] PCBs
- [X] PAHs
- [X] Pesticides & PCB Congeners

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
REF013, REF014, REF015, REF016, REF017, REF018

Additional Notes or Photos

Field Supervisor Initials DH **Date:** 9/26/19

Sample Lead Initials DH **Date:** 9/26/19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Porewater Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: CB016-PW-4-101219

Sampling Vessel: Yeti

Date Collected: 10/12/2019

Time Collected: 1225

Samplers: ~~J. Prehart~~, S. Kintner

 # Sample Containers: 3
(unfiltered Sample)

Equipment Evaluated: Driveframe on Yeti

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A, 6010C)
- [X] TOC
- [X] Alkalinity, Chloride, Sulfate

TAL Metals using EPA Method 6020A:	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc
TAL Metals using EPA Method 6010C.	calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:

~~C~~ CB047
CB016

Additional Notes or Photos

None

Glass bead in probe
No filters
No 300 mL purge

Field Supervisor Initials DJF 10/12/19 **Date:**

Sample Lead Initials JP **Date:** 10-12-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: DM022-PW-4-090819 **Sampling Vessel:** Tieton

Date Collected: 09-18-19 **Time Collected:** 1500

Samplers: Linda Howard **# Sample Containers:** 3
(unfiltered Sample)

Equipment Evaluated: Tr. dump driveframe #1 **Requested Analyses:** [X] Total TAL Metals (EPA 6020A)

[X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A:	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc
TAL Metals using EPA Method 6010C:	calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date: DM022

Additional Notes or Photos

Per discussion with Kevin/ERM prior to collecting equipment rinsate blank, collected for metals, Toc, and Sulfate. However, Kevin thinks it may just be metals that is required. Kevin to confirm. If only metals, discard Toc and Sulfate.

Field Supervisor Initials DM **Date:** 9-19-19

Sample Lead Initials LH. **Date:** 09-18-19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Porewater Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: EV010-PW-4-092119

Sampling Vessel: Yeti

Date Collected: 9-21-2019

Time Collected: 0930

Samplers: NM, CS, AS

 # Sample Containers: NM 4 3
(unfiltered Sample)

Equipment Evaluated: Trident Vibraframe

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A, 6010C)
- [X] TOC
- [X] Alkalinity, Chloride, Sulfate

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date: - 9/20/2019

EV012

EV013

Additional Notes or Photos

Field Supervisor Initials LH. **Date:** 09/21/19

Sample Lead Initials NM **Date:** 9/21/19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Porewater Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: EV037-PW-4-092419 **Sampling Vessel:** Yeti

Date Collected: 24 Sept. 19 **Time Collected:** 1545

Samplers: Bart Chadwick, Joel Guerrero, Al Thatcher **# Sample Containers:** 3 *(unfiltered Sample)*

Equipment Evaluated: Driveframe 2

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A, 6010C)
- [X] TOC
- [X] Alkalinity, Chloride, Sulfate

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:

EV026 and EV037

Additional Notes or Photos

Collected sample of DI water pumped through and dripping from bottom tip of probe

Field Supervisor Initials DY **Date:** 9-24-19

Sample Lead Initials Al Thatcher **Date:** 24 Sept. 19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: EV044-PW-4-092019 **Sampling Vessel:** RV Yeti

Date Collected: 9/20/2019 **Time Collected:** 0900

Samplers: NM + AS **# Sample Containers:** 3 *(unfiltered Sample)*

Equipment Evaluated: Trident probe vibraframe + teflon tubing.

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TOC, Sulfate, Chloride, Alkalinity.

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

3 bottles
N/O filter

List all Locations Sampled using this Equipment on this Date:

Yesterday -> EV057
9/19/2019 EV063

Additional Notes or Photos

1x 125mL poly w/nitric
1x Amber 125mL w/ sulfric acid.
1x 125mL poly

Field Supervisor Initials [illegible] **Date:** 9/20/19

Sample Lead Initials NM **Date:** 9/20/19

PUT ON HOLD - METHOD REVISED AGAIN w/ Beads in probe
9-20-19
@ 12:50pm

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Weekly Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

This sample was not analyzed. It was determined after sample collection that glass beads should not have been included in the Trident Probe tip.

Project Number: 60612698

Sample Id: EV057-PW-4-091919

Sampling Vessel: Yeti.

Date Collected: 9/19/2019

Time Collected: 1405

Samplers: Nicky Moody

 # Sample Containers: 1
(unfiltered Sample)

Equipment Evaluated: Vibraframe trident probe.

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A)
- [X] Total TAL Metals (EPA 6010C)

TAL Metals using EPA Method 6020A:	aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc
TAL Metals using EPA Method 6010C:	calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:

EV063
EV057

Additional Notes or Photos

Sunny weather - light breeze.

Field Supervisor Initials JP **Date:** 9-17-19

Sample Lead Initials NM **Date:** 9/19/2019

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.

Porewater Rinsate Sample Collection
Upper Columbia River RI/FS
2019 Phase 3 Sediment Study

Project Number: 60612698

Sample Id: Ref018-PW-4-092619

Sampling Vessel: RV Tietan

Date Collected: 9/26/19

Time Collected: 0945

Samplers: Anders Utter

 # Sample Containers: 3
(unfiltered Sample)

Equipment Evaluated: Trident Probe

Requested Analyses:
- [X] Total TAL Metals (EPA 6020A, 6010C)
- [X] TOC
- [X] Alkalinity, Chloride, Sulfate

TAL Metals using EPA Method 6020A: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc

TAL Metals using EPA Method 6010C: calcium, iron, magnesium, potassium, and sodium

List all Locations Sampled using this Equipment on this Date:
Locations sampled before this equipment blank – Ref015, Ref014, Ref016, Ref017, Ref018

Additional Notes or Photos
This equipment blank is for the Arrow Lake AOI. See photolog for photos.

Field Supervisor Initials LOH **Date:** 9/26/19

Sample Lead Initials AU **Date:** 9/26/19

Sample ID Format:
EV031-SE-4-090819: equipment rinsate blank collected on 09/08/2019 at Evans Beach AOI station 025.