

Draft
Screening-Level Risk Assessment For Recreational Use Of Beaches
Upper Columbia River
Remedial Investigation and Feasibility Study

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Executive Summary

The UCR Site is located in north central Washington, and extends from the U.S.- Canadian international border south and west to the Grand Coulee Dam, a distance of approximately 150 miles down river (see Figure 1-1 in Section 1). The UCR site includes short free-flowing reach of the Columbia River and Franklin D. Roosevelt Lake (Lake Roosevelt), a large reservoir maintained behind the Grand Coulee Dam. EPA prepared this screening assessment in response to public concern regarding the safety of recreating on beaches along the UCR, especially for those beaches which appear to be largely comprised of riverine deposits of slag (Majewski et al., 2003).

Previous investigations by federal and state agencies have identified the presence of contamination within the U.S. portion of the Upper Columbia River (UCR) and surrounding upland areas from the Grand Coulee Dam to the Canadian border (Bortelson et al., 1994; U.S. Environmental Protection Agency Region 10, 2003). Other studies evaluated contaminant source areas and effects north of the Canadian border (Godin & Hagen, 1992; Nener, 1992; Goodarzi, Sanei & Duncan, 2001; Goodarzi et al., 2002; McMartin et al., 2002). Contaminants found by those studies include heavy metals such as cadmium, copper, lead, mercury, and zinc.

In August 1999, the Colville Confederated Tribes petitioned EPA to conduct an assessment of the UCR (The Confederated Tribes of the Colville Reservation, 1999). The petition expressed health and ecological concerns from contamination in the river. Consequently, EPA completed a preliminary assessment and expanded site inspection, which indicated that further data collection and Remedial Investigation and Feasibility Studies (RI/FS) were needed (Ecology and Environment (E&E), 2000; Ecology and Environment (E&E), 2002; U.S. Environmental Protection Agency Region 10, 2003)

Because Franklin D. Roosevelt Lake (Lake Roosevelt) and Grand Coulee Dam are designated as National Recreation Areas, there is a concern that people may be exposed to unsafe levels of contaminants along the river during occasional beach visits. EPA prepared this recreational beach screening assessment in an effort to begin to address concerns expressed over the safety of recreating on beaches in the Upper Columbia River and Lake Roosevelt. This screening level risk assessment is based on beach sediment samples collected in April, 2005 as part of a larger sediment study. The sediment study also involved the collection of a large amount of submerged sediment samples to assess the nature and extent of contamination and to assess risks to the environment (U.S. Environmental Protection Agency Region 10, 2006).

Of the fifteen beaches examined, twelve are safe for recreational use, and the remaining three, northernmost locations ("Black Sand Beach", Northport, and Dalles) will be re-evaluated using the recreational use scenario. If your exposure is limited to ingesting sediment while camping (with young children) along the shoreline for 14 days per year, returning for 30 years, then 12 of the beaches are safe and 3 of the beaches warrant additional study. These beaches present cancer risks on the order of 1 in a million.

Additional studies are planned to occur as part of the Human Health Risk Assessment to address residential, tribal, and other types of exposures and land use.

This screening level risk assessment entailed calculating a safe concentration for each metal of concern for comparison to the maximum level of each metal encountered at each of the 15 beaches. This safe concentration is a Preliminary Remedial Goal (PRG). The PRG was compared to the maximum level of each metal found on each of the 15 beaches. The maximum for arsenic was greater than the PRG at the following 3 of the 15 sites (listed from north to south):

- “Black Sand” Beach at river mile 742
- Northport City Boat Ramp at river mile 735 (this was the only location with a maximum lead concentration above the 400 mg/kg)
- Dalles Orchard at river mile 729

None of the other metals exceeded PRGs at the remaining 12 beaches along the Upper Columbia River or Lake Roosevelt.

Although 12 of the 15 beaches were below the recreational screening levels, these beaches along with the three northernmost locations will be evaluated for other types of uses, including residential or tribal uses. However, no significant health risk to recreational users is posed from exposures to sediment at the three locations with levels of arsenic or lead slightly above screening levels because the screening levels were selected to be very protective for recreational uses.

Although this assessment was developed to prioritize beaches based on limited recreational use, the results suggest that sediments along the beaches would also present minimal risks for residents who frequent the beaches on a daily basis.

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Abbreviations and Acronyms

AF	adherence factor
COPC	chemical of potential concern
CSM	conceptual site model
CTE	central tendency estimate
Ecology	Washington State Department of Ecology
HHRA	human health risk assessment
HQ	hazard quotient
MTCA	Washington State Model Toxics Control Act
NOAEL	no-observed adverse effect level
PbB	blood lead levels
PRG	preliminary remediation goal
RBC	risk-based concentration
RI/FS	Remedial Investigation and Feasibility Studies
RfD	reference dose
RME	reasonable maximum exposure
SA	surface area
SF	slope factor

Introduction

1.1 Background and Site Description

The Upper Columbia River (UCR) site is located in north central Washington, and extends from the U.S. – Canadian international border south and west to the Grand Coulee Dam, a distance of approximately 150 miles down river (Figure 1-1). The UCR site includes a short free-flowing reach of the Columbia River and Franklin D. Roosevelt Lake (Lake Roosevelt), a large reservoir maintained behind the Grand Coulee Dam. EPA prepared this screening assessment in response to public concern regarding the safety of recreating on beaches along the UCR, especially for those beaches which appear to be largely comprised of riverine deposits of slag (Majewski et al., 2003). Because the Upper Columbia River and Lake Roosevelt are a popular destination to camp, boat, swim, or otherwise recreate, there is a concern that people could potentially be exposed to metals in beach sediments along the river.

1.2 Purpose

This report documents a screening evaluation of contaminant concentrations in beach sediment along the banks of the Upper Columbia River and Lake Roosevelt from the Canadian border to the Grand Coulee Dam. Fifteen beaches along the Upper Columbia River and Lake Roosevelt were sampled as representative of popular recreational sites based on comments received from The Confederated Tribes of the Colville Reservation (CCT), the Spokane Tribe of Indians (STI), the National Parks Service, and the Washington Departments of Ecology and Health. The purpose of performing a screening level risk assessment is to provide a high degree of confidence that a health threat does not exist or, alternatively, to determine if further evaluation is warranted in the RI/FS.

1.3 Site Description

The Upper Columbia River (UCR) site is located in north central Washington, and extends from the U.S.–Canadian international border south and west to the Grand Coulee Dam, a distance of approximately 150 miles down river (see Figure 1-1). The UCR site includes a free-flowing reach of the Columbia River and Franklin D. Roosevelt Lake (Lake Roosevelt), a large reservoir maintained behind the Grand Coulee Dam. EPA prepared this screening risk assessment in response to public concern regarding the safety of recreating on beaches along the UCR, especially for those beaches which appear to be largely comprised of riverine deposits of slag (Majewski et al., 2003).

1.4 Methods

1.4.1 Field Sampling

Sediment samples were collected from the upper 15 cm at three elevations (1250, 1260, and 1280 feet above mean sea level) along the shoreline, and analyzed for metals, PCB arochlors, dioxins, furans, and pesticides. The sample elevations were selected to be exposed between 20 and 100 percent of the time during a typical water year. Samples were collected along beaches where exposure is expected from the surface to a depth 15 cm.

1.4.2 Selection of Contaminants for Screening

The following seven contaminants were selected because the maximum concentrations of at least one beach sample exceeded the residential Preliminary Remedial Goals (PRG) developed by Region 9 (Smucker, 2004) <http://www.epa.gov/region09/waste/sfund/prg/index.html>. Because the residential PRGs are based on exposures of 350 days per year for 30 years, they are protective for 14 days of intense recreation use per year. None of the other chemicals (e.g., PCB arochlors, dioxins, furans, and pesticides) exceeded the Region 9 Residential PRGs.

The following seven metals were selected for evaluation because the maximum levels exceeded the Region 9 PRG:

- Antimony
- Arsenic
- Copper
- Iron
- Lead
- Manganese
- Uranium

After comparison of maximum sample concentrations with recreational PRGs, exceedances were limited to arsenic and lead.

1.4.3 Screening Process

The screening level risk assessment entailed calculating a safe concentration for each metal of concern for comparison to the maximum level of each metal encountered at each of the 15 beaches (Table 1-1). This safe concentration is Preliminary Remedial Goal (PRG) (U.S. Environmental Protection Agency, 2005a). The PRGs were developed for screening purposes; they are not clean-up levels (U.S. Environmental Protection Agency, 2005a). Based on this comparison, sites were grouped into one of the following categories:

- Excluded from further consideration because they are unlikely to pose a threat to human health from recreational use, or
- Evaluated further in the RI/FS

Because young children are the most vulnerable, because of their high potential for sediment ingestion and their low body weight, PRGs developed to ensure protection of children are protective of older children and adults. PRGs developed for beach sediment

TABLE 1-1

Values for Selected Contaminants of Concern on UCR Beaches (all values are expressed in mg/kg dry weight)
Upper Columbia River RI/FS

Metal	Maximum (mg/kg dry wt)	Region 9 Residential PRG	Recreational PRG
Antimony	53	31	521
Arsenic	36	0.4	13 ^a
Copper	3,290	3,129	52,143
Iron	254,000	23,463	782,143
Lead	535	400	400
Manganese	4,780	1,762	60,833
Uranium	84	16	261

^a13 mg/kg is the risk-based PRG for arsenic, but this value was increased to account for naturally occurring arsenic at approximately 3 mg/kg for an adjusted PRG of 16 mg/kg (associated with an incremental risk of 10–6 see discussion on background levels).

assume children will be exposed to beach sand sediment through ingestion and dermal contact and will ingest more sediment (i.e., eat more dirt) while playing at the beach than they would in their home setting on a per day basis because of greater access to uncovered sand or sediment and more limited access to washrooms compared with a home or school. Consistent with EPA dermal exposure guidance, the dermal pathway was evaluated for arsenic only because absorption factors are not currently available for other metals (U.S. Environmental Protection Agency, 2004b). Children were assumed to visit the beaches for up to 14 days per year. For arsenic, the only carcinogen evaluated, the 14-day exposure was repeated annually for 30 consecutive years. For children, the PRG was based on a high rate of sediment ingestion equal to 300 mg/day based on the 90th percentile from a soil ingestion study of children camping (van Wijnen, Clausing & Brunekreef, 1990). The adult sediment ingestion rate was 100 mg/day, equivalent to a full-time residential rate (U.S. Environmental Protection Agency, 1991a).

1.4.4 Preliminary Remediation Goal for Lead

PRGs are developed differently for lead than for the other metals. EPA uses a mathematical model to estimate blood lead levels in children up to 84 months of age (U.S. Environmental Protection Agency, 2005b). The model was used to calculate the national residential soil lead screening level of 400 mg/kg. This level associated with 5% risk of attaining an *elevated* blood lead level of 10 µg/dL (U.S. Environmental Protection Agency, 1998b). Currently, 10 µg/dL is recognized as an elevated blood level for children by EPA and the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, 1991; U.S. Environmental Protection Agency, 1998b). The 400 mg/kg national screening level was selected as a protective recreational PRG for this screening assessment. Alternative scenarios or assumptions may be used to assess risks for other types of activities in the forthcoming RI/FS.

1.4.5 Preliminary Remediation Goal for Metals Other Than Lead

PRGs were calculated using standard EPA risk equations and solving for concentration (U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response, 1996b). Target risk goals and equations differ for carcinogenic or non-carcinogenic effects. PRGs are calculated by defining a target cancer risk or hazard goals, a set of exposure assumptions, and then solving sediment concentration. Arsenic was the only carcinogen evaluated. The arsenic PRG is based on the low end of EPA's acceptable cancer range, which is an increased cancer risk of one in a million (10^{-6}). This level was adjusted to account for local levels of naturally occurring arsenic at approximately 3 mg/kg. Based solely on cancer risk, PRG would be 13 mg/kg, but the average background level is 3 mg/kg, these levels were added to realize an adjusted PRG of 16 mg/kg. A PRG based on non-cancer arsenic effects would be substantially higher at 540 mg/kg. The target risk goal for non-carcinogenic hazards is a hazard quotient (HQ) of 1. An HQ of 1 is the point at which the estimated dose equals the protective dose or Reference Dose (RfD).

1.4.6 Beach Recreation

Typical recreational uses on the beach areas are:

- Dry beach play – playing and digging in the sand,
- Shallow water play – wading, splashing, or swimming
- Camping, picnicking, or cooking
- Boat launching and retrieval

These recreational activities may include intensive contact with sediments, especially when individuals are moving in and out of the water and in contact with beach sand. Of particular interest is a young child playing on the sand, where wet materials are more likely to adhere to skin, and a large proportion of skin is exposed (Finley & Scott, 1996; Kissel, Richter & Fenske, 1996). Under these conditions, adhered materials are available for hand-to-mouth ingestion and, to a lesser extent, for dermal absorption.

1.4.7 Limitations of this Assessment

The focus of this screening level risk assessment is the sediment ingestion pathway by children; however, examples of other receptors and exposure pathways that will be part of the forthcoming RI/FS work include-exposures that occur during fishing, hunting, or gathering of other food items from the Upper Columbia River and Lake Roosevelt. This assessment does not address risks associated with wind blown sediment. Dust storms are currently being investigated by the U.S. Geological Survey, but results are not yet available (Majewski et al., 2003). These exposures will be addressed in the forthcoming baseline risk assessment.

Mercury is the primary concern from fish consumption. EPA is currently analyzing fish tissue for an extensive array of potential contaminants, but the fish consumption pathway is not included in this screening assessment. This pathway will be investigated in the near future by both the Washington Department of Health and EPA.

It is also possible that park maintenance workers could be exposed to contaminants in sediment during the course of their work activities. Because the screening levels are

protective of children during beach play, the screening concentrations are likely protective of adult maintenance workers at the depths sampled. However, it is possible that contamination may be present below samples depth used in this assessment which could expose excavation workers.

The focus of this expedited risk assessment is the development of screening levels for beach sediment that will protect all visitors recreating along the Upper Columbia River and Lake Roosevelt. Recreational exposure was evaluated based on children ingesting sediment and getting sediment on their skin (dermal contact). Children were selected as the most sensitive population based on their potentially higher ingestion of sediment and lower body weight.

This report was prepared in accord with EPA's current risk assessment guidelines (U.S. Environmental Protection Agency Office of Solid Waste And Emergency Response, 1989; U.S. Environmental Protection Agency, 1991c; U.S. Environmental Protection Agency, 2000; U.S. Environmental Protection Agency, 2002b; U.S. Environmental Protection Agency Office of Emergency and Remedial Response, 2002; U.S. Environmental Protection Agency, 2004a; U.S. Environmental Protection Agency, 2004b; U.S. Environmental Protection Agency, 2006). The evaluation follows the best available science and professional judgment to reflect site-specific conditions that are not specifically addressed in appropriate regulatory guidance.

The accuracy of this report depends in part on the quality and representativeness of the available sampling, exposure, and toxicological data. Where information is incomplete, health-protective assumptions were made so that public health risks were not underestimated. Section 4 presents a discussion of uncertainties in the risk assessment resulting from data limitations.

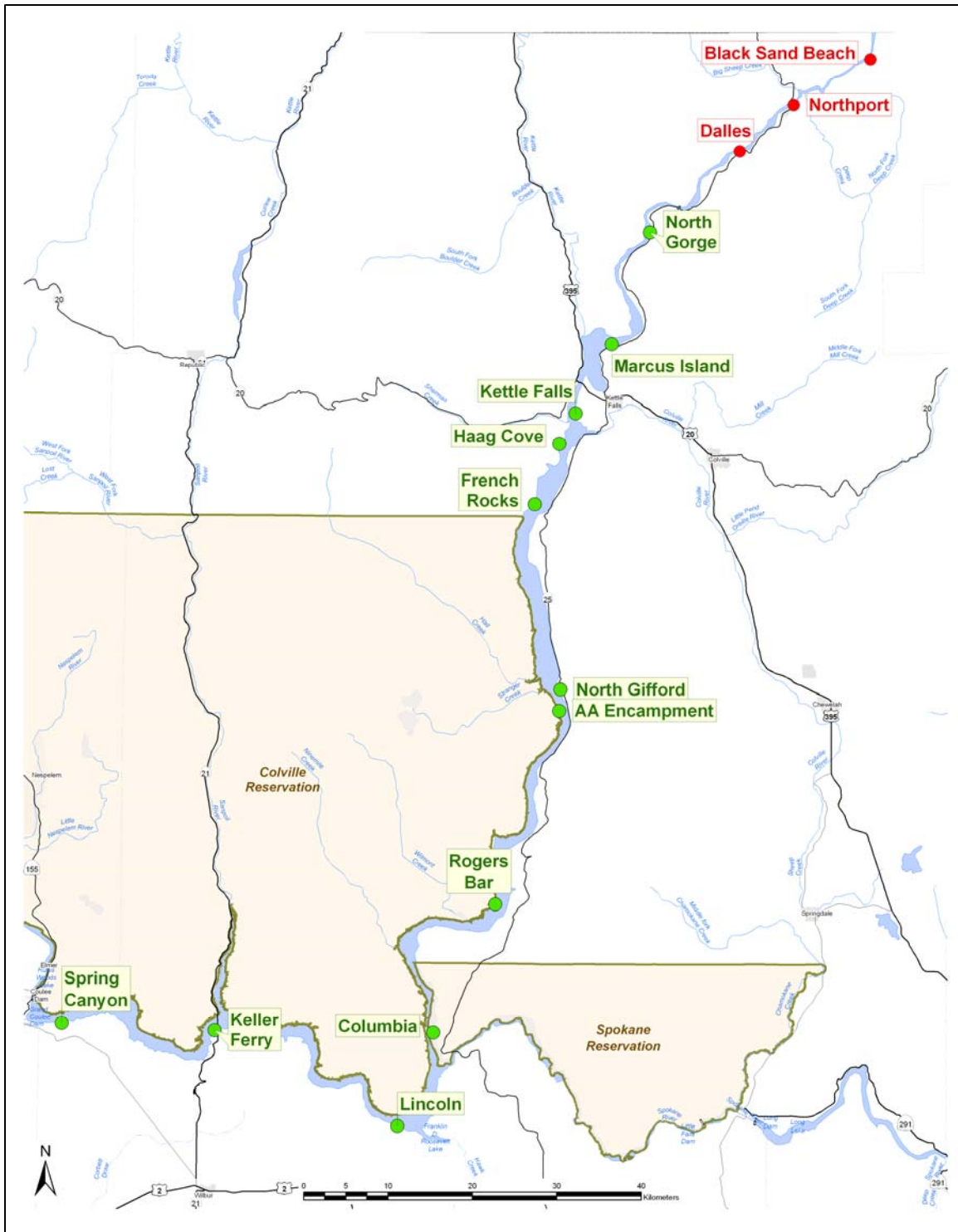


FIGURE 1-1
Upper Columbia River and Lake Roosevelt Beach Area Sampling Sites

SECTION 2

Data Evaluation

This section provides a summary of the sampling and analysis completed to support this screening assessment. Samples were collected from sediment (i.e., beach sand) on the portions of the beach used by people for recreation. Ortho photographs showing the sample locations are presented in Appendix B. Sections below describe the numbers and types of samples collected at each beach and present analytical results. Also described are the chemicals of potential concern (COPCs) and the background concentrations of metals in sediment for the Upper Columbia River and Lake Roosevelt.

Data were gathered for this screening level analysis as described in the Sediment Sampling Approach and Rationale report prepared by CH2MHill (U.S. Environmental Protection Agency Region 10, 2006). Overall objectives for the Phase I sediment sampling include the following:

- Evaluate human health risks from recreational exposure at 15 high-use locations dispersed along the Upper Columbia River and Lake Roosevelt
- Define nature and extent of sediment contamination
- Describe longitudinal and transverse spatial trends of sediment contamination
- Collect concentration depth data from sediment cores
- Describe temporal trends by comparing data collected in 2005 with prior sediment data

After screening maximum beach samples against Region 9 Residential PRGs, the following chemicals of potential concern were identified. Maximum beach sample concentrations were then screened against recreational PRGs for these metals, with the exception of lead – where a residential PRG was used as the recreational PRG. See Appendix A for results of the COPC screening.

- Antimony
- Arsenic
- Copper
- Iron
- Lead
- Manganese
- Uranium

2.1 Sampling Investigations

For this recreational screening risk assessment, samples were collected from beach sediment at 15 locations along the Upper Columbia River and Lake Roosevelt based on input from the Confederated Tribes of the Colville Reservation, the Spokane Tribe of Indians, Washington State, and the National Parks Service. Beach locations were distributed along the entire

length of the site. Additionally, within each location, samples were located based on local knowledge (gleaned during discussions with staff from the Tribes and National Parks Service) of high use areas based on proximity to swim beaches, campgrounds, play equipment, boat ramps, and other amenities.

2.2 Sediment Sampling

Appendix A summarizes the results of COPCS at each location. The objective of the sampling was to produce sufficient data for screening against PRGs. Surface samples were collected from the upper 10-15 cm at three locations and three elevations for a total of 9 sub-samples. These sub-samples were combined at each of the three elevations to yield three composite samples at 12 locations. The 9 sub-samples collected at the Northport, Kettle Falls, and Columbia Campground beaches were not combined. At these beaches, all 9 samples were analyzed separately to measure variability between sub-samples. Ratios of the maximum to mean concentrations were relatively small, (i.e., generally less than 2x for the composites and less than 3x for the discreet samples).

2.3 Sediment Laboratory Analyses

The laboratory had problems with the analyses for antimony and uranium. In the case of antimony, the many results were rejected due to low matrix spike recoveries (i.e., recovery below 30 percent) that indicated low bias in the measurement. This was not caused by laboratory or field error, but is intrinsic to the nature of the sediments collected. Despite uncertainties in the antimony results, the highest value encountered was one tenth of the PRG and it is unlikely that antimony poses a risk to people on the beaches. More than 75% of the uranium analyses were below the detection limit which varied between 5 and 129 mg/kg depending on the lab result and the moisture content of the sediment. However, even the maximum non-detect value was below the PRG of 261 mg/kg.

2.4 Results

After a comparison of the full suite of chemicals, including pesticides, organic compounds, PCBs, dioxins, furans, and metals, seven metals had maximum concentrations which exceeded residential land use soil screening values (Smucker, 2004). Recreational PRGs were developed to screen beaches based on 14 days of use per year instead of 350 days of use per year for residential land use PRGs. For children, the PRG was based on a high rate of sediment ingestion equal to 300 mg/day based on the 90th percentile from a soil ingestion study of children camping (van Wijnen, Clausing & Brunekreef, 1990). The adult sediment ingestion rate was 100 mg/day, equivalent to a full-time residential rate (U.S. Environmental Protection Agency, 1991a). When compared with recreational PRGs, three of the fifteen locations had concentrations above the arsenic PRG and one sample exceeded the lead PRG (Table 2-1). Levels for these metals exceeded the residential PRGs by a small margin. The maximum concentration for arsenic was greater than the PRG at the following 3 of the 15 sites (listed from north to south):

TABLE 2-1
Summary of Beach Screening Results
Upper Columbia River RI/FS

Beach (listed from North to South)	Bank – River Mile	Exceeds PRG
“Black Sand” Beach	East – 742	Arsenic
Northport Boat Ramp	East – 735	Arsenic Lead
Dalles Orchard	East – 729	Arsenic
North Gorge Campground	East – 718	Pass
Marcus Island Campground	East – 708	Pass
Kettle Falls Swim Beach	East – 700	Pass
Haag Cove	West – 697	Pass
French Rocks Boat Ramp	West – 690	Pass
North Gifford	East – 675	Pass
AA Campground	East – 673	Pass
Roger’s Bar	West – 658	Pass
Columbia Campground	East – 642	Pass
Lincoln Mills Boat Ramp	East – 633	Pass
Keller Ferry No. 2	East – 615	Pass
Spring Canyon Campground	East – 600	Pass

- “Black Sand” Beach at river mile 742
- Northport City Boat Ramp at river mile 735 (this was the only location with a maximum lead concentration above the 400 mg/kg)
- Dalles Orchard at river mile 729

None of the other chemicals (e.g., PCB arochlors, dioxins, furans, and pesticides) exceeded recreational PRGs. Although this screening risk assessment was based on recreational use of the beaches, because the arsenic recreational PRG was based on a 1 in a million cancer risk and the lead recreational PRG was equal to the residential PRG, risks from sediment exposure would still be modest, even under a full-time residential land-use scenario.

2.5 Sediment Background Concentrations

Background concentrations for the seven metals of concern are presented in Table 2-2. These background concentrations are based on results from sediment reference samples collected in 2005 by EPA, the U.S. Geological Survey in 1995 and 1990, and Ecology’s Natural Background Soil Metals Concentrations in Washington State (Washington State Department of Ecology, 1994; Majewski et al., 2003).

TABLE 2-2
Reference Concentrations for Metals of Potential Concern
Upper Columbia River RI/FS

Metal	Reference Concentration Range (mg/kg)
Antimony	0.1 – 1.4
Arsenic	1 – 10
Copper	10 – 25
Iron	5,100 – 34,000
Lead	8 – 47
Manganese	129 – 1,000
Uranium	0.5

SECTION 3

Development of PRGs

The purpose of establishing a PRG is to provide a point of comparison below which there is a high degree of confidence that a health threat does not exist. *Alternatively, a health threat may not exist at beaches where metals occur above the PRG.* To develop a PRG, the amount of exposure to a given chemical must be defined, an estimate of the toxicity of each chemical must be available, and target cancer risk and other health hazard goals must be established. Each of these three categories: exposure, toxicity, and target risk, are included in equations to calculate the PRG. Although, true for all metals examined, the lead PRG was based on a the national soil PRG for lead, which is based on limiting lead exposure, based on a modeled 5% target risk of attaining a blood level of 10 µg/dL for a child aged 6-84 months (U.S. Environmental Protection Agency, 1998b). Toxicity data was based on EPA sources, primarily the online Integrated Risk Information System (IRIS) <http://www.epa.gov/iris/> (Cook, 2003).

3.1 Exposure Assessment

In a screening risk assessment, exposure is defined conditionally to calculate the PRGs. A screening assessment is an “If - Then” statement created to prioritize areas based on a clearly defined exposure scenario. For this assessment, the statement is:

If your exposure is limited to ingesting sediment while camping (with young children) along the shoreline for 14 days per year, returning for 30 years, then 12 of the beaches are safe and 3 of the beaches warrant additional study. These 3 beaches present cancer risks on the order of 1 in a million.

EPA defined the target population as young children because they are the most sensitive to potential risks from ingesting beach sediment. Young children typically ingest more sediment than older children, or adults, because they are often on the ground, have greater hand-to-mouth contact, and ingest more material normalized to their lighter body weight (Simon, 1998). In addition to their greater potential for exposure, children are more sensitive to lead because their brains are still developing (National Academy of Sciences, 1993). Recent research suggests that early life exposures may contribute to the onset of diseases in later life (Barker, 2004; Smith et al., 2006).

Exposure was defined as a 14-day camping scenario with young children and associated high rates of sediment ingestion and dermal exposure, reoccurring over 30 years. The 14-day exposure frequency was based on National Park Service limits to camping. Repeating exposure over 30 years makes for a more protective PRG for arsenic, the only carcinogen evaluated, but does not effect the PRGs for other metals.

3.1.1 Ingestion of Soil

Incidental ingestion of soil is believed to be the primary route of exposure for metals in outdoor settings (Duggan & Inskip, 1985; Duggan et al., 1985). Young children are more

likely to ingest soil during outdoor play than adults because of their more frequent hand-to-mouth actions and tendency to play in sand (U.S. Environmental Protection Agency, 1997a; U.S. Environmental Protection Agency, 2002a). Although adults also ingest soil, they typically ingest less soil than children (Stanek et al., 1997). Because adults ingest less soil than children, PRGs protective of children will protect adults.

The best estimates of soil ingestion rates in children are from mass balance tracer studies which estimate soil ingestion based on elements found in soil and feces, and even these studies reflect a high degree of uncertainty (previous studies have been published without any measurements at all) (Hawley, 1985). Ideally, soil tracers have a low content in the diet and low gastrointestinal absorption. Tracer studies measure all sources of tracers that were ingested, including outdoor soil, indoor house dust, airborne dust that is trapped in the upper respiratory tract and swallowed, food, medicines, vitamins, paint chips, baby powder, and toothpaste. The most reliable studies have attempted to correct for the contribution of tracers from the diet and from medicines (U.S. Environmental Protection Agency, 1997a).

For residential exposure scenarios, EPA has recommended a Reasonable Maximum Exposure soil (i.e., the highest value that is reasonably expected to occur within a population) ingestion rates of 200 mg/day for young children (ages 1 through 6) and 100 mg/day for older groups (U.S. Environmental Protection Agency, 1991a). These values are protective estimates of average values for soil and dust ingestion over a chronic period of exposure based on EPA's subsequent review of soil ingestion studies (U.S. Environmental Protection Agency, 1997a).

For exposures at the beach, children are assumed to potentially ingest greater amounts of soil/sediment than they would at home; consequently, the soil/sediment ingestion rate selected for the PRG calculations is 300 mg/day, rather than 200 mg/day. EPA selected this value because EPA believes it is based on the most relevant soil ingestion study for a camping scenario. The value is the 90th percentile from a study of 78 children camping adjacent to a lake (van Wijnen, Clausing & Brunekreef, 1990).

3.1.2 Dermal Contact With Soil

Dermal contact with soil is a complete pathway and was included in the PRG calculations concurrent with soil ingestion. However, a dermal absorption factor is available to quantify the dermal pathway for arsenic only (U.S. Environmental Protection Agency, 2004b).

EPA recommends the use of oral toxicity criteria for the dermal pathway, with a conversion factor to convert the orally administered toxicity criteria to an internally absorbed dose, and an absorption factor for the amount of chemicals which cross the skin and enter the blood stream (U.S. Environmental Protection Agency, 2004b). The importance of dermal exposures relative to ingestion exposures for soil depends on the chemical-specific absorption fraction and relative bioavailability factors associated with the dermal and ingestion routes. In this assessment, dermal absorption of arsenic is insignificant relative to ingestion (Lorenzana et al., 1996).

3.1.3 Gastrointestinal Absorption

The dose calculated by the exposure assessment is an “administered” dose unless it is adjusted to account for systemic absorption into the blood stream (“absorbed” dose). Absorption should be adjusted if the form of the chemical for the exposed population differs from the form of the chemical used to develop the toxicity criteria. In this assessment, EPA adjusted the arsenic absorption by a factor of 0.6 to account for reduced absorption of arsenic in sediment relative to arsenic in drinking water because the toxicity criteria for arsenic are based on drinking water exposures (U.S. Environmental Protection Agency Office of Solid Waste And Emergency Response, 1989; U.S. Environmental Protection Agency, 1998a).

3.1.4 Dermal Absorption

Because arsenic is the only metal with an available dermal absorbed fraction, dermal exposure calculations were limited exclusively to arsenic (U.S. Environmental Protection Agency, 2004b). The dermal absorption factor for arsenic is 3% (U.S. Environmental Protection Agency, 2004b).

3.1.5 Intake Calculations

For each exposure pathway and age group, the following equation calculates unit exposure, as dose per mg/kg of chemical in soil per day based on the exposure assumptions (see Table 3-1 below and Appendix D for detailed calculations).

Non-carcinogens

Soil Ingestion:

$$\text{Summary Intake Factor (SIF)} = CF \times IRS_c \times EF_c \times ED_q / (BW_c \times AT_n)$$

Dermal Soil Contact:

$$SIF = CF \times SA_c \times EF_c \times ED_c \times AF_c / (BW_c \times AT_n)$$

Carcinogens

Exposure is calculated differently for assessing carcinogenic risks than non-carcinogenic hazards. The averaging time for non-carcinogenic effects is the same as the exposure period (i.e., 6 years for children), whereas for carcinogenic effects the averaging time is equivalent to a lifetime, or 70 years (U.S. Environmental Protection Agency Office of Solid Waste And Emergency Response, 1989).

For evaluation of carcinogenic exposure, pathways with different exposures for two age groups (e.g., child soil ingestion and dermal contact), the total dose is calculated by:

1. Weighting the intake of each age group (e.g., 1- to 6-year-olds) by the length of time spent in that age group (e.g., 6 years)

TABLE 3-1
Exposure Parameter Definitions
Upper Columbia River RI/FS

Abbreviation	Name	Value and Units
CF	Sediment Conversion Factor	10 ⁶ mg per kg
IRS _c	Sediment Ingestion Rate – Child	300 mg per day
IRS _a	Sediment Ingestion Rate – Adult	100 mg per day
EF	Exposure Frequency	14 days per year
ED _c	Exposure Duration – Child	6 years
ED _a	Exposure Duration – Adult	24 years
AF _c	Adherence Factor – Child	0.2 mg/cm ²
AF _a	Adherence Factor – Adult	0.07 mg/cm ²
SA _c	Exposed Surface Area – Child	6,600 cm ²
SA _a	Exposed Surface Area – Adult	15,000 cm ²
BW _c	Body Weight – Child	15 kg
BW _a	Body Weight – Adult	70 kg
AT _c	Averaging Time – Carcinogens	25,500 days
AT _{nc}	Averaging Time – Non-Carcinogens	2,190 days

2. Summing the time-weighted doses from all age groups

3. Dividing by the averaging time, as follows:

Soil Ingestion:

$$SIF_{soil} = CF \times EF_c \times \{ (ED_c \times IRS_c / BW_c) + (ED_a \times IRS_a / BW_a) \} / AT_c$$

Dermal Soil Contact:

$$SIF_{dermal} = CF \times EF_c \times \{ (ED_c \times SA_c \times AF_c / BW_c) + (ED_a \times SA_a \times AF_a / BW_a) \} / AT_c$$

The dose for each pathway of exposure (ingestion of soil, dermal contact) is combined with the toxicity criteria and target health goals to estimate PRGs. Appendix D contains the spreadsheets with calculation details and a presentation of each formula used.

3.2 Toxicity Criteria

This section summarizes toxicity criteria used to calculate PRGs. A fundamental principle of toxicology is that the dose determines whether a chemical is toxic. For example, very high doses of iron or manganese are toxic, but both metals are essential nutrients at lower doses. Accordingly, the toxicity criteria describe the quantitative relationship between a chemical's dose and magnitude of toxic effect. The criteria are described below; toxicity

criteria used in this assessment are summarized in Table 3-2. It is noteworthy that for arsenic and lead, the only two metals which exceeded the PRG, the toxicity criteria are based on extensive studies of human populations exposed to these metals (National Academy of Sciences, 1993; National Academy of Sciences, 1999; National Academy of Sciences, 2001).

3.2.1 Oral Toxicity Parameters

Key dose-response parameters are EPA slope factors for assessing cancer risks, and EPA-verified reference dose (RfD) values for evaluating non-carcinogenic effects (Table 3-2). Most of these criteria are from the EPA's online data base Integrated Risk Information System (IRIS) <http://www.epa.gov/iris/>, but other sources of toxicity parameters are available from the Risk Assessment Information System http://risk.lsd.ornl.gov/tox/tox_values.shtml.

Carcinogenic Effects of Arsenic

The cancer slope factor (SF) expressed as the inverse of dose units of mg/kg-day relates an increase in cancer risk as a function of dose. The dose response assumes that there is no threshold. In other words, any exposure to arsenic greater than zero is associated with a proportional increase in cancer risk, such that no dose is without some risk of cancer.

Arsenic's SF, the only carcinogen in this assessment, is based on human epidemiological studies and real environmental exposures. In Taiwan, a correlation has been made between high arsenic concentrations in drinking water and the increased incidence of skin cancer in humans (Tseng, 1977; Tseng, 1989). Therefore, EPA has classified arsenic as a proven human carcinogen (U.S. Environmental Protection Agency, 2003). Currently, the SF for arsenic is under review to incorporate findings from more recent studies including drinking water reviews (National Academy of Sciences, 1999; National Academy of Sciences, 2001). There are no cancer toxicity criteria for the other metals of concern, because there is no evidence to suggest that they are carcinogenic.

Non-carcinogenic Effects

The chronic RfD (expressed in units of mg/kg-day) is an estimated daily chemical intake rate for the human population, including sensitive subgroups, that appears to be without appreciable risk of non-carcinogenic effects if ingested over a lifetime. Because chronic criteria are based on lifetime average body weight and intake assumptions, they are likely to be protective when compared to child's exposure, with their lower body weight and greater sediment ingestion rate.

RfD values are derived from experimental data on a no-observed-adverse-effect level (NOAEL) or lowest-observed-adverse-effect level (LOAEL) in animals or humans. A NOAEL is the highest tested chemical dose given to animals or humans that has not been associated with any adverse health effects. A LOAEL is the lowest chemical dose at which health effects have been reported. RfDs are calculated by dividing a NOAEL or LOAEL by a total uncertainty factor, which represents a combination of individual factors for various sources of uncertainty in the data base for a particular chemical or in extrapolating animal data to humans. RfDs and associated uncertainty factors are summarized in Table 3-2 for each chemical. IRIS also assigns a level of confidence in the RfD. The level of confidence is

rated as either high, medium, or low based on the confidence in the critical study and underlying data.

TABLE 3-2
Toxicity Criteria
Upper Columbia River RI/FS

Chemical	Cancer SF (mg/kg-day) ⁻¹	Noncancer: RfD (mg/kg-day)	Health Endpoint	Uncertainty Factor Confidence in RfD	Reference
Antimony	None	0.0004	Reduced lifespan, altered glucose and cholesterol	1,000 Low confidence	(U.S. Environmental Protection Agency, 1991b)
Arsenic	1.5	0.0003	Skin cancer (SF), hyper pigmentation and hyperkeratosis of the skin (RfD)	3 Medium confidence	(U.S. Environmental Protection Agency, 1998a)
Copper	None	0.04	Renal, proteinuria	10 High confidence	(U.S. Environmental Protection Agency, 1997b)
Iron	None	0.6	Hematological effects	1 High	(Institute of Medicine, 2001; Stifelman <i>et al.</i> , 2005)
Lead	None	10 µg/dL in blood	CNS IQ and cognitive function	High	(Centers for Disease Control and Prevention, 1991; U.S. Environmental Protection Agency, 1998b)
Manganese	None	0.047*	CNS Motor Effects	1 Medium confidence	(U.S. Environmental Protection Agency, 1996)
Uranium	None	0.0002	Renal damage	1,000 Low confidence	(U.S. EPA National Center for Exposure Assessment, 2001)

Notes:
RfD – Reference Dose
SF – Slope Factor

*Mn RfD is 0.14 with a MF of 3 for non-dietary assessments ($0.14/3 = .047$) based on (U.S. Environmental Protection Agency, 1996)

3.2.2 Essential Nutrients

Of the seven chemicals of concern, three are essential nutrients: iron, copper, and manganese. RfDs for essential elements are developed to be protective against deficiency as well as toxicity. Therefore, RfDs for essential metals are protective against the toxic effects of over-exposure to these metals, and the RfDs supply adequate levels of the metal to meet the Recommended Daily Allowance guidelines (Institute of Medicine, 2001; U.S. Environmental Protection Agency, 2004a; Stifelman *et al.*, 2005).

3.3 Calculation of PRGs

This section calculates health-based PRGs for beach sediment. Preceding sections quantified exposure in terms of a unit dose of chemical along with the relative toxicity associated with exposure. This section uses this information to calculate sediment PRGs that are protective of health for sediment ingestion and dermal absorption for arsenic.

PRGs are calculated by defining a exposure parameters and a target risk level, then solving the equations for a sediment concentration (U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response, 1996a). The target cancer risk for arsenic, the only carcinogen assessed, is 1 in a million (10^{-6}). This is the low end of EPA's cancer risk range spanning 10^{-6} to 10^{-4} . For lead, EPA relied on the EPA's national PRG of 400 mg/kg, instead of calculating a site-specific concentration (U.S. Environmental Protection Agency, 1994; U.S. Environmental Protection Agency, 1998b). The target risk for the remaining metals was a Hazard Quotient of 1.

The following equation was used for calculation of PRGs for oral and dermal exposure to arsenic (the only carcinogen in this assessment):

$$\text{Soil/Sediment PRG} = \text{Target Risk} / \{SF \times \{(SIF_{\text{sediment}}) + (SIF_{\text{dermal}} \times ABS_d)\}\}$$

The target risk goal for non-carcinogenic hazards is a hazard quotient (HQ) of 1. An HQ of 1.0 is the point at which the estimated dose equals the RfD.

PRGs based on noncancer effects for each the remaining metals, were calculated using the following equation for each pathway.

$$\text{Soil PRG} = \text{HQ} \times \text{RfD} / (SIF_{\text{soil}})$$

PRG calculations are included as Appendix D.

SECTION 4

Uncertainties in the Beach Screening Assessment

The purpose of the screening level risk assessment was to prioritize beaches into two categories:

1. Excluded from further consideration because they are unlikely to pose a threat to human health from recreational use, or
2. Evaluated further in the Remedial Investigation and Feasibility Studies

The screening assessment produces the potential for two kinds of errors. The first is the potential to falsely retain a site for additional evaluation when, in fact, the site need not be considered a concern (false positive conclusion). The second is to falsely eliminate a site from further consideration when, in fact, there should be a concern (false negative conclusion). The assessment was designed to limit the potential for false negative errors in favor of the potential for false positive errors, which can be addressed during planned re-evaluations. Countering false positive errors is important to prevent response actions where they are not necessary. EPA wishes to limit the potential for false negative errors to avoid missing a potentially hazardous situation. Therefore, uncertainties were handled protectively in this screening assessment to reduce the potential for false negative conclusions (e.g., maximum concentrations from each of the beaches were used for screening).

EPA recognizes that perhaps the greatest uncertainty was caused limiting the sampling to 15 locations. During public meetings held in June 2006, EPA learned that the Agency did not include two popular beaches, namely Bradbury Beach and Colville Flats. Sampling at these locations will be recommended during the next phase of field work. Sampling at additional beaches in the vicinity of Dalles Orchard, Northport, and "Black Sand" beaches will also be considered.

PRG development requires assumptions about exposure and toxicity as well as defining a target level of risk. Assumptions about exposure are generally site-specific, in this assessment, 14 days was based on Park Service limits to camping and a high sediment ingestion rate was selected based on a study of children camping near a lake (van Wijnen, Clausing & Brunekreef, 1990; National Parks Service, 2006). Assumptions about toxicity are independent of the site, and depend on the standardized values (Cook, 2003).

PRGs for sediment included an assumption that ingestion of sediment during recreational activities was 300 mg/day for children up to six years old, and 100 mg/day for children older than six and adults. The 300 mg per day ingestion day is the 90th percentile value from a study of soil ingested by children while camping (van Wijnen, Clausing & Brunekreef, 1990). The average value from this study was 120 mg/day. Recreational users of the rivers may have a shorter exposure duration than 30 years assumed for the PRG calculation for arsenic or the 6-year total assumed for other metals. Shorter exposure

durations would produce proportionally less stringent PRGs. In addition to exposure parameters, PRG development required selection of a target acceptable risk level. For arsenic, the only carcinogen evaluated, the PRG was based on a 1×10^{-6} increased cancer risk, which represents the low end of EPA's cancer risk range of 10^{-6} to 10^{-4} . The lead PRG was based on the national soil screening value for lead (U.S. Environmental Protection Agency, 1998b). Because this value is typically used in residential settings, it is considered protective in a recreational setting. For the other metals, the target risk was a HQ of 1, which is considered a protective threshold for adverse health effects (U.S. Environmental Protection Agency Office of Solid Waste And Emergency Response, 1989).

The effects of simultaneous exposure to multiple chemicals can be additive, antagonistic (less than additive), or synergistic (more than additive). Whether and how chemicals interact depends on the level of exposure and characteristics of the individual chemicals. Adverse health interactions are unlikely to occur from beach sediment exposure because the exposure levels are low and the interactions are likely to be less than additive because copper, iron, manganese and zinc are essential minerals (Goyer, 1995). For example, iron and zinc decrease absorption and toxicity from exposure to lead (Goyer, 1997).

SECTION 5

Summary and Conclusions

EPA has completed a screening level risk assessment for sediment exposure from limited recreational use at fifteen popular beaches along Lake Roosevelt and the Upper Columbia River. Twelve of the fifteen beaches are safely below health-based risk standards for all the contaminants EPA tested for, including arsenic, lead, pesticides, and PCBs. At three beaches EPA found levels of arsenic and/or lead that were slightly above EPA screening levels, but those beaches remain safe for seasonal recreation as well. This screening was limited to recreational use only, such as a family that camps for up to two weeks per year, returning for 30 years. More intensive uses of the beaches, such as year-round food gathering or camping for extended periods of several months or more were not addressed by this assessment, but will be addressed in the Upper Columbia River RI/FS.

The beach screening is a first step in evaluating potential risks from contamination. EPA will be using all of the sediment and fish tissue data EPA collected in 2005 to conduct an in-depth risk assessment for people living in the area and using the beaches year-round. That risk assessment may take several years to complete.

The highest levels of arsenic in beach sediments were found at the three most northern beaches EPA sampled (Black Sand, Northport, and Dalles). Arsenic levels at these beaches were still very low, but slightly higher than the screening level. Lead was also slightly higher than the screening level at Northport only. Since these three locations did not pass EPA's screening, EPA will re-evaluate them for recreational use during the full risk assessment. However, because the risks are low, these beaches are still safe for visitors to use.

The following is a summary of findings:

- Higher metal concentrations were found at the northern reach of the river.
- There was little difference between metals levels at different beach elevations.
- Three sites ("Black Sand" Beach, Northport, and Dalles) were selected for further evaluation based on the concentration of arsenic above screening levels. One of these sites, at Northport, also exceeded the screening level for lead.

SECTION 6

References

- Barker, D.J. (2004). The developmental origins of adult disease. *J Am Coll Nutr*, **23**, 588S-595S.
- Bortelson, G.C., Cox, S.E., Munn, M.D., Schumaker, R.J. & Block, E.K. (1994). Sediment-quality assessment of Franklin E. Roosevelt Lake and the upstream reach of the Columbia River pp. 130. U.S. Geological Survey: Tacoma, WA. Open-File Report 94-315. <http://wa.water.usgs.gov>
- Centers for Disease Control and Prevention. (1991). Preventing Lead Poisoning in Young Children: A Statement on Preventing Lead Poisoning in Young Children by the Centers for Disease Control. Centers for Disease Control and Prevention: Atlanta, GA. <http://aepo-xdv-www.epo.cdc.gov/wonder/prevguid/p0000029/p0000029.asp>
- Cook, M.B. (2003). Human Health Toxicity Values in Superfund Risk Assessments pp. 4. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington D.C. OSWER Directive 9285.7-53. <http://rais.ornl.gov/homepage/hhmemo.pdf>
- Duggan, M.J. & Inskip, M.J. (1985). Childhood exposure to lead in surface dust and soil: a community health problem. *Public Health Rev*, **13**, 1-54.
- Duggan, M.J., Inskip, M.J., Rundle, S.A. & Moorcroft, J.S. (1985). Lead in playground dust and on the hands of schoolchildren. *Sci Total Environ*, **44**, 65-79.
- Ecology and Environment (E&E). (2000). Upper Columbia River/Lake Roosevelt River Mile 597 to 745, Preliminary Assessment Report, Washington. Prepared for the United States Environmental Protection Agency Region 10.: Seattle, WA.
- Ecology and Environment (E&E). (2002). Upper Columbia River Mine and Mills, Preliminary Assessments and Site Inspections Report, Stevens County, Washington. U.S. EPA Region 10: Seattle, WA.
- Finley, B. & Scott, P. (1996). Response to John Kissels' letter to the editor: *Characterization of soil adherence to skin: impact of historical misinterpretation of the Que Hee et al. data. Risk Anal*, **16**, 443-4.
- Godin, B. & Hagen, M. (1992). Survival and Water Quality Results of Bioassays on Five Species of Aquatic Organism Exposed to Slag from Cominco's Trail Operations. Department of Fisheries and Oceans: Vancouver, B.C.
- Goodarzi, F., Sanei, H. & Duncan, W.F. (2001). Monitoring the distribution and deposition of trace elements associated with a zinc-lead smelter in the Trail area, British Columbia, Canada. *J Environ Monit*, **3**, 515-25.
- Goodarzi, F., Sanei, H., Labonte, M. & Duncan, W.F. (2002). Sources of lead and zinc associated with metal smelting activities in the Trail area, British Columbia, Canada. *J Environ Monit*, **4**, 400-7.
- Goyer, R.A. (1995). Nutrition and metal toxicity. *Am J Clin Nutr*, **61**, 646S-650S.
- Goyer, R.A. (1997). Toxic and essential metal interactions. *Annu Rev Nutr*, **17**, 37-50.

- Hawley, J.K. (1985). Assessment of health risk from exposure to contaminated soil. *Risk Anal*, **5**, 289-302.
- Institute of Medicine. (2001). Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc pp. xxii 800. Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Panel on Micronutrients, Food and Nutrition Board, Institute of Medicine: Washington, DC. ISBN 0-309-7279-4.
<http://www.nap.edu/catalog/10026.html>
- Kissel, J.C., Richter, K.Y. & Fenske, R.A. (1996). Factors affecting soil adherence to skin in hand-press trials. *Bull Environ Contam Toxicol*, **56**, 722-8.
- Lorenzana, R.M., Duncan, P.B., Ketterer, M., Lowry, J., Simon, J., Dawson, M. & Poppenga, R. (1996). Bioavailability of Arsenic and Lead in Environmental Substrates pp. iii, 48. U.S. EPA Region 10: Seattle, WA. EPA 910/R-96-002.
<http://www.epa.gov/r10earth/offices/oea/risk/bioavail.pdf>
- Majewski, M.S., Kahle, S.C., Ebbert, J.C. & Josberger, E.G. (2003). Concentrations and Distribution of Slag-Related Trace Elements and Mercury in Fine-Grained Beach and Bed Sediments of Lake Roosevelt, Washington, April-May 2001 pp. 29. U.S. Geological Survey: Tacoma, WA. U.S. Geological Survey Water-Resources Investigations Report 03-4170. <http://water.usgs.gov/pubs/wri/wri034170/>
- McMartin, I., Henderson, P.J., Plouffe, A. & Knight, R.D. (2002). Comparison of Cu-Hg-Ni-Pb concentrations in soils adjacent to four Canadian anthropogenic point sources. *Geochemistry Exploration, Environment, Analysis*, **2**, 57-74.
- National Academy of Sciences. (1993). *Measuring lead exposure in infants, children, and other sensitive populations*. National Academy Press: Washington, D.C.
- National Academy of Sciences. (1999). Arsenic in Drinking Water pp. 330. National Research Council: Washington D.C. ISBN 0-309-06333-7.
- National Academy of Sciences. (2001). Arsenic in Drinking Water: 2001 Update pp. 244. National Research Council: Washington D.C. ISBN 0-309-07629-3.
- National Parks Service. (2006). Superintendent's Compendium for Lake Roosevelt Designations, Closures, Permit Requirements and Other Restrictions Imposed Under Discretionary Authority. Office of the Superintendent: Coulee Dam, WA.
- Nener, J. (1992). Survival and Water Quality Results of Bioassays of Five Species of Aquatic Organisms Exposed to Slag from Cominco's Trail Operations. Department of Fisheries and Oceans: Vancouver, B.C.
- Simon, S.L. (1998). Soil ingestion by humans: a review of history, data, and etiology with application to risk assessment of radioactively contaminated soil. *Health Phys*, **74**, 647-72.
- Smith, A.H., Marshall, G., Yuan, Y., Ferreccio, C., Liaw, J., von Ehrenstein, O., Steinmaus, C., Bates, M.N. & Selvin, S. (2006). Increased Mortality from Lung Cancer and Bronchiectasis in Young Adults Following Exposure to Arsenic In Utero and Early Childhood *Environ Health Perspect*, **In Press**.
- Smucker, S.J. (2004). Region 9 PRGs Table 2004 Update, Vol. 2006. U.S. EPA Region 9. <http://www.epa.gov/region09/waste/sfund/prg/index.htm>
- Stanek, E.J., 3rd, Calabrese, E.J., Barnes, R. & Pekow, P. (1997). Soil ingestion in adults--results of a second pilot study. *Ecotoxicol Environ Saf*, **36**, 249-57.
- Stifelman, M.L., Ingerman, L., Thayer, W.C. & Diamond, G.L. (2005). Abstract No. 2082: Risk Assessment for Iron: Use of the Institute of Medicine's Tolerable Upper Intake Level

- as a Surrogate Toxicity Value for Iron. In *Society of Toxicology 44th Annual Meeting*, Vol. Volume 84, S-1. The Toxicologist CD – An official Journal of the Society of Toxicology: New Orleans, LA.
http://www.toxicology.org/AI/FA/2005_Toxicologist.pdf
- The Confederated Tribes of the Colville Reservation. (1999). Petition for Assessment of Release - Pursuant to Section 105(d) of CERCLA, 42 USC 9605(d) pp. ii, 7. Colville Business Council: Nespelem, WA.
- Tseng, W.P. (1977). Effects and dose--response relationships of skin cancer and blackfoot disease with arsenic. *Environ Health Perspect*, **19**, 109-19.
- Tseng, W.P. (1989). Blackfoot disease in Taiwan: a 30-year follow-up study. *Angiology*, **40**, 547-58.
- U.S. Environmental Protection Agency. (1991a). Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Office of Emergency and Remedial Response: Washington, DC. OERR Publication 9285.6-03 NTIS PB91-921314.
- U.S. Environmental Protection Agency. (1991b). IRIS Toxicity Profile for Antimony. Last Modified: February, 1991. <http://www.epa.gov/iris/subst/0006.htm#top>
- U.S. Environmental Protection Agency. (1991c). Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual, Part B, Development of Risk-based PRGs pp. xii 54. USEPA Office of Emergency and Remedial Response: Washington DC. EPA/540/R-92/003 Pub 9285.7-01B.
<http://www.epa.gov/superfund/programs/risk/ragsb/index.htm>
- U.S. Environmental Protection Agency. (1994). OSWER Directive #9355.4-12 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. U.S. Environmental Protection Agency,; Washington, DC. EPA/540/F-94/043. <http://www.epa.gov/superfund/programs/lead/prods.htm#guidance>
- U.S. Environmental Protection Agency. (1996). IRIS Toxicity Profile for Manganese. Last Modified: May, 1996. <http://www.epa.gov/iris/subst/0373.htm>
- U.S. Environmental Protection Agency. (1997a). Exposure Factors Handbook. U.S. Environmental Protection Agency, Office of Research and Development: Washington D.C. EPA/600/P-95/002Fc. <http://www.epa.gov/ncea/exposfac.htm>
- U.S. Environmental Protection Agency. (1997b). Health Effects Assessment Summary Table (HEAST) - FY 1997 Update. Office of Research and Development: Washington, DC.
- U.S. Environmental Protection Agency. (1998a). IRIS Toxicity Profile for Arsenic. Last Modified: April, 1998. <http://www.epa.gov/iris/subst/0278.htm>
- U.S. Environmental Protection Agency. (1998b). OSWER Directive #9200.4-27P Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. U.S. Environmental Protection Agency,; Washington, DC. EPA/540/F-98/030.
<http://www.epa.gov/superfund/programs/lead/prods.htm#guidance>
- U.S. Environmental Protection Agency. (2000). Risk Characterization Handbook pp. 178. U.S. EPA Science Policy Council: Washington DC. EPA 100-B-00-002.
<http://www.epa.gov/osp/spc/rchandbk.pdf>
- U.S. Environmental Protection Agency. (2002a). Child-Specific Exposure Factors Handbook (Interim Report). pp. 440. Office of Research and Development, National Center for Environmental Assessment: Washington, DC. EPA-600-P-00-002B.
<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=55145>

- U.S. Environmental Protection Agency. (2002b). Role of Background in the CERCLA Cleanup Program pp. 13. Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response: Washington DC. OSWER 9285.6-07P.
http://www.epa.gov/oerrpage/superfund/programs/risk/bkgpol_jan01.pdf
- U.S. Environmental Protection Agency. (2003). IRIS Toxicity Profile for Arsenic. Last Modified. <http://www.epa.gov/iris/subst/0278.htm>
- U.S. Environmental Protection Agency. (2004a). Framework for Inorganic Metals Risk Assessment (External Review Draft). pp. 344. U.S. Environmental Protection Agency, Risk Assessment Forum: Washington, D.C. EPA/630/P-04/068B.
<http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=88903>
- U.S. Environmental Protection Agency. (2004b). Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA: Washington, DC. EPA/540/R/99/005 OSWER 9285.7-02EP PB99-963312. <http://www.epa.gov/superfund/programs/risk/ragse/>
- U.S. Environmental Protection Agency. (2005a). Contaminated Sediment Remediation Guidance for Hazardous Waste Sites pp. 236. US EPA OSWER, Washington, DC. EPA-540-R-05-012; OSWER 9355.0-85.
<http://www.epa.gov/superfund/resources/sediment/guidance.htm>.
- U.S. Environmental Protection Agency. (2005b). Integrated Exposure Uptake Biokinetic Model for Lead in Children. Office of Emergency and Remedial Response: Washington, DC. <http://www.epa.gov/superfund/lead/products.htm#ieubk>
- U.S. Environmental Protection Agency. (2006). The Integrated Risk Information System (IRIS), Vol. 2006. U.S. Environmental Protection Agency, <http://www.epa.gov/iris/>
- U.S. Environmental Protection Agency Office of Emergency and Remedial Response. (2002). Guidance for Characterizing Background Chemicals In Soil at Superfund Sites. U.S. Environmental Protection Agency: Washington, D.C. OSWER 9285.7-41 EPA 540-R-01-003. <http://www.epa.gov/superfund/programs/risk/background.pdf>
- U.S. Environmental Protection Agency Office of Solid Waste And Emergency Response. (1989). Risk Assessment Guidance for Superfund Human Health Evaluation Manual Part A Interim Final. U.S. Environmental Protection Agency: Washington, D.C. 9285.701A. <http://www.epa.gov/superfund/programs/risk/ragsa/index.htm>
- U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response. (1996a). Soil Screening Guidance: Technical Background Document. USEPA: Washington, DC. EPA/540/R-95/128 PB96-963502.
<http://www.epa.gov/superfund/resources/soil/ssg496.pdf>
- U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response. (1996b). Soil Screening Guidance: User's Guide. USEPA: Washington, DC. 9355.4-23. <http://www.epa.gov/superfund/resources/soil/ssg496.pdf>
- U.S. Environmental Protection Agency Region 10. (2003). Upper Columbia River Expanded Site Inspection Report, Northeast Washington pp. xi, 70. U.S. EPA Region 10: Seattle, WA. Contract: 68-S0-01-01.
<http://yosemite.epa.gov/R10/CLEANUP.NSF/UCR/Technical+Documents>
- U.S. Environmental Protection Agency Region 10. (2006). Phase I Sediment Sampling Approach and Rationale - Upper Columbia River Site RI/FS pp. 143. Prepared by CH2MHill: Seattle, WA. Contract No. 68-S7-04-01.

- U.S. EPA National Center for Exposure Assessment. (2001). Risk Assessment Issue Paper: Oral RfD, Inhalation RfC and Cancer Assessment for Compounds of Natural Uranium (CASRN 7440-61-0) pp. 29. EPA, National Center for Exposure Assessment: Cincinnati, OH.
- van Wijnen, J.H., Clausing, P. & Brunekreef, B. (1990). Estimated soil ingestion by children. *Environ Res*, **51**, 147-62.
- Washington State Department of Ecology. (1994). Natural background soil metals concentrations in Washington State.

APPENDIX A

Results for the Seven Metals of Concern

Results for the Seven Metals of Concern

TABLE A-1
Summary of Analytical and Screening Results
Upper Columbia River RI/FS

Site Name	Analyte: (mg/kg)		Antimony	Arsenic	Copper	Iron	Lead	Manganese	Uranium
	CAS Number:		7440360	7440382	7440508	7439896	7439921	7439965	7440611
	Recreational RBC		521	16	52143	782143	400	60833	261
	Object Name	Sample Name							
Spring Canyon Campground South	RM600B1	MJ4FG0	1 UJ	8.5	6.5	14300	6.1	226	20.6 U
	RM600B2	MJ4FG1	1.1 UJ	7.5	5.5	14900	7.1	208	5.2 J
	RM600B3	MJ4FG2	0.79 UJ	10.3	7.1	15400	6.7	227	20.8 U
	Max		1.1	10.3	7.1	15400	7.1	227	20.8
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	54.3%	0.0%	1.9%	1.7%	0.4%	6.0%
	Max/Ave		114.2%	117.5%	111.5%	103.6%	107.0%	103.0%	133.9%
Keller Ferry No 2 East	RM615B1	MJ4FE8	0.58 UR	4	6.7	13100	4.5	214	20.2 U
	RM615B2	MJ4FE9	0.89 UR	4.9	8.6	15500	6.3	230	4.6 J
	RM615B3	MJ4FF0	0.95 UR	4.7	9.1	15600	5.9	248	5.4 J
	Max		0.95	4.9	9.1	15600	6.3	248	20.2
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	28.1%	0.0%	1.9%	1.4%	0.4%	3.9%
	Max/Ave		117.8%	108.1%	111.9%	105.9%	113.2%	107.5%	200.7%
Lincoln Mill Boat Ramp East	RM633B1	MJ4FD3	0.79 UR	5.9	11.5	14200	6.2	334	6.9 J
	RM633B2	MJ4FD4	1.3 UR	6.7	10	12600	4.7	224	6.4 J
	RM633B3	MJ4FD5	0.92 UR	5.9	7.3	10200	4.4	217	6.3 J
	Max		1.3	6.7	11.5	14200	6.2	334	6.9
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	38.2%	0.0%	1.6%	1.3%	0.4%	2.5%
	Max/Ave		129.6%	108.6%	119.8%	115.1%	121.6%	129.3%	105.6%
Columbia Campground East	RM642B1c	MJ4F88	0.53 J	3.9	6	13100	13.2	136	20.1 U
	RM642B1L	MJ4F89	1.3 J	3.4	8.9	13800	9	111	22.1 U
	RM642B1R	MJ4F90	1.3 J	4.2	11.2	16300	9.5	254	21.3 U
	RM642B2c	MJ4F91	0.89 J	5.6	13.4	16300	16.8	215	22.9 U
	RM642B2L	MJ4F92	0.79 J	4.3	10.3	16000	16.1	184	18.6 U
	RM642B2R	MJ4F93	1.2 J	6.3	10.5	15500	22.5	172	21.5 U
	RM642B3c	MJ4F94	1 J	3.2	13.5	14000	31.2	218	23.1 U
	RM642B3L	MJ4F95	0.58 J	6.4	23.2	18700	24.4	340	6.1 J
	RM642B3R	MJ4F97	1.8 UJ	4.5	20.5	17400	119	292	12.9 J
	Ave		1.0	4.6	13.1	15678	29.1	214	18.7
	Max		1.8	6.4	23.2	18700	119	340	23.1
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	28.8%	0.0%	2.0%	7.3%	0.4%	7.2%
Max/Ave		172.5%	137.8%	177.7%	119.3%	409.2%	159.2%	123.3%	
Roger's Bar West	RM658B1	MJ4F64	0.73 UR	2.2	7.4	9720	5.1	134	20.2 U
	RM658B2	MJ4F65	1.2 UR	1.9	9	9800	5.4	157	9.8 U
	RM658B3	MJ4F66	0.97 UR	0.97 U	4.9	4930	3.1	95.3	19.4 U
	Max		1.2	2.2	9	9800	5.4	157	20.2
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	10.5%	0.0%	1.0%	1.1%	0.2%	6.3%
	Max/Ave		124.1%	130.2%	126.8%	120.2%	119.1%	121.9%	122.7%
AA Campground East	RM673B1	MJ4F67	1.2 J	4.1	12.1	14800	6.7	248	22.8 U
	RM673B2	MJ4F69	1.5 J	5.3	20	21100	19.7	383	24.6 U
	RM673B3	MJ4F70	1.1 J	3.6	14.7	16000	33.7	167	23.9 U
	Max		1.5	5.3	20	21100	33.7	383	24.6
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	26.8%	0.0%	2.2%	5.0%	0.4%	9.1%
	Max/Ave		118.4%	122.3%	128.2%	122.0%	168.2%	144.0%	103.5%
North Gifford Campground East	RM675B1	MJ4FB1	1 J	2.3	14.8	13300	51.1	145	24.4 U
	RM675B2	MJ4FB3	1.1 J	3.6	16.1	15200 J	15.8	194	21.4 UJ
	RM675B3	MJ4FB4	1.6 J	7	28.7	22600 J	102	526	24.6 UJ
	Max		1.6	7	28.7	22600	102	526	24.6
PRG Flag		Pass	Pass	Pass	Pass	Pass	Pass	Pass	

TABLE A-1
Summary of Analytical and Screening Results
Upper Columbia River RI/FS

Site Name	Analyte: (mg/kg)		Antimony	Arsenic	Copper	Iron	Lead	Manganese	Uranium
	CAS Number:		7440360	7440382	7440508	7439896	7439921	7439965	7440611
	Recreational RBC		521	16	52143	782143	400	60833	261
	Object Name	Sample Name							
			PRG	PRG	PRG	PRG	PRG	PRG	PRG
	Ave/PRG		0.2%	26.6%	0.0%	2.2%	14.1%	0.5%	9.0%
	Max/Ave		129.7%	162.8%	144.5%	132.7%	181.2%	182.4%	104.8%
French Rocks Boat Launch West	RM690B1	MJ4F49	0.42 UJ	2.4	10.9	11000	20.7	208	17.7 U
	RM690B2	MJ4F50	1 UJ	2.4	14.5	9960	18.7	171	8.4 J
	RM690B3	MJ4F51	0.95 UJ	2.6	13.8	12000	21.9	260	22.1 U
	Max		1	2.6	14.5	12000	21.9	260	22.1
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	15.3%	0.0%	1.4%	5.1%	0.4%	6.2%
	Max/Ave		126.6%	105.4%	111.0%	109.2%	107.2%	122.1%	137.6%
Haag Cove West	RM697B1	MJ4F44	0.29 UJ	1	4.2	5180	16.5	111	17.3 U
	RM697B2	MJ4F45	1.8 J	1.4	16.5	11800	136	158	23.1 U
	RM697B3	MJ4F46	1.8 J	2.3	34	18100	222	267	30.2 U
	Max		1.8	2.3	34	18100	222	267	30.2
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.2%	9.7%	0.0%	1.5%	31.2%	0.3%	9.0%
	Max/Ave		138.8%	146.8%	186.5%	154.8%	177.8%	149.4%	128.3%
Kettle Falls Swim Beach East	RM700B1c	MJ4F20	0.37 UJ	1.4	9.9	11300	5.2	259	20 UJ
	RM700B1L	MJ4F21	0.61 UJ	1.5	10.7	8640	6	125	18.2 UJ
	RM700B1R	MJ4F22	5.3 UJ	1.8	9.8	8650	4.3	146	17.8 UJ
	RM700B2c	MJ4F23	0.95 UJ	1	10	9930	7.3	147	16.6 UJ
	RM700B2L	MJ4F24	6.4 UJ	1.3	9.2	9320	6.8	161	21.2 UJ
	RM700B2R	MJ4F25	0.3 UJ	1.5	9.3	9690	4	145	16 UJ
	RM700B3c	MJ4F26	1.3 UJ	2.3	26.7	26000	10.7	605	24.7 UJ
	RM700B3L	MJ4F27	0.45 UJ	1.5	10	10100	7.6	147	17.9 UJ
	RM700B3R	MJ4F29	0.31 UJ	1.8	16.1	16200	8.3	390	19.9 UJ
	Ave		1.8	1.6	12.4	12203	6.7	236	19.1
	Max		6.4	2.3	26.7	26000	10.7	605	24.7
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.3%	9.7%	0.0%	1.6%	1.7%	0.4%	7.3%
Max/Ave		360.2%	146.8%	215.1%	213.1%	160.0%	256.2%	129.0%	
Marcus Is East	RM708B1	MJ4ET6	6.2 UJ	3.9 U	14.1	12700	52.3	170	7.5 J
	RM708B2	MJ4ET8	2 J	8.6	57.8	23400	202	246	6.7 J
	RM708B3	MJ4ET9	8.1 UJ	6.5	50.3	17600	297	214	27.1 U
	Max		8.1	8.6	57.8	23400	297	246	27.1
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		1.0%	39.2%	0.1%	2.3%	45.9%	0.3%	5.3%
	Max/Ave		149.1%	135.8%	141.9%	130.7%	161.6%	117.1%	196.9%
N. Gorge East	RM718B1	MJ4ET3	0.47 UJ	5	22.9	16000	68.8	171	5.7 J
	RM718B2	MJ4ET4	3.6 J	9.6	132	23500	223	270	11.2 J
	RM718B3	MJ4ET5	6.4 J	10.7	216	29500	216	434	14.2 J
	Max		6.4	10.7	216	29500	223	434	14.2
	PRG Flag		Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		0.7%	52.2%	0.2%	2.9%	42.3%	0.5%	4.0%
	Max/Ave		183.4%	126.9%	174.7%	128.3%	131.7%	148.8%	137.0%
Dalles Orchard East	RM729B1	MJ4EZ2	11.2 J	13.7	802	82100 D	214	1660	21 UJ
	RM729B2	MJ4EZ3	32.4 J	22.5	1380	110000 D	190	2200	19.4 UJ
	RM729B3	MJ4EZ4	24.8 J	18.1	1300	108000 D	205	2110	20.4 UJ
	Max		32.4	22.5	1380	110000	214	2200	21
	PRG Flag		Pass PRG	Fail PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		4.4%	112.1%	2.2%	12.8%	50.8%	3.3%	7.8%
	Max/Ave		142.1%	124.3%	118.9%	110.0%	105.4%	110.6%	103.6%
Northport Boat Ramp East	RM735B1c	MJ4EX1	8.9 J	6.9	271	33500	163	619	22.3 U
	RM735B1L	MJ4EX2	52.1 J	18.2	2130	171000 D	239	3430 D	20.6 U
	RM735B1R	MJ4EX4	3.6 J	6.9	98	21300	156	288	22.4 U
	RM735B2c	MJ4EY4	14.8 J	10.5	598	71600 D	249	1220	19 U
	RM735B2L	MJ4EY5	53.2 J	23.2	2620	213000 D	324	4150 D	20.2 U
	RM735B2R	MJ4EY6	13.7 J	9.3	328	40100	194	642	21.3 U
	RM735B3c	MJ4EY7	9.6 J	6.1	364	34600	174	672	21.8 U
	RM735B3L	MJ4EZ0	43.6 J	35.7	3290	254000 D	535	4780 D	19.1 U

TABLE A-1
 Summary of Analytical and Screening Results
 Upper Columbia River RI/FS

Site Name	Analyte: (mg/kg)		Antimony	Arsenic	Copper	Iron	Lead	Manganese	Uranium
	CAS Number:		7440360	7440382	7440508	7439896	7439921	7439965	7440611
	Recreational RBC		521	16	52143	782143	400	60833	261
	Object Name	Sample Name							
	RM735B3R	MJ4EZ1	15.6 J	10.2	491	51500	217	961	21.8 U
	Ave		23.9	14.1	1132	98956	250	1862	20.9
	Max		53.2	35.7	3290	254000	535	4780	22.4
	PRG Flag		Pass PRG	Fail PRG	Pass PRG	Pass PRG	Fail PRG	Pass PRG	Pass PRG
	Ave/PRG		4.6%	87.4%	2.2%	12.7%	62.5%	3.1%	8.0%
	Max/Ave		222.6%	253.0%	290.6%	256.7%	213.9%	256.7%	106.9%
Black Sand	RM742B1	MJ4EW4	47.7 J	27.3	2350	211000 D	266	3680 D	81.6
East Bank	RM742B2	MJ4EW5	52.3 J	25.2	2240	187000 D	231	3680 D	84.3 J
	RM742B3	MJ4EX0	18.6 J	16.1	1620	197000 D	276	3080	64.8 J
	Max		52.3	27.3	2350	211000	276	3680	84.3
	PRG Flag		Pass PRG	Fail PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG	Pass PRG
	Ave/PRG		7.6%	141.6%	4.0%	25.4%	64.4%	5.7%	29.5%
	Max/Ave		132.3%	119.4%	113.5%	106.4%	107.1%	105.7%	109.6%

APPENDIX B

Summary of Complete Analytical Results

LIST OF QUALIFIERS

Qualifier	Definition
U	The analyte was not detected at or above the reported result.
J	The analyte was positively identified. The associated numerical result is an estimate.
UJ	The analyte was not detected at or above the reported estimated results. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
R	The data are unusable for all purposes.
D	The value is the result of analysis at a secondary dilution factor.

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1
Date Collected:	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	18-Apr-05
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite
Elevation:	1289	1276	1266	1279	1275	1275	1289

Analyte	CAS	Units	Frequency of Detection	Number of Samples								
					286 U	825	558	385	910	1,330	1,850	
415.1												
Total organic carbon	E-10195	mg/Kg	98%	63	286 U	825	558	385	910	1,330	1,850	
CLP TAL TotMetals												
Aluminum	7429905	mg/Kg	100%	63	7,150	7,800	8,310	6,270	8,030	8,620	7,160	
Antimony	7440360	mg/Kg	63%	54	1.0 UJ	1.1 UJ	0.79 UJ	0.58 UR	0.89 UR	0.95 UR	0.79 UR	
Arsenic	7440382	mg/Kg	97%	63	8.5	7.5	10	4.0	4.9	4.7	5.9	
Barium	7440393	mg/Kg	100%	63	41	52	51	46	59	69	61	
Beryllium	7440417	mg/Kg	100%	63	0.53	0.60	0.64	0.51	0.68	0.74	0.47	
Cadmium	7440439	mg/Kg	86%	63	0.52 U	0.51 U	0.52 U	0.50 U	0.48 U	0.50 U	0.064 U	
Calcium	7440702	mg/Kg	100%	63	5,990	1,810	1,960	3,880	1,760	1,940	11,500	
Chromium	7440473	mg/Kg	100%	63	9.0	9.7	9.6	9.8	11	13	9.6	
Cobalt	7440484	mg/Kg	100%	63	3.7 J	4.1 J	4.4 J	3.9 J	5.0	5.4	14	
Copper	7440508	mg/Kg	100%	63	6.5	5.5	7.1	6.7	8.6	9.1	12	
Iron	7439896	mg/Kg	100%	63	14,300	14,900	15,400	13,100	15,500	15,600	14,200	
Lead	7439921	mg/Kg	100%	63	6.1	7.1	6.7	4.5	6.3	5.9	6.2	
Magnesium	7439954	mg/Kg	100%	63	5,360	5,590	5,880	4,330	4,390	4,210	6,530	
Manganese	7439965	mg/Kg	100%	63	226	208	227	214	230	248	334	
Mercury	7439976	mg/Kg	68%	63	0.10 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.10 U	
Nickel	7440020	mg/Kg	100%	63	7.5	7.5	8.2	8.5	9.4	10	8.5	
Potassium	7440097	mg/Kg	100%	63	1,230	1,470	1,610	1,080	1,410	1,640	1,350	
Selenium	7782492	mg/Kg	26%	19	3.6 UJ	3.6 UJ	3.6 UJ	3.5 UR	3.4 UR	3.5 UR	3.3 UR	
Silver	7440224	mg/Kg	#VALUE!	63	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	0.96 UJ	1.0 UJ	0.93 UJ	
Sodium	7440235	mg/Kg	89%	63	74 J	54 J	66 J	49 J	58 J	75 J	98 J	
Thallium	7440280	mg/Kg	5%	63	2.6 U	2.6 U	2.6 U	2.5 U	2.4 U	2.5 U	2.3 U	
Uranium	7440611	mg/Kg	27%	63	21 U	5.2 J	21 U	20 U	4.6 J	5.4 J	6.9 J	
Vanadium	7440622	mg/Kg	100%	63	14	14	15	14	17	20	13	
Zinc	7440666	mg/Kg	100%	63	40	55	48	37	44	39	36	
CLP TCL PAH												
2-Methylnaphthalene	91576	µg/Kg	35%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	0.30 J	
Acenaphthene	83329	µg/Kg	11%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	4.0 U	
Acenaphthylene	208968	µg/Kg	14%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	0.90 J	
Anthracene	120127	µg/Kg	13%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	4.0 U	
Benzo(a)anthracene	56553	µg/Kg	30%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	4.0 U	

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1				
Date Collected:	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	18-Apr-05				
	Beach	Beach	Beach	Beach	Beach	Beach	Beach				
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite				
Elevation:	1289	1276	1266	1279	1275	1275	1289				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1
Benzo(a)pyrene	50328	µg/Kg	24%	63	4.0 UJ	4.0 UJ	4.0 UJ	4.0 UJ	4.0 U	5.0 U	4.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	4.0 UJ	4.0 UJ	4.0 UJ	4.0 UJ	4.0 U	5.0 U	0.30 J
Benzo(ghi)perylene	191242	µg/Kg	32%	63	4.0 UJ	4.0 UJ	4.0 UJ	4.0 UJ	4.0 U	5.0 U	0.90 J
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	4.0 UJ	4.0 UJ	4.0 UJ	4.0 UJ	4.0 U	5.0 U	0.30 J
Chrysene	218019	µg/Kg	54%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	0.70 J
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	4.0 UJ	4.0 UJ	4.0 UJ	4.0 UJ	4.0 U	5.0 U	4.0 U
Dibenzofuran	132649	µg/Kg	22%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	4.0 U
Fluoranthene	206440	µg/Kg	48%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	4.0
Fluorene	86737	µg/Kg	14%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	4.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	4.0 UJ	4.0 UJ	4.0 UJ	4.0 UJ	4.0 U	5.0 U	0.30 J
Naphthalene	91203	µg/Kg	16%	63	3.5 U	3.6 U	3.5 U	3.6 U	3.6 U	3.7 U	2.0 J
Phenanthrene	85018	µg/Kg	44%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	2.0 J
Pyrene	129000	µg/Kg	48%	63	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	5.0 U	5.0
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	0.84 U	0.86 U	0.86 U	0.88 U	0.88 U	0.92 U	0.86 U
PCB-1221	11104282	µg/Kg	0%	63	3.4 U	3.5 U	3.5 U	3.6 U	3.6 U	3.7 U	3.4 U
PCB-1232	11141165	µg/Kg	0%	63	3.4 U	3.5 U	3.5 U	3.6 U	3.6 U	3.7 U	3.4 U
PCB-1242	53469219	µg/Kg	0%	63	0.84 U	0.86 U	0.86 U	0.88 U	0.88 U	0.92 U	0.86 U
PCB-1248	12672296	µg/Kg	0%	63	0.84 U	0.86 U	0.86 U	0.88 U	0.88 U	0.92 U	0.86 U
PCB-1254	11097691	µg/Kg	0%	63	0.84 U	0.86 U	0.86 U	0.88 U	0.88 U	0.92 U	0.86 U
PCB-1260	11096825	µg/Kg	0%	63	0.84 U	0.86 U	0.86 U	0.88 U	0.88 U	0.92 U	0.86 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
2,4'-DDT	789026	µg/Kg	11%	63	0.68 U	0.33 J	0.69 U	0.71 U	0.45 J	0.74 U	0.69 U
4,4'-DDD	72548	µg/Kg	2%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
4,4'-DDE	72559	µg/Kg	11%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.50 J	0.74 U	0.69 U
4,4'-DDT	50293	µg/Kg	33%	63	0.68 U	1.5	0.29 J	0.71 U	1.3 J	0.74 U	0.26 J
Aldrin	309002	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
alpha-BHC	319846	µg/Kg	2%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
beta-BHC	319857	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1				
Date Collected:	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	18-Apr-05				
	Beach	Beach	Beach	Beach	Beach	Beach	Beach				
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite				
Elevation:	1289	1276	1266	1279	1275	1275	1289				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1
delta-BHC	319868	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Dieldrin	60571	µg/Kg	0%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
Endosulfan I	959988	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Endosulfan II	33213659	µg/Kg	0%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
Endrin	72208	µg/Kg	0%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
Endrin aldehyde	7421934	µg/Kg	0%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
Endrin ketone	53494705	µg/Kg	0%	63	0.68 U	0.70 U	0.69 U	0.71 U	0.71 U	0.74 U	0.69 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Heptachlor	76448	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Methoxychlor	72435	µg/Kg	5%	63	3.4 U	3.4 U	3.4 U	3.5 U	3.6 U	3.7 U	3.4 U
Oxychlordane	27304138	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
Toxaphene	8001352	µg/Kg	0%	63	34 U	34 U	34 U	35 U	35 U	37 U	34 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.35 U	0.35 U	0.37 U	0.34 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	210 U	220 U	220 U	220 U	220 U	230 U	220 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	210 UR	220 UR	220 UR	220 UR	220 UR	230 UR	220 UR
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2-Chloronaphthalene	91587	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1
Date Collected:	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	18-Apr-05
	Beach	Beach	Beach	Beach	Beach	Beach	Beach
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite
Elevation:	1289	1276	1266	1279	1275	1275	1289

Analyte	CAS	Units	Frequency		Number of Samples						
			Detection	of	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1
2-Chlorophenol	95578	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2-Methylphenol	95487	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
2-Nitroaniline	88744	µg/Kg	0%	63	210 U	220 U	220 U	220 U	220 U	230 U	220 U
2-Nitrophenol	88755	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
3-Nitroaniline	99092	µg/Kg	0%	63	210 U	220 U	220 U	220 U	220 U	230 U	220 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	210 UJ	220 UJ	220 UJ	220 UJ	220 UJ	230 UJ	220 U
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
4-Chloroaniline	106478	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
4-Methylphenol	106445	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
4-Nitroaniline	100016	µg/Kg	0%	63	210 U	220 U	220 U	220 U	220 U	230 U	220 U
4-Nitrophenol	100027	µg/Kg	0%	63	210 U	220 U	220 U	220 U	220 U	230 U	220 U
Acetophenone	98862	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Atrazine	1912249	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Benzaldehyde	100527	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Benzoic acid	65850	µg/Kg	0%	46	85 UR	86 UR	85 UR	88 UR	88 UR	91 UR	85 UR
Benzyl alcohol	100516	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Caprolactam	105602	µg/Kg	3%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Carbazole	86748	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Diethyl phthalate	84662	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Dimethyl phthalate	131113	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Hexachloroethane	67721	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Isophorone	78591	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Nitrobenzene	98953	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1				
Date Collected:	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	19-Apr-05	18-Apr-05				
	Beach	Beach	Beach	Beach	Beach	Beach	Beach				
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite				
Elevation:	1289	1276	1266	1279	1275	1275	1289				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM600B1	RM600B2	RM600B3	RM615B1	RM615B2	RM615B3	RM633B1
Pentachlorophenol	87865	µg/Kg	0%	63	210 U	220 U	220 U	220 U	220 U	230 U	220 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Phenol	108952	µg/Kg	0%	63	85 U	86 U	85 U	88 U	88 U	91 U	85 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	0.61 U	0.89 U	1.3 J	0.95 J	0.59 U	0.25 U	4.4
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	0.14 J	0.14 J	0.26 J	0.076 J	0.089 J	0.055 U	11
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	0.080 U	0.12 U	0.10 U	0.062 U	0.082 U	0.079 U	0.15 U
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	0.088 J	0.11 J	0.065 J	0.091 U	0.063 U	0.082 U	0.085 U
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	0.041 U	0.052 U	0.031 U	0.044 U	0.034 U	0.040 U	0.16 U
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	0.080 J	0.072 J	0.076 U	0.088 U	0.066 U	0.082 U	0.55 J
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	0.041 U	0.049 U	0.044 U	0.044 U	0.034 U	0.039 U	0.13 U
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	0.069 J	0.091 U	0.067 J	0.090 U	0.065 U	0.083 U	0.26 J
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	0.064 U	0.082 U	0.073 U	0.073 U	0.056 U	0.067 U	0.18 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	0.058 U	0.064 U	0.070 U	0.060 U	0.054 U	0.086 U	0.068 U
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	0.029 U	0.034 U	0.035 U	0.028 U	0.033 U	0.042 U	0.037 U
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	0.043 U	0.053 J	0.045 U	0.044 U	0.035 U	0.043 U	0.17 U
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	0.030 U	0.051 U	0.029 U	0.027 U	0.036 U	0.046 U	0.10 U
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	0.053 U	0.047 U	0.057 U	0.057 U	0.050 U	0.066 U	0.053 U
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	0.10 U	0.095 U	0.20 U	0.092 U	0.16 U	0.096 U	0.11 U
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	1.2 J	1.6 U	2.3 U	1.9	1.2	0.52	8.5
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	0.32 J	0.38 J	0.63 J	0.18 J	0.16 J	0.065 U	17 J
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	0.24	0.28	0.30	0.13	0.11	0.083 U	3.5
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	0.23	0.26	0.45	0.061	0.052	0.046 U	5.8
Octachlorodibenzodioxin	3268879	pg/g	58%	36	3.7 U	5.6	19	5.3	4.0	1.9 U	31
Octachlorodibenzofuran	39001020	pg/g	58%	36	0.25 J	0.33 J	0.51 J	0.24 U	0.16 J	0.17 U	3.2 J
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	0.13 U	0.064 U	0.070 U	0.060 U	0.12	0.086 U	0.64
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	0.18	0.14 U	0.065 U	0.027 U	0.066 J	0.043 U	1.2 J
TEQ WHO-98	TEQ	pg/g	92%	36	0.025	0.026	0.030	0.0010	0.0017	0 U	0.24
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	0.053 U	0.047 U	0.057 U	0.057 U	0.050 U	0.066 U	0.86
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	0.10 U	0.095 U	0.32 J	0.14 J	0.27 J	0.096 U	0.83 J

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L				
Date Collected:	18-Apr-05	18-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1278	1267	1281	1279	1281	1264	1264				
Analyte	CAS	Units	Frequency of Detection	Number of Samples							
415.1											
Total organic carbon	E-10195	mg/Kg	98%	63	582	543	944	4,810	4,500	6,420	3,470
CLP TAL TotMetals											
Aluminum	7429905	mg/Kg	100%	63	6,900	5,070	7,350	7,890	11,600	11,400	9,680
Antimony	7440360	mg/Kg	63%	54	1.3 UR	0.92 UR	0.53 J	1.3 J	1.3 J	0.89 J	0.79 J
Arsenic	7440382	mg/Kg	97%	63	6.7	5.9	3.9	3.4	4.2	5.6	4.3
Barium	7440393	mg/Kg	100%	63	34	35	62	68	114	112	91
Beryllium	7440417	mg/Kg	100%	63	0.43 J	0.32 J	0.43 J	0.55 J	0.72	0.75	0.67
Cadmium	7440439	mg/Kg	86%	63	0.058 U	0.47 U	0.25 J	0.46 J	0.29 J	0.51 J	0.37 J
Calcium	7440702	mg/Kg	100%	63	15,100	10,300	1,660	2,030	2,360	2,630	2,160
Chromium	7440473	mg/Kg	100%	63	9.1	6.2	11	12	13	14	15
Cobalt	7440484	mg/Kg	100%	63	3.5 J	3.0 J	4.7 J	5.4 J	6.2	6.6	6.4
Copper	7440508	mg/Kg	100%	63	10	7.3	6.0	8.9	11	13	10
Iron	7439896	mg/Kg	100%	63	12,600	10,200	13,100	13,800	16,300	16,300	16,000
Lead	7439921	mg/Kg	100%	63	4.7	4.4	13	9.0	9.5	17	16
Magnesium	7439954	mg/Kg	100%	63	6,240	5,320	3,420	3,430	3,610	4,120	3,920
Manganese	7439965	mg/Kg	100%	63	224	217	136	111	254	215	184
Mercury	7439976	mg/Kg	68%	63	0.11 U	0.098 U	0.032 J	0.012 J	0.0070 J	0.033 J	0.018 J
Nickel	7440020	mg/Kg	100%	63	7.8	6.1	9.4	11	11	12	12
Potassium	7440097	mg/Kg	100%	63	1,410	1,140	1,240	1,360	1,640	2,000	1,850
Selenium	7782492	mg/Kg	26%	19	3.4 UR	3.3 UR	3.5 UR	3.9 UR	3.7 UR	4.0 UR	3.3 UR
Silver	7440224	mg/Kg	#VALUE!	63	0.97 UJ	0.94 UJ	1.0 UJ	1.1 UJ	1.1 UJ	1.1 UJ	0.93 UJ
Sodium	7440235	mg/Kg	89%	63	97 J	57 J	75 J	94 J	111 J	108 J	92 J
Thallium	7440280	mg/Kg	5%	63	2.4 U	2.3 U	2.5 U	2.8 U	2.7 U	2.9 U	2.3 U
Uranium	7440611	mg/Kg	27%	63	6.4 J	6.3 J	20 U	22 U	21 U	23 U	19 U
Vanadium	7440622	mg/Kg	100%	63	11	8.4	14	19	21	21	22
Zinc	7440666	mg/Kg	100%	63	30	27	149	116	95	143	129
CLP TCL PAH											
2-Methylnaphthalene	91576	µg/Kg	35%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acenaphthene	83329	µg/Kg	11%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acenaphthylene	208968	µg/Kg	14%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Anthracene	120127	µg/Kg	13%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(a)anthracene	56553	µg/Kg	30%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L				
Date Collected:	18-Apr-05	18-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1278	1267	1281	1279	1281	1264	1264				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L
Benzo(a)pyrene	50328	µg/Kg	24%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(ghi)perylene	191242	µg/Kg	32%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chrysene	218019	µg/Kg	54%	63	0.20 J	4.0 U	4.0 U	0.70 J	5.0 U	5.0 U	0.40 J
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dibenzofuran	132649	µg/Kg	22%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Fluoranthene	206440	µg/Kg	48%	63	4.0 U	4.0 U	4.0 U	0.70 J	5.0 U	5.0 U	0.40 J
Fluorene	86737	µg/Kg	14%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	4.0 U	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	91203	µg/Kg	16%	63	8.6 U	3.6 U	3.6 U	3.7 U	3.8 U	4.2 U	3.8 U
Phenanthrene	85018	µg/Kg	44%	63	4.0 U	4.0 U	4.0 U	0.40 J	5.0 U	5.0 U	5.0 U
Pyrene	129000	µg/Kg	48%	63	4.0 U	4.0 U	4.0 U	0.50 J	5.0 U	5.0 U	5.0 U
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	0.85 U	0.86 U	0.85 U	0.90 U	0.92 U	1.0 U	0.92 U
PCB-1221	11104282	µg/Kg	0%	63	3.4 U	3.4 U	3.4 U	3.6 U	3.7 U	4.1 U	3.7 U
PCB-1232	11141165	µg/Kg	0%	63	3.4 U	3.4 U	3.4 U	3.6 U	3.7 U	4.1 U	3.7 U
PCB-1242	53469219	µg/Kg	0%	63	0.85 U	0.86 U	0.85 U	0.90 U	0.92 U	1.0 U	0.92 U
PCB-1248	12672296	µg/Kg	0%	63	0.85 U	0.86 U	0.85 U	0.90 U	0.92 U	1.0 U	0.92 U
PCB-1254	11097691	µg/Kg	0%	63	0.85 U	0.86 U	0.85 U	0.90 U	0.92 U	1.0 U	0.92 U
PCB-1260	11096825	µg/Kg	0%	63	0.85 U	0.86 U	0.85 U	0.90 U	0.92 U	1.0 U	0.92 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.56 J	0.74 U
2,4'-DDT	789026	µg/Kg	11%	63	0.68 U	0.69 U	0.46	0.73 U	0.74 U	1.7	0.41 J
4,4'-DDD	72548	µg/Kg	2%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
4,4'-DDE	72559	µg/Kg	11%	63	0.68 U	0.69 U	0.85 J	0.12 J	0.74 U	1.6 J	0.32 J
4,4'-DDT	50293	µg/Kg	33%	63	0.12 J	0.19 J	1.5 J	0.19 J	0.20 J	6.3	1.4 J
Aldrin	309002	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
alpha-BHC	319846	µg/Kg	2%	63	0.34 U	0.23 J	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
beta-BHC	319857	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L				
Date Collected:	18-Apr-05	18-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1278	1267	1281	1279	1281	1264	1264				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L
delta-BHC	319868	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
Dieldrin	60571	µg/Kg	0%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
Endosulfan I	959988	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
Endosulfan II	33213659	µg/Kg	0%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
Endrin	72208	µg/Kg	0%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
Endrin aldehyde	7421934	µg/Kg	0%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
Endrin ketone	53494705	µg/Kg	0%	63	0.68 U	0.69 U	0.69 U	0.73 U	0.74 U	0.83 U	0.74 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
Heptachlor	76448	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.34 U	0.34 U	1.1	1.6	0.37 U	0.41 U	0.37 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
Methoxychlor	72435	µg/Kg	5%	63	3.4 U	3.4 U	3.4 U	3.6 U	3.7 U	4.1 U	3.7 U
Oxychlordane	27304138	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
Toxaphene	8001352	µg/Kg	0%	63	34 U	34 U	34 U	36 U	37 U	41 U	37 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.34 U	0.34 U	0.34 U	0.36 U	0.37 U	0.41 U	0.37 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	220 U	220 U	220 U	230 U	230 U	260 U	240 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	220 UR	220 UR	220 UJ	230 UJ	230 UJ	260 UJ	240 UJ
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2-Chloronaphthalene	91587	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L
Date Collected:	18-Apr-05	18-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample
Elevation:	1278	1267	1281	1279	1281	1264	1264

Analyte	CAS	Units	Frequency		Number of Samples						
			Detection	of	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L
2-Chlorophenol	95578	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2-Methylphenol	95487	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
2-Nitroaniline	88744	µg/Kg	0%	63	220 U	220 U	220 U	230 U	230 U	260 U	240 U
2-Nitrophenol	88755	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
3-Nitroaniline	99092	µg/Kg	0%	63	220 U	220 U	220 U	230 U	230 U	260 U	240 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	220 U	220 U	220 U	230 U	230 U	260 U	240 U
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
4-Chloroaniline	106478	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
4-Methylphenol	106445	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
4-Nitroaniline	100016	µg/Kg	0%	63	220 U	220 U	220 U	230 U	230 U	260 U	240 U
4-Nitrophenol	100027	µg/Kg	0%	63	220 U	220 U	220 U	230 U	230 U	260 U	240 U
Acetophenone	98862	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Atrazine	1912249	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Benzaldehyde	100527	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Benzoic acid	65850	µg/Kg	0%	46	85 UR	86 UR	86 UJ	91 UJ	92 UJ	100 UJ	93 UJ
Benzyl alcohol	100516	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Caprolactam	105602	µg/Kg	3%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Carbazole	86748	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Diethyl phthalate	84662	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Dimethyl phthalate	131113	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Hexachloroethane	67721	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Isophorone	78591	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Nitrobenzene	98953	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L				
Date Collected:	18-Apr-05	18-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1278	1267	1281	1279	1281	1264	1264				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM633B2	RM633B3	RM642B1c	RM642B1L	RM642B1R	RM642B2c	RM642B2L
Pentachlorophenol	87865	µg/Kg	0%	63	220 U	220 U	220 UJ	230 UJ	230 UJ	260 UJ	240 UJ
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Phenol	108952	µg/Kg	0%	63	85 U	86 U	86 U	91 U	92 U	100 U	93 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	0.10 U	0.26 U	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	0.19 J	0.16 J	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	0.079 U	0.10 U	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	0.099 U	0.055 U	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	0.046 U	0.034 U	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	0.10 U	0.057 U	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	0.045 U	0.032 U	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	0.10 U	0.056 U	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	0.071 U	0.055 U	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	0.056 U	0.052 U	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	0.021 U	0.024 U	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	0.050 U	0.036 U	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	0.037 U	0.024 U	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	0.052 U	0.057 U	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	0.057 U	0.073 U	--	--	--	--	--
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	0.33	0.54	--	--	--	--	--
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	0.35 U	0.16 U	--	--	--	--	--
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	0.056	0.056 U	--	--	--	--	--
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	0.087	0.12 U	--	--	--	--	--
Octachlorodibenzodioxin	3268879	pg/g	58%	36	2.3 U	1.6 U	--	--	--	--	--
Octachlorodibenzofuran	39001020	pg/g	58%	36	0.20 J	0.20 U	--	--	--	--	--
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	0.056 U	0.052 U	--	--	--	--	--
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	0.037 U	0.024 U	--	--	--	--	--
TEQ WHO-98	TEQ	pg/g	92%	36	0.0020	0.0020	--	--	--	--	--
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	0.052 U	0.057 U	--	--	--	--	--
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	0.057 U	0.052 U	--	--	--	--	--

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3				
Date Collected:	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	14-Apr-05	14-Apr-05	14-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1264	1252	1252	1253	1286	1277	1260				
Analyte	CAS	Units	Frequency of Detection	Number of Samples							
415.1											
Total organic carbon	E-10195	mg/Kg	98%	63	4,290	7,050	4,680	11,100	357	789	460
CLP TAL TotMetals											
Aluminum	7429905	mg/Kg	100%	63	10,900	8,950	13,600	12,300 J	4,810	5,810	2,760
Antimony	7440360	mg/Kg	63%	54	1.2 J	1.0 J	0.58 J	1.8 UJ	0.73 UR	1.2 UR	0.97 UR
Arsenic	7440382	mg/Kg	97%	63	6.3	3.2	6.4	4.5	2.2	1.9	0.97 U
Barium	7440393	mg/Kg	100%	63	96	84	158	106	38	53	21
Beryllium	7440417	mg/Kg	100%	63	0.70	0.65	1.0	0.92	0.37 J	0.44 J	0.21 J
Cadmium	7440439	mg/Kg	86%	63	0.46 J	0.98	1.9	2.0	0.22 J	0.11 J	0.056 J
Calcium	7440702	mg/Kg	100%	63	2,210	2,740	3,210	2,990	1,580	1,700	1,670
Chromium	7440473	mg/Kg	100%	63	13	14	18	18	9.6	13	5.7
Cobalt	7440484	mg/Kg	100%	63	6.0	6.1	9.2	7.7	3.7 J	4.1 J	2.1 J
Copper	7440508	mg/Kg	100%	63	11	14	23	21	7.4	9.0	4.9
Iron	7439896	mg/Kg	100%	63	15,500	14,000	18,700	17,400	9,720	9,800	4,930
Lead	7439921	mg/Kg	100%	63	23	31	24	119	5.1	5.4	3.1
Magnesium	7439954	mg/Kg	100%	63	3,630	3,690	4,370	4,260	2,390	2,590	1,540
Manganese	7439965	mg/Kg	100%	63	172	218	340	292	134	157	95
Mercury	7439976	mg/Kg	68%	63	0.035 J	0.073 J	0.065 J	0.27	0.10 U	0.11 U	0.10 U
Nickel	7440020	mg/Kg	100%	63	11	12	17	15	9.0	10	5.1
Potassium	7440097	mg/Kg	100%	63	1,670	1,540	3,060	2,030	519	719	317 J
Selenium	7782492	mg/Kg	26%	19	3.8 UR	4.0 UR	3.9 UR	3.6 UR	3.5 UR	3.7 UR	3.4 UR
Silver	7440224	mg/Kg	#VALUE!	63	1.1 UJ	1.2 UJ	1.1 UJ	1.0 UJ	1.0 UJ	1.1 UJ	0.97 UJ
Sodium	7440235	mg/Kg	89%	63	109 J	142 J	122 J	167 J	88 J	98 J	58 J
Thallium	7440280	mg/Kg	5%	63	2.7 U	2.9 U	2.8 U	2.5 U	2.5 U	2.7 U	2.4 U
Uranium	7440611	mg/Kg	27%	63	22 U	23 U	6.1 J	13 J	20 U	9.8 U	19 U
Vanadium	7440622	mg/Kg	100%	63	20	19	27	23	17	16	8.7
Zinc	7440666	mg/Kg	100%	63	156	185	149	366	47	33	21
CLP TCL PAH											
2-Methylnaphthalene	91576	µg/Kg	35%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Acenaphthene	83329	µg/Kg	11%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Acenaphthylene	208968	µg/Kg	14%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Anthracene	120127	µg/Kg	13%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Benzo(a)anthracene	56553	µg/Kg	30%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3				
Date Collected:	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	14-Apr-05	14-Apr-05	14-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1264	1252	1252	1253	1286	1277	1260				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3
Benzo(a)pyrene	50328	µg/Kg	24%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Benzo(ghi)perylene	191242	µg/Kg	32%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Chrysene	218019	µg/Kg	54%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Dibenzofuran	132649	µg/Kg	22%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Fluoranthene	206440	µg/Kg	48%	63	5.0 U	0.60 J	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Fluorene	86737	µg/Kg	14%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Naphthalene	91203	µg/Kg	16%	63	3.8 U	6.6 U	4.2 U	5.1 U	3.5 U	3.6 U	4.0 U
Phenanthrene	85018	µg/Kg	44%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
Pyrene	129000	µg/Kg	48%	63	5.0 U	8.0 U	5.0 U	6.0 U	4.0 U	4.0 U	4.0 U
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	0.93 U	1.6 U	1.0 U	6.3 U	0.86 U	0.88 U	0.88 U
PCB-1221	11104282	µg/Kg	0%	63	3.7 U	6.4 U	4.1 U	25 U	3.5 U	3.6 U	3.6 U
PCB-1232	11141165	µg/Kg	0%	63	3.7 U	6.4 U	4.1 U	25 U	3.5 U	3.6 U	3.6 U
PCB-1242	53469219	µg/Kg	0%	63	0.93 U	1.6 U	1.0 U	6.3 U	0.86 U	0.88 U	0.88 U
PCB-1248	12672296	µg/Kg	0%	63	0.93 U	1.6 U	1.0 U	6.3 U	0.86 U	0.88 U	0.88 U
PCB-1254	11097691	µg/Kg	0%	63	0.93 U	1.6 U	1.0 U	6.3 U	0.86 U	0.88 U	0.88 U
PCB-1260	11096825	µg/Kg	0%	63	0.93 U	1.6 U	1.0 U	6.3 U	0.86 U	0.88 U	0.88 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.75 U	1.3 U	0.81 U	5.1 U	0.69 U	0.71 U	0.71 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.75 U	1.3 U	0.74 J	17 J	0.69 U	0.71 U	0.71 U
2,4'-DDT	789026	µg/Kg	11%	63	0.75 U	1.3 U	2.7	57	0.69 U	0.71 U	0.71 U
4,4'-DDD	72548	µg/Kg	2%	63	0.75 U	1.3 U	0.81 U	2.1 J	0.69 U	0.71 U	0.71 U
4,4'-DDE	72559	µg/Kg	11%	63	0.75 U	1.3 U	2.7	63	0.69 U	0.71 U	0.71 U
4,4'-DDT	50293	µg/Kg	33%	63	0.28 J	0.18 J	10	200 J	0.69 U	0.71 U	0.71 U
Aldrin	309002	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
alpha-BHC	319846	µg/Kg	2%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
beta-BHC	319857	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3				
Date Collected:	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	14-Apr-05	14-Apr-05	14-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1264	1252	1252	1253	1286	1277	1260				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3
delta-BHC	319868	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Dieldrin	60571	µg/Kg	0%	63	0.75 U	1.3 U	0.81 U	5.1 U	0.69 U	0.71 U	0.71 U
Endosulfan I	959988	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Endosulfan II	33213659	µg/Kg	0%	63	0.75 U	1.3 U	0.81 U	5.1 U	0.69 U	0.71 U	0.71 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.75 U	1.3 U	0.81 U	5.1 U	0.69 U	0.71 U	0.71 U
Endrin	72208	µg/Kg	0%	63	0.75 U	1.3 U	0.81 U	5.1 U	0.69 U	0.71 U	0.71 U
Endrin aldehyde	7421934	µg/Kg	0%	63	0.75 U	1.3 U	0.81 U	5.1 U	0.69 U	0.71 U	0.71 U
Endrin ketone	53494705	µg/Kg	0%	63	0.75 U	1.3 U	0.81 U	5.1 U	0.69 U	0.71 U	0.71 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Heptachlor	76448	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Methoxychlor	72435	µg/Kg	5%	63	3.7 U	6.3 U	4.0 U	25 U	3.4 U	3.5 U	3.5 U
Oxychlordane	27304138	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
Toxaphene	8001352	µg/Kg	0%	63	37 U	63 U	40 U	250 U	34 U	35 U	35 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.37 U	0.63 U	0.40 U	2.6 U	0.34 U	0.35 U	0.35 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	240 U	400 U	260 U	320 U	220 U	220 U	220 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	240 U	400 U	260 U	320 U	220 UJ	220 UJ	220 UJ
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 UJ	88 UJ	88 UJ
2-Chloronaphthalene	91587	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3				
Date Collected:	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	14-Apr-05	14-Apr-05	14-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1264	1252	1252	1253	1286	1277	1260				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3
2-Chlorophenol	95578	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2-Methylphenol	95487	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
2-Nitroaniline	88744	µg/Kg	0%	63	240 U	400 U	260 U	320 U	220 U	220 U	220 U
2-Nitrophenol	88755	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
3-Nitroaniline	99092	µg/Kg	0%	63	240 U	400 U	260 U	320 U	220 U	220 U	220 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	240 U	400 U	260 U	320 U	220 UJ	220 UJ	220 UJ
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
4-Chloroaniline	106478	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
4-Methylphenol	106445	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
4-Nitroaniline	100016	µg/Kg	0%	63	240 U	400 U	260 U	320 U	220 U	220 U	220 U
4-Nitrophenol	100027	µg/Kg	0%	63	240 U	400 U	260 U	320 U	220 U	220 U	220 U
Acetophenone	98862	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Atrazine	1912249	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Benzaldehyde	100527	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Benzoic acid	65850	µg/Kg	0%	46	93 UJ	160 U	100 U	130 U	220 UR	220 UR	220 UR
Benzyl alcohol	100516	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Caprolactam	105602	µg/Kg	3%	63	93 U	160 U	55 J	130 U	86 U	88 U	88 U
Carbazole	86748	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Diethyl phthalate	84662	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 UJ	88 UJ	88 UJ
Dimethyl phthalate	131113	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Hexachloroethane	67721	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Isophorone	78591	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Nitrobenzene	98953	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3				
Date Collected:	15-Apr-05	15-Apr-05	15-Apr-05	15-Apr-05	14-Apr-05	14-Apr-05	14-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1264	1252	1252	1253	1286	1277	1260				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM642B2R	RM642B3c	RM642B3L	RM642B3R	RM658B1	RM658B2	RM658B3
Pentachlorophenol	87865	µg/Kg	0%	63	240 U	400 U	260 U	320 U	220 U	220 U	220 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Phenol	108952	µg/Kg	0%	63	93 U	160 U	100 U	130 U	86 U	88 U	88 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	--	--	--	--	0.28 U	0.40 U	0.18 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	--	--	--	--	0.078 U	0.079 U	0.047 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	--	--	--	--	0.075 U	0.070 U	0.074 U
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	--	--	--	--	0.068 U	0.048 U	0.071 U
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	--	--	--	--	0.039 U	0.018 U	0.034 U
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	--	--	--	--	0.070 U	0.052 U	0.071 U
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	--	--	--	--	0.023 J	0.028 U	0.019 J
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	--	--	--	--	0.069 U	0.050 U	0.071 U
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	--	--	--	--	0.063 U	0.047 U	0.028 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	--	--	--	--	0.041 U	0.051 U	0.039 U
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	--	--	--	--	0.031 U	0.021 U	0.020 U
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	--	--	--	--	0.041 U	0.028 U	0.016 J
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	--	--	--	--	0.029 U	0.034 U	0.028 U
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	--	--	--	--	0.047 U	0.035 U	0.042 U
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	--	--	--	--	0.10 U	0.067 U	0.12 U
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	--	--	--	--	0.28 J	1.1 J	0.39 U
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	--	--	--	--	0.078 J	0.24 U	0.056 U
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	--	--	--	--	0.069 U	0.050 U	0.071 U
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	--	--	--	--	0.035	0.080 U	0.035
Octachlorodibenzodioxin	3268879	pg/g	58%	36	--	--	--	--	3.3 U	7.2 U	1.7 U
Octachlorodibenzofuran	39001020	pg/g	58%	36	--	--	--	--	0.097 U	0.33 U	0.14 U
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	--	--	--	--	0.041 U	0.051 U	0.039 U
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	--	--	--	--	0.058 U	0.068 U	0.028 U
TEQ WHO-98	TEQ	pg/g	92%	36	--	--	--	--	0.0023	0 U	0.0035
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	--	--	--	--	0.047 U	0.035 U	0.042 U
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	--	--	--	--	0.25 J	0.14 U	0.26 J

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1
Date Collected:	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	13-Apr-05
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite
Elevation:	1282	1277	1278	1283	1272	1253	1285

Analyte	CAS	Units	Frequency		Number of							
			Detection	of Samples	of							
415.1												
Total organic carbon	E-10195	mg/Kg	98%	63	1,500	3,680	4,660	7,430	3,470	5,330	2,530	
CLP TAL TotMetals												
Aluminum	7429905	mg/Kg	100%	63	9,080 J	12,200 J	10,200 J	7,780 J	7,520	12,300	6,550	
Antimony	7440360	mg/Kg	63%	54	1.2 J	1.5 J	1.1 J	1.0 J	1.1 J	1.6 J	0.42 UJ	
Arsenic	7440382	mg/Kg	97%	63	4.1	5.3	3.6	2.3	3.6	7.0	2.4	
Barium	7440393	mg/Kg	100%	63	78	117	78	66	80	152	62	
Beryllium	7440417	mg/Kg	100%	63	0.66	0.90	0.68	0.63	0.59 J	0.93 J	0.46	
Cadmium	7440439	mg/Kg	86%	63	0.17 J	0.74	1.0	3.1	0.63	2.4	0.51	
Calcium	7440702	mg/Kg	100%	63	2,990	4,120	2,520	3,100	6,050	5,200	4,830	
Chromium	7440473	mg/Kg	100%	63	15	24	18	20	18	28	13	
Cobalt	7440484	mg/Kg	100%	63	6.4	10	6.9	5.6 J	6.7	10	4.5	
Copper	7440508	mg/Kg	100%	63	12	20	15	15	16	29	11	
Iron	7439896	mg/Kg	100%	63	14,800	21,100	16,000	13,300	15,200 J	22,600 J	11,000	
Lead	7439921	mg/Kg	100%	63	6.7	20	34	51	16	102	21	
Magnesium	7439954	mg/Kg	100%	63	3,550	4,970	3,700	4,040	4,520	6,530	4,590	
Manganese	7439965	mg/Kg	100%	63	248	383	167	145	194	526	208	
Mercury	7439976	mg/Kg	68%	63	0.010 J	0.031 J	0.053 J	0.062 J	0.030 J	0.21	0.099 U	
Nickel	7440020	mg/Kg	100%	63	13	21	16	14	16	24	15	
Potassium	7440097	mg/Kg	100%	63	1,160	2,020	1,220	1,200	1,210	2,190	749	
Selenium	7782492	mg/Kg	26%	19	4.0 UR	4.3 UR	4.2 UR	4.3 UR	3.7 UR	4.3 UR	3.1 UR	
Silver	7440224	mg/Kg	#VALUE!	63	1.1 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.1 U	1.2 U	0.89 UJ	
Sodium	7440235	mg/Kg	89%	63	129 J	173 J	115 J	94 J	147 J	245 J	134 J	
Thallium	7440280	mg/Kg	5%	63	2.9 U	3.1 U	3.0 U	3.1 U	2.7 UJ	3.1 UJ	2.2 U	
Uranium	7440611	mg/Kg	27%	63	23 U	25 U	24 U	24 U	21 UJ	25 UJ	18 U	
Vanadium	7440622	mg/Kg	100%	63	26	33	27	22	27	36	22	
Zinc	7440666	mg/Kg	100%	63	49	118	158	220	90	295	92	
CLP TCL PAH												
2-Methylnaphthalene	91576	µg/Kg	35%	63	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.70 J	0.20 J	
Acenaphthene	83329	µg/Kg	11%	63	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	6.0 U	4.0 U	
Acenaphthylene	208968	µg/Kg	14%	63	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	6.0 U	4.0 U	
Anthracene	120127	µg/Kg	13%	63	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	6.0 U	4.0 U	
Benzo(a)anthracene	56553	µg/Kg	30%	63	5.0 U	5.0 U	5.0 U	0.40 J	5.0 U	1.0 J	4.0 U	

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1				
Date Collected:	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	13-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1282	1277	1278	1283	1272	1253	1285				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1
Benzo(a)pyrene	50328	µg/Kg	24%	63	5.0 U	5.0 U	5.0 U	0.40 J	5.0 U	1.0 J	4.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	5.0 U	5.0 U	5.0 U	0.60 J	5.0 U	1.0 J	4.0 U
Benzo(ghi)perylene	191242	µg/Kg	32%	63	5.0 U	5.0 U	5.0 U	0.40 J	5.0 U	1.0 J	4.0 U
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	5.0 U	5.0 U	5.0 U	0.40 J	5.0 U	0.70 J	4.0 U
Chrysene	218019	µg/Kg	54%	63	5.0 U	5.0 U	5.0 U	0.60 J	5.0 U	2.0 J	0.30 J
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	6.0 U	4.0 U
Dibenzofuran	132649	µg/Kg	22%	63	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.50 J	4.0 U
Fluoranthene	206440	µg/Kg	48%	63	5.0 U	5.0 U	5.0 U	0.60 J	5.0 U	2.0 J	0.20 J
Fluorene	86737	µg/Kg	14%	63	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	6.0 U	4.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	5.0 U	5.0 U	5.0 U	0.40 J	5.0 U	0.70 J	4.0 U
Naphthalene	91203	µg/Kg	16%	63	4.0 U	4.4 U	4.1 U	3.8 U	4.2 U	1.0 J	0.50 U
Phenanthrene	85018	µg/Kg	44%	63	5.0 U	5.0 U	5.0 U	0.40 J	5.0 U	1.0 J	4.0 U
Pyrene	129000	µg/Kg	48%	63	5.0 U	5.0 U	5.0 U	0.60 J	5.0 U	1.0 J	4.0 U
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	0.97 UJ	1.1 U	1.0 UJ	0.92 U	1.0 UJ	1.2 U	0.87 U
PCB-1221	11104282	µg/Kg	0%	63	3.9 UJ	4.3 U	4.0 UJ	3.7 U	4.1 UJ	4.8 U	3.6 U
PCB-1232	11141165	µg/Kg	0%	63	3.9 UJ	4.3 U	4.0 UJ	3.7 U	4.1 UJ	4.8 U	3.6 U
PCB-1242	53469219	µg/Kg	0%	63	0.97 UJ	1.1 U	1.0 UJ	0.92 U	1.0 UJ	1.2 U	0.87 U
PCB-1248	12672296	µg/Kg	0%	63	0.97 UJ	1.1 U	1.0 UJ	0.92 U	1.0 UJ	1.2 U	0.87 U
PCB-1254	11097691	µg/Kg	0%	63	0.97 UJ	1.1 U	1.0 UJ	0.92 U	1.0 UJ	1.2 U	0.87 U
PCB-1260	11096825	µg/Kg	0%	63	0.97 UJ	1.1 U	1.0 UJ	0.92 U	1.0 UJ	1.2 U	0.87 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
2,4'-DDT	789026	µg/Kg	11%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
4,4'-DDD	72548	µg/Kg	2%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
4,4'-DDE	72559	µg/Kg	11%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
4,4'-DDT	50293	µg/Kg	33%	63	0.79 U	0.27 J	0.81 U	0.81 J	0.25 J	0.23 J	0.70 U
Aldrin	309002	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
alpha-BHC	319846	µg/Kg	2%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
beta-BHC	319857	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1				
Date Collected:	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	13-Apr-05				
	Beach	Beach	Beach	Beach	Beach	Beach	Beach				
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite				
Elevation:	1282	1277	1278	1283	1272	1253	1285				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1
delta-BHC	319868	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Dieldrin	60571	µg/Kg	0%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
Endosulfan I	959988	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Endosulfan II	33213659	µg/Kg	0%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
Endrin	72208	µg/Kg	0%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
Endrin aldehyde	7421934	µg/Kg	0%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
Endrin ketone	53494705	µg/Kg	0%	63	0.79 U	0.86 U	0.81 U	0.75 U	0.82 U	0.97 U	0.70 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Heptachlor	76448	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Methoxychlor	72435	µg/Kg	5%	63	3.9 U	4.2 U	4.0 U	3.7 U	4.1 U	4.8 U	3.5 U
Oxychlordane	27304138	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
Toxaphene	8001352	µg/Kg	0%	63	39 U	42 U	40 U	37 U	41 U	48 U	35 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.39 U	0.42 U	0.40 U	0.37 U	0.41 U	0.48 U	0.35 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	250 U	270 U	260 U	230 U	260 U	300 U	220 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	250 U	270 U	260 UR	230 U	260 U	300 U	220 U
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2-Chloronaphthalene	91587	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1				
Date Collected:	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	13-Apr-05				
	Beach	Beach	Beach	Beach	Beach	Beach	Beach				
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite				
Elevation:	1282	1277	1278	1283	1272	1253	1285				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1
2-Chlorophenol	95578	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2-Methylphenol	95487	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
2-Nitroaniline	88744	µg/Kg	0%	63	250 U	270 U	260 U	230 U	260 U	300 U	220 U
2-Nitrophenol	88755	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
3-Nitroaniline	99092	µg/Kg	0%	63	250 U	270 U	260 U	230 U	260 U	300 U	220 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	250 U	270 U	260 U	230 U	260 U	300 U	220 U
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
4-Chloroaniline	106478	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
4-Methylphenol	106445	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
4-Nitroaniline	100016	µg/Kg	0%	63	250 U	270 U	260 U	230 U	260 U	300 U	220 U
4-Nitrophenol	100027	µg/Kg	0%	63	250 U	270 U	260 U	230 U	260 U	300 U	220 U
Acetophenone	98862	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Atrazine	1912249	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Benzaldehyde	100527	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Benzoic acid	65850	µg/Kg	0%	46	98 UR	110 UR	100 U	93 UR	100 UR	120 UR	86 U
Benzyl alcohol	100516	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Caprolactam	105602	µg/Kg	3%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Carbazole	86748	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Diethyl phthalate	84662	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Dimethyl phthalate	131113	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Hexachloroethane	67721	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Isophorone	78591	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Nitrobenzene	98953	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1				
Date Collected:	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	16-Apr-05	13-Apr-05				
	Beach	Beach	Beach	Beach	Beach	Beach	Beach				
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite				
Elevation:	1282	1277	1278	1283	1272	1253	1285				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM673B1	RM673B2	RM673B3	RM675B1	RM675B2	RM675B3	RM690B1
Pentachlorophenol	87865	µg/Kg	0%	63	250 U	270 U	260 U	230 U	260 U	300 U	220 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Phenol	108952	µg/Kg	0%	63	98 U	110 U	100 U	93 U	100 U	120 U	86 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	0.55 U	2.2	3.6	6.4	3.0	2.0 U	0.62 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	0.12 U	0.51 J	0.62 J	0.53 J	0.36 J	0.38 J	0.13 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	0.071 U	0.16 U	0.093 U	0.11 U	0.15 U	0.077 U	0.12 U
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	0.079 U	0.096 U	0.079 U	0.23 J	0.16 U	0.059 J	0.12 U
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	0.047 J	0.10 U	0.094 J	0.063 U	0.10 U	0.064 U	0.047 U
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	0.088 U	0.27 J	0.25 J	0.37 J	0.24 J	0.11 J	0.12 U
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	0.046 U	0.048 J	0.057 J	0.053 U	0.11 U	0.063 U	0.043 U
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	0.084 U	0.16 J	0.15 J	0.27 J	0.16 U	0.094 U	0.12 U
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	0.070 U	0.10 J	0.037 J	0.086 U	0.17 U	0.10 U	0.071 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	0.057 U	0.11 J	0.081 J	0.13 J	0.10 U	0.051 U	0.055 U
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	0.041 U	0.049 U	0.058 U	0.075 U	0.057 U	0.044 U	0.039 U
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	0.057 J	0.046 J	0.069 J	0.10 U	0.11 U	0.062 U	0.046 U
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	0.047 U	0.14 U	0.099 U	0.093 U	0.095 U	0.082 U	0.039 U
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	0.045 U	0.063 U	0.052 U	0.094 J	0.10 U	0.061 U	0.076 U
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	0.084 U	0.78	1.2	1.4	0.72	1.9	0.65
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	1.1 U	4.2 J	7.2 J	13	6.1	4.5	0.85 U
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	0.22 U	1.1 J	1.4 J	1.2 U	0.36	0.95 J	0.13 U
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	0.076	0.42	0.80	3.0	1.4	1.2	0.080
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	0.12	0.53	0.65	1.2	0.36	0.47	0.089
Octachlorodibenzodioxin	3268879	pg/g	58%	36	3.3 U	17	42	52	23	15	4.4 U
Octachlorodibenzofuran	39001020	pg/g	58%	36	0.21 U	0.98 J	1.4 J	0.74 J	0.65 J	0.70 J	0.20 U
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	0.17	0.64	0.38	0.40	0.92	0.049	0.055 U
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	0.088 U	0.30	0.59 J	0.54	0.20 J	0.59 J	0.049 U
TEQ WHO-98	TEQ	pg/g	92%	36	0.011	0.27	0.31	0.54	0.13	0.41	0.065
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	0.045 U	0.39	0.12	0.094	0.60	0.14	0.076 U
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	0.084 U	1.2 J	2.2 J	1.0	1.6 J	4.1 J	0.95 J

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L				
Date Collected:	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample				
Elevation:	1274	1259	1284	1282	1277	1285	1288				
Analyte	CAS	Units	Frequency of Detection	Number of Samples							
415.1											
Total organic carbon	E-10195	mg/Kg	98%	63	2,360	3,700	1,430	725	23,200	475	430
CLP TAL TotMetals											
Aluminum	7429905	mg/Kg	100%	63	6,050	6,370	3,000	7,660	13,000	5,400	4,600
Antimony	7440360	mg/Kg	63%	54	1.0 UJ	0.95 UJ	0.29 UJ	1.8 J	1.8 J	0.37 UJ	0.61 UJ
Arsenic	7440382	mg/Kg	97%	63	2.4	2.6	1.0	1.4	2.3	1.4	1.5
Barium	7440393	mg/Kg	100%	63	58	56	30	102	232	48 J	44 J
Beryllium	7440417	mg/Kg	100%	63	0.51 J	0.52 J	0.28 J	0.69	1.2 J	0.36 J	0.32 J
Cadmium	7440439	mg/Kg	86%	63	0.33 J	0.45 J	0.32 J	4.4	7.8	0.11 J	0.18 J
Calcium	7440702	mg/Kg	100%	63	2,430	3,050	879	2,550	5,670	2,220	1,900
Chromium	7440473	mg/Kg	100%	63	12	13	5.6	15	25	11 J	9.1 J
Cobalt	7440484	mg/Kg	100%	63	4.3 J	4.9 J	2.3 J	5.2 J	8.7	3.8 J	3.1 J
Copper	7440508	mg/Kg	100%	63	15	14	4.2	17	34	9.9	11
Iron	7439896	mg/Kg	100%	63	9,960	12,000	5,180	11,800	18,100	11,300	8,640
Lead	7439921	mg/Kg	100%	63	19	22	17	136	222	5.2	6.0
Magnesium	7439954	mg/Kg	100%	63	2,770	3,980	1,390	3,210	5,220	3,230	2,560
Manganese	7439965	mg/Kg	100%	63	171	260	111	158	267	259	125
Mercury	7439976	mg/Kg	68%	63	0.019 J	0.030 J	0.099 U	0.29	0.80 J	0.11 U	0.11 U
Nickel	7440020	mg/Kg	100%	63	9.6	11	4.1	11	20	8.3	7.4
Potassium	7440097	mg/Kg	100%	63	843	775	483	1,120	2,260	558	585
Selenium	7782492	mg/Kg	26%	19	3.6 UR	3.9 UR	3.0 UR	4.0 UR	5.3 UR	3.5 UR	0.63 R
Silver	7440224	mg/Kg	#VALUE!	63	1.0 UJ	1.1 UJ	0.86 UJ	1.2 UJ	1.5 UJ	1.0 U	0.91 U
Sodium	7440235	mg/Kg	89%	63	131 J	155 J	60 J	125 J	242 J	91 U	97 U
Thallium	7440280	mg/Kg	5%	63	2.6 U	2.8 U	2.2 U	2.9 U	3.8 U	2.5 U	2.3 U
Uranium	7440611	mg/Kg	27%	63	8.4 J	22 U	17 U	23 U	30 U	20 UJ	18 UJ
Vanadium	7440622	mg/Kg	100%	63	20	22	9.1	20	29	27	17
Zinc	7440666	mg/Kg	100%	63	67	97	54	391	700	33	36
CLP TCL PAH											
2-Methylnaphthalene	91576	µg/Kg	35%	63	0.20 J	5.0 U	4.0 U	0.40 J	0.60 J	4.0 U	4.0 U
Acenaphthene	83329	µg/Kg	11%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 UJ	4.0 U	4.0 U
Acenaphthylene	208968	µg/Kg	14%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 U	4.0 U	4.0 U
Anthracene	120127	µg/Kg	13%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 U	4.0 U	4.0 U
Benzo(a)anthracene	56553	µg/Kg	30%	63	4.0 U	5.0 U	4.0 U	6.0 U	0.60 J	4.0 U	4.0 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L				
Date Collected:	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample				
Elevation:	1274	1259	1284	1282	1277	1285	1288				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L
Benzo(a)pyrene	50328	µg/Kg	24%	63	4.0 U	5.0 U	4.0 U	0.40 J	0.60 J	4.0 U	4.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	4.0 U	0.40 J	4.0 U	0.40 J	0.80 J	4.0 U	4.0 U
Benzo(ghi)perylene	191242	µg/Kg	32%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 U	4.0 U	4.0 U
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	4.0 U	5.0 U	4.0 U	0.40 J	0.60 J	4.0 U	4.0 U
Chrysene	218019	µg/Kg	54%	63	0.40 J	0.40 J	4.0 U	0.40 J	0.80 J	0.20 J	0.20 J
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 U	4.0 U	4.0 U
Dibenzofuran	132649	µg/Kg	22%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 UJ	4.0 U	4.0 U
Fluoranthene	206440	µg/Kg	48%	63	0.40 J	0.40 J	4.0 U	0.40 J	1.0 J	4.0 U	4.0 U
Fluorene	86737	µg/Kg	14%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 UJ	4.0 U	4.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	4.0 U	5.0 U	4.0 U	6.0 U	7.0 U	4.0 U	4.0 U
Naphthalene	91203	µg/Kg	16%	63	0.40 U	0.40 U	3.6 U	0.40 U	0.80 U	3.5 U	3.6 U
Phenanthrene	85018	µg/Kg	44%	63	0.40 J	0.20 J	4.0 U	0.40 J	1.0 J	4.0 U	4.0 U
Pyrene	129000	µg/Kg	48%	63	4.0 U	0.40 J	4.0 U	0.40 J	0.80 J	4.0 U	0.20 J
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	0.89 U	1.0 U	0.87 U	1.1 U	1.4 U	0.85 U	0.88 U
PCB-1221	11104282	µg/Kg	0%	63	3.6 U	4.1 U	3.6 U	4.4 U	5.7 U	3.4 U	3.6 U
PCB-1232	11141165	µg/Kg	0%	63	3.6 U	4.1 U	3.6 U	4.4 U	5.7 U	3.4 U	3.6 U
PCB-1242	53469219	µg/Kg	0%	63	0.89 U	1.0 U	0.87 U	1.1 U	1.4 U	0.85 U	0.88 U
PCB-1248	12672296	µg/Kg	0%	63	0.89 U	1.0 U	0.87 U	1.1 U	1.4 U	0.85 U	0.88 U
PCB-1254	11097691	µg/Kg	0%	63	0.89 U	1.0 U	0.87 U	1.1 U	1.4 U	0.85 U	0.88 U
PCB-1260	11096825	µg/Kg	0%	63	0.89 U	1.0 U	0.87 U	1.1 U	1.4 U	0.85 U	0.88 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
2,4'-DDT	789026	µg/Kg	11%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
4,4'-DDD	72548	µg/Kg	2%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
4,4'-DDE	72559	µg/Kg	11%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
4,4'-DDT	50293	µg/Kg	33%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
Aldrin	309002	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
alpha-BHC	319846	µg/Kg	2%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
beta-BHC	319857	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L				
Date Collected:	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample				
Elevation:	1274	1259	1284	1282	1277	1285	1288				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L
delta-BHC	319868	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
Dieldrin	60571	µg/Kg	0%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
Endosulfan I	959988	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
Endosulfan II	33213659	µg/Kg	0%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
Endrin	72208	µg/Kg	0%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
Endrin aldehyde	7421934	µg/Kg	0%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
Endrin ketone	53494705	µg/Kg	0%	63	0.72 U	0.83 U	0.70 U	0.89 U	1.1 U	0.69 U	0.71 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
Heptachlor	76448	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.35 U	0.41 U	0.092 J	0.44 U	0.56 U	0.34 U	0.35 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
Methoxychlor	72435	µg/Kg	5%	63	3.6 U	4.1 U	3.5 U	4.4 U	5.6 U	3.4 J	0.85 J
Oxychlordane	27304138	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
Toxaphene	8001352	µg/Kg	0%	63	35 U	41 U	35 U	44 U	56 U	34 U	35 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.35 U	0.41 U	0.35 U	0.44 U	0.56 U	0.34 U	0.35 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	220 U	260 U	220 U	280 U	360 U	210 U	220 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	220 U	260 U	220 U	280 U	360 U	210 U	220 U
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2-Chloronaphthalene	91587	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L				
Date Collected:	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample				
Elevation:	1274	1259	1284	1282	1277	1285	1288				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L
2-Chlorophenol	95578	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2-Methylphenol	95487	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
2-Nitroaniline	88744	µg/Kg	0%	63	220 U	260 U	220 U	280 U	360 U	210 U	220 U
2-Nitrophenol	88755	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
3-Nitroaniline	99092	µg/Kg	0%	63	220 U	260 U	220 U	280 U	360 U	210 U	220 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	220 U	260 U	220 U	280 U	360 U	210 U	220 U
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
4-Chloroaniline	106478	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
4-Methylphenol	106445	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
4-Nitroaniline	100016	µg/Kg	0%	63	220 U	260 U	220 U	280 U	360 U	210 U	220 U
4-Nitrophenol	100027	µg/Kg	0%	63	220 U	260 U	220 U	280 U	360 U	210 U	220 U
Acetophenone	98862	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Atrazine	1912249	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Benzaldehyde	100527	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Benzoic acid	65850	µg/Kg	0%	46	88 UJ	100 UJ	87 UJ	110 UJ	140 UJ	85 UJ	88 UJ
Benzyl alcohol	100516	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Caprolactam	105602	µg/Kg	3%	63	88 U	150	87 U	110 U	140 U	85 U	88 U
Carbazole	86748	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Diethyl phthalate	84662	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Dimethyl phthalate	131113	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Hexachloroethane	67721	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Isophorone	78591	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Nitrobenzene	98953	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L				
Date Collected:	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	13-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample				
Elevation:	1274	1259	1284	1282	1277	1285	1288				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM690B2	RM690B3	RM697B1	RM697B2	RM697B3	RM700B1c	RM700B1L
Pentachlorophenol	87865	µg/Kg	0%	63	220 U	260 U	220 U	280 U	360 U	210 U	220 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Phenol	108952	µg/Kg	0%	63	88 U	100 U	87 U	110 U	140 U	85 U	88 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	1.0 U	2.0	0.47 U	4.9	8.6	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	0.23 U	0.35 U	0.091 U	0.99 J	1.7	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	0.095 U	0.078 U	0.054 U	0.062 J	0.21 U	--	--
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	0.11 U	0.070 J	0.075 U	0.12 J	0.18 J	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	0.054 U	0.053 U	0.047 U	0.14 J	0.24 J	--	--
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	0.11 J	0.14 J	0.078 U	0.37 J	0.77 J	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	0.055 U	0.051 U	0.047 U	0.10 J	0.19 J	--	--
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	0.076 J	0.082 J	0.077 U	0.26 U	0.51 U	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	0.083 U	0.076 U	0.073 U	0.079 U	0.21 U	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	0.058 U	0.052 U	0.044 U	0.17 U	0.26 J	--	--
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	0.038 U	0.045 U	0.023 U	0.16 J	0.24 J	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	0.056 U	0.045 J	0.047 U	0.11 U	0.21 U	--	--
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	0.045 U	0.065 U	0.028 J	0.24 J	0.47 J	--	--
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	0.073 U	0.047 U	0.039 U	0.15 J	0.25 J	--	--
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	1.2	1.5	0.30 J	8.7	16	--	--
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	2.1 J	4.3 J	1.0 U	11 J	19 J	--	--
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	0.43 U	0.97 J	0.085 U	2.3 J	4.0	--	--
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	0.37	0.62	0.076 U	3.6	6.2	--	--
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	0.061 U	0.49	0.044	1.5	2.3	--	--
Octachlorodibenzodioxin	3268879	pg/g	58%	36	7.8 U	15	3.2 U	33	51	--	--
Octachlorodibenzofuran	39001020	pg/g	58%	36	0.68 U	0.98 J	0.16 U	2.1 J	4.2	--	--
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	0.058 U	0.16	0.044 U	0.54	1.00	--	--
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	0.12	0.46	0.067 U	1.9 J	3.1	--	--
TEQ WHO-98	TEQ	pg/g	92%	36	0.22	0.20	0.030	1.3	2.6	--	--
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	0.073 U	0.18	0.039 U	0.40	0.72	--	--
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	1.8 J	2.7 J	0.45 J	18 J	30	--	--

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R
Date Collected:	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample
Elevation:	1282	1274	1281	1269	1259	1255	1255

Analyte	CAS	Units	Frequency		Number of						
			Detection	Samples	471	694	864	514	555	472	963
415.1											
Total organic carbon	E-10195	mg/Kg	98%	63	471	694	864	514	555	472	963
CLP TAL TotMetals											
Aluminum	7429905	mg/Kg	100%	63	4,700	5,740	4,910	4,760	16,000	4,730	10,100
Antimony	7440360	mg/Kg	63%	54	5.3 UJ	0.95 UJ	6.4 UJ	0.30 UJ	1.3 UJ	0.45 UJ	0.31 UJ
Arsenic	7440382	mg/Kg	97%	63	1.8	1.0	1.3	1.5	2.3	1.5	1.8
Barium	7440393	mg/Kg	100%	63	38 J	40 J	40 J	38 J	169 J	37 J	106 J
Beryllium	7440417	mg/Kg	100%	63	0.31 J	0.38 J	0.37 J	0.36 J	1.4	0.35 J	0.83
Cadmium	7440439	mg/Kg	86%	63	0.15 J	0.15 J	0.23 J	0.11 J	0.36 J	0.19 J	0.22 J
Calcium	7440702	mg/Kg	100%	63	1,950	2,570	2,460	2,380	16,200	2,430	7,890
Chromium	7440473	mg/Kg	100%	63	9.7 J	10 J	9.6 J	9.6 J	37 J	10 J	22 J
Cobalt	7440484	mg/Kg	100%	63	3.2 J	3.5 J	3.5 J	3.8 J	13	3.8 J	7.5
Copper	7440508	mg/Kg	100%	63	9.8	10	9.2	9.3	27	10	16
Iron	7439896	mg/Kg	100%	63	8,650	9,930	9,320	9,690	26,000	10,100	16,200
Lead	7439921	mg/Kg	100%	63	4.3	7.3	6.8	4.0	11	7.6	8.3
Magnesium	7439954	mg/Kg	100%	63	2,870	3,100	2,860	2,690	9,960	3,100	5,970
Manganese	7439965	mg/Kg	100%	63	146	147	161	145	605	147	390
Mercury	7439976	mg/Kg	68%	63	0.098 U	0.10 U	0.11 U	0.10 U	0.0068 J	0.0040 J	0.0069 J
Nickel	7440020	mg/Kg	100%	63	7.6	7.8	8.3	7.2	30	8.2	18
Potassium	7440097	mg/Kg	100%	63	523	657	585	631	3,160	503	1,750
Selenium	7782492	mg/Kg	26%	19	3.1 UR	2.9 UR	3.7 UR	2.8 UR	4.3 UR	0.85 R	3.5 UR
Silver	7440224	mg/Kg	#VALUE!	63	0.89 U	0.83 U	1.1 U	0.80 U	1.2 U	0.90 U	0.99 U
Sodium	7440235	mg/Kg	89%	63	103 U	124 U	109 U	111 U	437 J	98 U	251 J
Thallium	7440280	mg/Kg	5%	63	2.2 U	2.1 U	2.7 U	2.0 U	3.1 U	2.2 U	2.5 U
Uranium	7440611	mg/Kg	27%	63	18 UJ	17 UJ	21 UJ	16 UJ	25 UJ	18 UJ	20 UJ
Vanadium	7440622	mg/Kg	100%	63	19	21	20	21	50	20	31
Zinc	7440666	mg/Kg	100%	63	33	42	40	27	74	40	52
CLP TCL PAH											
2-Methylnaphthalene	91576	µg/Kg	35%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Acenaphthene	83329	µg/Kg	11%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Acenaphthylene	208968	µg/Kg	14%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Anthracene	120127	µg/Kg	13%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Benzo(a)anthracene	56553	µg/Kg	30%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R				
Date Collected:	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1282	1274	1281	1269	1259	1255	1255				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R
Benzo(a)pyrene	50328	µg/Kg	24%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Benzo(ghi)perylene	191242	µg/Kg	32%	63	0.20 J	5.0 U	4.0 U	0.20 J	6.0 U	4.0 U	5.0 U
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Chrysene	218019	µg/Kg	54%	63	0.20 J	0.20 J	4.0 U	0.20 J	0.50 J	4.0 U	0.20 J
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Dibenzofuran	132649	µg/Kg	22%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Fluoranthene	206440	µg/Kg	48%	63	4.0 U	5.0 U	4.0 U	4.0 U	0.20 J	4.0 U	0.20 J
Fluorene	86737	µg/Kg	14%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	0.20 J	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Naphthalene	91203	µg/Kg	16%	63	3.6 U	3.7 U	3.6 U	3.6 U	4.7 U	3.5 U	4.3 U
Phenanthrene	85018	µg/Kg	44%	63	4.0 U	5.0 U	4.0 U	4.0 U	6.0 U	4.0 U	5.0 U
Pyrene	129000	µg/Kg	48%	63	0.20 J	5.0 U	4.0 U	0.20 J	0.20 J	4.0 U	0.20 J
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	0.87 U	0.90 U	0.89 U	0.90 U	1.1 U	0.86 U	1.1 U
PCB-1221	11104282	µg/Kg	0%	63	3.6 U	3.6 U	3.6 U	3.6 U	4.6 U	3.5 U	4.3 U
PCB-1232	11141165	µg/Kg	0%	63	3.6 U	3.6 U	3.6 U	3.6 U	4.6 U	3.5 U	4.3 U
PCB-1242	53469219	µg/Kg	0%	63	0.87 U	0.90 U	0.89 U	0.90 U	1.1 U	0.86 U	1.1 U
PCB-1248	12672296	µg/Kg	0%	63	0.87 U	0.90 U	0.89 U	0.90 U	1.1 U	0.86 U	1.1 U
PCB-1254	11097691	µg/Kg	0%	63	0.87 U	0.90 U	0.89 U	0.90 U	1.1 U	0.86 U	1.1 U
PCB-1260	11096825	µg/Kg	0%	63	0.87 U	0.90 U	0.89 U	0.90 U	1.1 U	0.86 U	1.1 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
2,4'-DDT	789026	µg/Kg	11%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
4,4'-DDD	72548	µg/Kg	2%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
4,4'-DDE	72559	µg/Kg	11%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
4,4'-DDT	50293	µg/Kg	33%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
Aldrin	309002	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
alpha-BHC	319846	µg/Kg	2%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
beta-BHC	319857	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R				
Date Collected:	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1282	1274	1281	1269	1259	1255	1255				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R
delta-BHC	319868	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Dieldrin	60571	µg/Kg	0%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
Endosulfan I	959988	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Endosulfan II	33213659	µg/Kg	0%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
Endrin	72208	µg/Kg	0%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
Endrin aldehyde	7421934	µg/Kg	0%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
Endrin ketone	53494705	µg/Kg	0%	63	0.70 U	0.73 U	0.72 U	0.73 U	0.93 U	0.70 U	0.86 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Heptachlor	76448	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Methoxychlor	72435	µg/Kg	5%	63	0.75 J	3.6 U	3.6 U	3.6 U	4.6 U	3.4 U	4.3 U
Oxychlordane	27304138	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
Toxaphene	8001352	µg/Kg	0%	63	35 U	36 U	35 U	36 U	46 U	34 U	43 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.35 U	0.36 U	0.35 U	0.36 U	0.46 U	0.34 U	0.43 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	220 U	230 U	220 U	220 U	290 U	220 U	270 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	220 U	230 U	220 U	220 U	290 U	220 U	270 U
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2-Chloronaphthalene	91587	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R
Date Collected:	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample
Elevation:	1282	1274	1281	1269	1259	1255	1255

Analyte	CAS	Units	Frequency		Number of						
			Detection	of Samples	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R
2-Chlorophenol	95578	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2-Methylphenol	95487	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
2-Nitroaniline	88744	µg/Kg	0%	63	220 U	230 U	220 U	220 U	290 U	220 U	270 U
2-Nitrophenol	88755	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
3-Nitroaniline	99092	µg/Kg	0%	63	220 U	230 U	220 U	220 U	290 U	220 U	270 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	220 U	230 U	220 U	220 U	290 U	220 U	270 U
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
4-Chloroaniline	106478	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
4-Methylphenol	106445	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
4-Nitroaniline	100016	µg/Kg	0%	63	220 U	230 U	220 U	220 U	290 U	220 U	270 U
4-Nitrophenol	100027	µg/Kg	0%	63	220 U	230 U	220 U	220 U	290 U	220 U	270 U
Acetophenone	98862	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Atrazine	1912249	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Benzaldehyde	100527	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Benzoic acid	65850	µg/Kg	0%	46	88 UJ	90 UJ	88 UJ	86 UJ	120 UJ	85 UJ	110 UJ
Benzyl alcohol	100516	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Caprolactam	105602	µg/Kg	3%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Carbazole	86748	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Diethyl phthalate	84662	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Dimethyl phthalate	131113	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Hexachloroethane	67721	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Isophorone	78591	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Nitrobenzene	98953	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R				
Date Collected:	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05	12-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1282	1274	1281	1269	1259	1255	1255				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM700B1R	RM700B2c	RM700B2L	RM700B2R	RM700B3c	RM700B3L	RM700B3R
Pentachlorophenol	87865	µg/Kg	0%	63	220 U	230 U	220 U	220 U	290 U	220 U	270 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Phenol	108952	µg/Kg	0%	63	88 U	90 U	88 U	86 U	120 U	85 U	110 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	--	--	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	--	--	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	--	--	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	--	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	--	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	--	--	--	--	--	--	--
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	--	--	--	--	--	--	--
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	--	--	--	--	--	--	--
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	--	--	--	--	--	--	--
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	--	--	--	--	--	--	--
Octachlorodibenzodioxin	3268879	pg/g	58%	36	--	--	--	--	--	--	--
Octachlorodibenzofuran	39001020	pg/g	58%	36	--	--	--	--	--	--	--
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	--	--	--	--	--	--	--
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	--	--	--	--	--	--	--
TEQ WHO-98	TEQ	pg/g	92%	36	--	--	--	--	--	--	--
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	--	--	--	--	--	--	--
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	--	--	--	--	--	--	--

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM708B1	RM708B2	RM708B3	RM718B1	RM718B2	RM718B3	RM729B1
Date Collected:	07-Apr-05	07-Apr-05	07-Apr-05	06-Apr-05	06-Apr-05	06-Apr-05	08-Apr-05
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite
Elevation:	1283	1279	1279	1289	1271	1259	1282

Analyte	CAS	Units	Frequency		Number of							
			Detection	of Samples	of Samples							
415.1												
Total organic carbon	E-10195	mg/Kg	98%	63	3,410	22,200 J	19,900 J	2,790	20,300	8,810	4,000 J	
CLP TAL TotMetals												
Aluminum	7429905	mg/Kg	100%	63	7,310	9,890	8,600	4,350	7,880	7,060	10,700	
Antimony	7440360	mg/Kg	63%	54	6.2 UJ	2.0 J	8.1 UJ	0.47 UJ	3.6 J	6.4 J	11 J	
Arsenic	7440382	mg/Kg	97%	63	3.9 U	8.6	6.5	5.0	9.6	11	14	
Barium	7440393	mg/Kg	100%	63	101	264	258	102	315	407	686	
Beryllium	7440417	mg/Kg	100%	63	0.36 J	0.56 J	0.48 J	0.28 J	0.53 J	0.48 J	0.77	
Cadmium	7440439	mg/Kg	86%	63	1.6	5.6	7.3	1.1	4.2	4.2	2.5	
Calcium	7440702	mg/Kg	100%	63	7,110	6,920	7,520	6,090	15,400	24,700	35,100	
Chromium	7440473	mg/Kg	100%	63	14	20	20	15	23	25	51	
Cobalt	7440484	mg/Kg	100%	63	5.2	7.1	6.8 J	4.3 J	8.5	9.8	22	
Copper	7440508	mg/Kg	100%	63	14	58	50	23	132	216	802	
Iron	7439896	mg/Kg	100%	63	12,700	23,400	17,600	16,000	23,500	29,500	82,100 D	
Lead	7439921	mg/Kg	100%	63	52	202	297	69	223	216	214	
Magnesium	7439954	mg/Kg	100%	63	4,220	5,390	6,070	4,140	10,200	13,900	9,090	
Manganese	7439965	mg/Kg	100%	63	170	246	214	171	270	434	1,660	
Mercury	7439976	mg/Kg	68%	63	0.078 J	0.47	0.81	0.068 J	0.40	0.37	0.073 J	
Nickel	7440020	mg/Kg	100%	63	13	17	16	9.6	17	15	10	
Potassium	7440097	mg/Kg	100%	63	1,070	1,020	1,010	624	1,220	1,190	2,030	
Selenium	7782492	mg/Kg	26%	19	3.6 U	4.3 J	2.3 J	1.1 J	2.7 J	3.0 J	3.7 UR	
Silver	7440224	mg/Kg	#VALUE!	63	1.0 U	1.3 U	1.4 U	1.0 U	1.4 U	1.2 U	1.0 UJ	
Sodium	7440235	mg/Kg	89%	63	96 J	134 J	86 J	89 J	134 J	170 J	811	
Thallium	7440280	mg/Kg	5%	63	2.6 U	3.2 U	3.4 U	2.6 U	3.4 U	3.1 U	1.3 J	
Uranium	7440611	mg/Kg	27%	63	7.5 J	6.7 J	27 U	5.7 J	11 J	14 J	21 UJ	
Vanadium	7440622	mg/Kg	100%	63	19	29	24	28	27	27	27	
Zinc	7440666	mg/Kg	100%	63	186 J	620 J	915 J	352 J	1,060 J	1,700 J	6,560 D	
CLP TCL PAH												
2-Methylnaphthalene	91576	µg/Kg	35%	63	1.0 J	30	7.0	0.40 J	4.0 J	4.0 J	0.60 J	
Acenaphthene	83329	µg/Kg	11%	63	0.30 J	3.0 J	1.0 J	9.0 U	0.50 J	0.40 J	5.0 U	
Acenaphthylene	208968	µg/Kg	14%	63	13 U	1.0 J	0.20 J	9.0 U	0.30 J	0.40 J	9.0	
Anthracene	120127	µg/Kg	13%	63	13 U	3.0 J	0.50 J	3.7 U	7.0	4.6 U	7.0	
Benzo(a)anthracene	56553	µg/Kg	30%	63	2.0 J	7.0	7.0	0.50 J	3.0 J	3.0 J	5.0 U	

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM708B1	RM708B2	RM708B3	RM718B1	RM718B2	RM718B3	RM729B1				
Date Collected:	07-Apr-05	07-Apr-05	07-Apr-05	06-Apr-05	06-Apr-05	06-Apr-05	08-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1283	1279	1279	1289	1271	1259	1282				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM708B1	RM708B2	RM708B3	RM718B1	RM718B2	RM718B3	RM729B1
Benzo(a)pyrene	50328	µg/Kg	24%	63	0.50 J	4.0 J	3.0 J	0.50 J	3.0 J	2.0 J	0.90 J
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	1.0 J	9.0	6.0	1.0 J	5.0 J	4.0 J	5.0 U
Benzo(ghi)perylene	191242	µg/Kg	32%	63	0.50 J	2.0 J	1.0 J	0.20 J	1.0 J	0.70 J	5.0
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	13 UJ	5.0 J	12 U	9.0 U	13 U	11 U	5.0 U
Chrysene	218019	µg/Kg	54%	63	2.0 J	17	7.0	1.0 J	5.0 J	5.0	5.0 U
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	0.50 J	3.0 J	1.0 J	3.7 U	1.0 J	1.0 J	2.0 J
Dibenzofuran	132649	µg/Kg	22%	63	0.30 J	10	4.0 J	0.20 J	2.0 J	2.0 J	5.0 U
Fluoranthene	206440	µg/Kg	48%	63	13 U	9.0	8.0	2.0 J	9.0	5.0	2.0 J
Fluorene	86737	µg/Kg	14%	63	0.30 J	3.0 J	1.0 J	0.20 J	1.0 J	0.90 J	5.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	0.30 J	5.0 J	3.0 J	0.70 J	3.0 J	2.0 J	4.0
Naphthalene	91203	µg/Kg	16%	63	7.0	43 J	27	3.7 U	4.0 J	8.0	3.8 U
Phenanthrene	85018	µg/Kg	44%	63	1.0 J	41 J	13	1.0 J	7.0	6.0	1.0 J
Pyrene	129000	µg/Kg	48%	63	1.0 J	12	8.0	1.0 J	8.0	5.0	2.0 J
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	1.2 U	1.1 U	0.86 U	0.90 U	1.3 U	1.1 U	0.93 U
PCB-1221	11104282	µg/Kg	0%	63	5.0 U	4.5 U	3.4 U	3.6 U	5.1 U	4.4 U	3.7 U
PCB-1232	11141165	µg/Kg	0%	63	5.0 U	4.5 U	3.4 U	3.6 U	5.1 U	4.4 U	3.7 U
PCB-1242	53469219	µg/Kg	0%	63	1.2 U	1.1 U	0.86 U	0.90 U	1.3 U	1.1 U	0.93 U
PCB-1248	12672296	µg/Kg	0%	63	1.2 U	1.1 U	0.86 U	0.90 U	1.3 U	1.1 U	0.93 U
PCB-1254	11097691	µg/Kg	0%	63	1.2 U	1.1 U	0.86 U	0.90 U	1.3 U	1.1 U	0.93 U
PCB-1260	11096825	µg/Kg	0%	63	1.2 U	1.1 U	0.86 U	0.90 U	1.3 U	1.1 U	0.93 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
2,4'-DDE	3424826	µg/Kg	5%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
2,4'-DDT	789026	µg/Kg	11%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
4,4'-DDD	72548	µg/Kg	2%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
4,4'-DDE	72559	µg/Kg	11%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
4,4'-DDT	50293	µg/Kg	33%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
Aldrin	309002	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
alpha-BHC	319846	µg/Kg	2%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
beta-BHC	319857	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM708B1	RM708B2	RM708B3	RM718B1	RM718B2	RM718B3	RM729B1				
Date Collected:	07-Apr-05	07-Apr-05	07-Apr-05	06-Apr-05	06-Apr-05	06-Apr-05	08-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1283	1279	1279	1289	1271	1259	1282				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
delta-BHC	319868	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Dieldrin	60571	µg/Kg	0%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
Endosulfan I	959988	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Endosulfan II	33213659	µg/Kg	0%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
Endrin	72208	µg/Kg	0%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
Endrin aldehyde	7421934	µg/Kg	0%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
Endrin ketone	53494705	µg/Kg	0%	63	1.0 U	0.90 U	0.69 U	0.72 U	1.0 U	0.89 U	0.75 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Heptachlor	76448	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Methoxychlor	72435	µg/Kg	5%	63	5.0 U	4.4 U	3.4 U	3.6 U	5.0 U	4.4 U	3.7 U
Oxychlordane	27304138	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
Toxaphene	8001352	µg/Kg	0%	63	50 U	44 U	34 U	36 U	50 U	44 U	37 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.50 U	0.44 U	0.34 U	0.36 U	0.50 U	0.44 U	0.37 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	320 U	280 U	300 U	230 U	320 U	280 U	240 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	320 U	280 U	300 U	230 U	320 U	280 U	240 U
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
2-Chloronaphthalene	91587	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM708B1	RM708B2	RM708B3	RM718B1	RM718B2	RM718B3	RM729B1
Date Collected:	07-Apr-05	07-Apr-05	07-Apr-05	06-Apr-05	06-Apr-05	06-Apr-05	08-Apr-05
	Beach	Beach	Beach	Beach	Beach	Beach	Beach
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite
Elevation:	1283	1279	1279	1289	1271	1259	1282

Analyte	CAS	Units	Frequency		Number of Samples							
			Detection	of	RM708B1	RM708B2	RM708B3	RM718B1	RM718B2	RM718B3	RM729B1	
2-Chlorophenol	95578	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
2-Methylphenol	95487	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
2-Nitroaniline	88744	µg/Kg	0%	63	320 U	280 U	300 U	230 U	320 U	280 U	240 U	
2-Nitrophenol	88755	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
3-Nitroaniline	99092	µg/Kg	0%	63	320 U	280 U	300 U	230 U	320 U	280 U	240 U	
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	320 U	280 U	300 U	230 U	320 U	280 U	240 U	
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
4-Chloroaniline	106478	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
4-Methylphenol	106445	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
4-Nitroaniline	100016	µg/Kg	0%	63	320 U	280 U	300 U	230 U	320 U	280 U	240 U	
4-Nitrophenol	100027	µg/Kg	0%	63	320 U	280 U	300 U	230 U	320 U	280 U	240 U	
Acetophenone	98862	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Atrazine	1912249	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Benzaldehyde	100527	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Benzoic acid	65850	µg/Kg	0%	46	130 UJ	110 UJ	120 UJ	89 UJ	130 UJ	110 UJ	93 UJ	
Benzyl alcohol	100516	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Butyl benzyl phthalate	85687	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Caprolactam	105602	µg/Kg	3%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Carbazole	86748	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Di-n-butyl phthalate	84742	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Di-n-octylphthalate	117840	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Diethyl phthalate	84662	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Dimethyl phthalate	131113	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Hexachloroethane	67721	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Isophorone	78591	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	
Nitrobenzene	98953	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U	

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM708B1	RM708B2	RM708B3	RM718B1	RM718B2	RM718B3	RM729B1
Date Collected:	07-Apr-05	07-Apr-05	07-Apr-05	06-Apr-05	06-Apr-05	06-Apr-05	08-Apr-05
	Beach	Beach	Beach	Beach	Beach	Beach	Beach
Sample Type:	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite	Subsample Composite
Elevation:	1283	1279	1279	1289	1271	1259	1282

Analyte	CAS	Units	Frequency		Number of						
			Detection	of Samples	320 U	280 U	300 U	230 U	320 U	280 U	240 U
Pentachlorophenol	87865	µg/Kg	0%	63	320 U	280 U	300 U	230 U	320 U	280 U	240 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
Phenol	108952	µg/Kg	0%	63	130 U	110 U	120 U	89 U	130 U	110 U	93 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	1.4 J	8.1	11	1.8	10	6.3	1.8
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	0.39 J	1.6 J	2.1	0.41 U	1.9	1.1 J	1.2 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	0.12 U	0.12 U	0.17 U	0.078 U	0.18 U	0.10 U	0.053 U
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	0.076 U	0.15 J	0.21 J	0.061 J	0.18 J	0.13 U	0.069 J
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	0.052 U	0.20 U	0.28 U	0.082 U	0.25 U	0.17 U	0.056 U
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	0.097 U	0.59 U	0.84 J	0.17 J	0.67 U	0.45 U	0.13 J
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	0.053 J	0.13 U	0.20 U	0.068 U	0.19 U	0.12 U	0.053 U
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	0.075 U	0.45 J	0.60 J	0.12 J	0.48 J	0.28 J	0.098 J
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	0.064 U	0.073 U	0.077 U	0.063 U	0.12 U	0.078 U	0.043 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	0.045 U	0.16 U	0.21 J	0.062 J	0.17 J	0.099 J	0.040 J
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	0.043 U	0.24 J	0.33 J	0.070 J	0.27 U	0.19 J	0.036 U
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	0.056 U	0.17 U	0.24 U	0.092 U	0.23 U	0.14 U	0.055 U
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	0.077 J	0.46 J	0.61 J	0.14 J	0.43 J	0.34 J	0.064 J
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	0.040 U	0.25 J	0.28 J	0.081 U	0.19 J	0.19 J	0.034 U
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	1.2	18	24	3.9	15	14	0.67
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	2.8	17	25	3.9	22	12	3.9
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	0.62 J	4.0 J	5.4 J	0.95 J	4.7	2.5 J	2.4 J
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	0.33	5.6	7.2	1.3	5.5	3.4	0.73
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	0.49	2.5	3.2	0.72	2.9	1.8	0.97
Octachlorodibenzodioxin	3268879	pg/g	58%	36	10	55	87	12	77	40	13
Octachlorodibenzofuran	39001020	pg/g	58%	36	0.67 J	3.8	5.5	0.93 J	4.9	2.6 J	0.99 J
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	0.045 U	1.1	1.8	0.14	1.2	0.59	0.15
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	0.53 J	3.0	4.2	0.65 J	2.9 J	1.4	0.33
TEQ WHO-98	TEQ	pg/g	92%	36	0.28	2.5	3.5	0.58	2.3	2.0	0.20
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	0.040 U	0.77	0.93	0.064 U	0.91	0.54	0.053
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	2.3	37	47	7.2	32	28	1.3

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L
Date Collected:	08-Apr-05	08-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample
Elevation:	1272	1261	1282	1282	1289	1277	1278

Analyte	CAS	Units	Frequency		Number of							
			Detection	of Samples	1,940 J	1,210 J	8,460	1,290	4,430	9,140	1,220	
415.1												
Total organic carbon	E-10195	mg/Kg	98%	63	1,940 J	1,210 J	8,460	1,290	4,430	9,140	1,220	
CLP TAL TotMetals												
Aluminum	7429905	mg/Kg	100%	63	11,900	11,300	6,280	17,300	5,950	9,810	21,000	
Antimony	7440360	mg/Kg	63%	54	32 J	25 J	8.9 J	52 J	3.6 J	15 J	53 J	
Arsenic	7440382	mg/Kg	97%	63	23	18	6.9	18	6.9	11	23	
Barium	7440393	mg/Kg	100%	63	1,070	1,020	459	1,620	465	616	1,980	
Beryllium	7440417	mg/Kg	100%	63	0.88	0.84	0.57	1.3	0.59	0.73	1.5	
Cadmium	7440439	mg/Kg	86%	63	1.9	2.1	2.8	0.84	3.1	3.2	0.27 J	
Calcium	7440702	mg/Kg	100%	63	39,900	37,700	28,500	58,100	27,300	43,700	68,800	
Chromium	7440473	mg/Kg	100%	63	78	72	25	111	17	38	133	
Cobalt	7440484	mg/Kg	100%	63	37	35	9.7	48	6.7	15	57	
Copper	7440508	mg/Kg	100%	63	1,380	1,300	271	2,130	98	598	2,620	
Iron	7439896	mg/Kg	100%	63	110,000 D	108,000 D	33,500	171,000 D	21,300	71,600 D	213,000 D	
Lead	7439921	mg/Kg	100%	63	190	205	163	239	156	249	324	
Magnesium	7439954	mg/Kg	100%	63	6,450	5,640	13,800	6,040	14,500	14,500	6,370	
Manganese	7439965	mg/Kg	100%	63	2,200	2,110	619	3,430 D	288	1,220	4,150 D	
Mercury	7439976	mg/Kg	68%	63	0.044 J	0.034 J	0.098 J	0.027 J	0.099 J	0.14	0.017 J	
Nickel	7440020	mg/Kg	100%	63	12	10	12	14	13	11	15	
Potassium	7440097	mg/Kg	100%	63	2,300	2,270	1,200	3,500	1,130	1,850	4,150	
Selenium	7782492	mg/Kg	26%	19	3.4 UR	3.6 UR	3.9 UJ	3.6 UJ	3.9 UJ	3.3 UJ	3.5 UJ	
Silver	7440224	mg/Kg	#VALUE!	63	0.97 UJ	1.0 UJ	1.1 UJ	1.0 UJ	1.1 UJ	0.95 UJ	1.0 UJ	
Sodium	7440235	mg/Kg	89%	63	1,300	1,200	272 J	1,890	139 J	678	2,470	
Thallium	7440280	mg/Kg	5%	63	1.1 J	0.83 J	2.8 U	2.6 U	2.8 U	2.4 U	2.5 U	
Uranium	7440611	mg/Kg	27%	63	19 UJ	20 UJ	22 U	21 U	22 U	19 U	20 U	
Vanadium	7440622	mg/Kg	100%	63	29	28	22	37	25	27	41	
Zinc	7440666	mg/Kg	100%	63	8,410 D	8,700 D	2,220	14,600 D	1,020	5,900 D	17,100 D	
CLP TCL PAH												
2-Methylnaphthalene	91576	µg/Kg	35%	63	0.40 J	0.50 J	0.40 J	4.0 U	2.0 J	0.40 J	4.0 U	
Acenaphthene	83329	µg/Kg	11%	63	5.0 U	4.0 U	5.0 U	4.0 U	5.0 U	5.0 U	4.0 U	
Acenaphthylene	208968	µg/Kg	14%	63	5.0 U	4.0 U	3.0 J	4.0 U	3.0 J	5.0 U	4.0 U	
Anthracene	120127	µg/Kg	13%	63	5.0 U	4.0 U	6.0	4.0 U	2.0 J	5.0 U	4.0 U	
Benzo(a)anthracene	56553	µg/Kg	30%	63	0.40 J	0.40 J	12	4.0 U	10	2.0 J	0.50 J	

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L				
Date Collected:	08-Apr-05	08-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1272	1261	1282	1282	1289	1277	1278				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L
Benzo(a)pyrene	50328	µg/Kg	24%	63	5.0 U	4.0 U	11	4.0 U	13	5.0 U	4.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	5.0 U	4.0 U	9.0	4.0 U	5.0 U	5.0 U	0.30 J
Benzo(ghi)perylene	191242	µg/Kg	32%	63	5.0 U	4.0 U	7.0	4.0 U	9.0	2.0 J	0.20 J
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	5.0 U	4.0 U	7.0	4.0 U	5.0 U	5.0 U	0.50 J
Chrysene	218019	µg/Kg	54%	63	0.70 J	0.50 J	13	4.0 U	14	3.0 J	0.50 J
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	5.0 U	4.0 U	2.0 J	4.0 U	3.0 J	0.60 J	4.0 U
Dibenzofuran	132649	µg/Kg	22%	63	5.0 U	0.20 J	0.40 J	4.0 U	2.0 J	0.40 J	4.0 U
Fluoranthene	206440	µg/Kg	48%	63	0.70 J	0.40 J	36 J	0.20 J	27	5.0	0.30 J
Fluorene	86737	µg/Kg	14%	63	5.0 U	4.0 U	2.0 J	4.0 U	5.0 U	5.0 U	4.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	5.0 U	4.0 U	9.0	4.0 U	5.0 U	2.0 J	4.0 U
Naphthalene	91203	µg/Kg	16%	63	3.7 U	3.6 U	4.1 U	3.6 U	3.0 J	4.3 U	3.6 U
Phenanthrene	85018	µg/Kg	44%	63	0.50 J	0.70 J	36 J	0.20 J	24	3.0 J	0.20 J
Pyrene	129000	µg/Kg	48%	63	0.70 J	0.40 J	36 J	0.20 J	25	4.0 J	0.30 J
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	0.90 U	0.87 U	0.99 U	0.85 U	1.0 U	1.0 U	0.86 U
PCB-1221	11104282	µg/Kg	0%	63	3.6 U	3.5 U	4.0 U	3.4 U	4.1 U	4.2 U	3.5 U
PCB-1232	11141165	µg/Kg	0%	63	3.6 U	3.5 U	4.0 U	3.4 U	4.1 U	4.2 U	3.5 U
PCB-1242	53469219	µg/Kg	0%	63	0.90 U	0.87 U	0.99 U	0.85 U	1.0 U	1.0 U	0.86 U
PCB-1248	12672296	µg/Kg	0%	63	0.90 U	0.87 U	0.99 U	0.85 U	1.0 U	1.0 U	0.86 U
PCB-1254	11097691	µg/Kg	0%	63	0.90 U	0.87 U	0.99 U	0.85 U	1.0 U	1.0 U	0.86 U
PCB-1260	11096825	µg/Kg	0%	63	0.90 U	0.87 U	0.99 U	0.85 U	1.0 U	1.0 U	0.86 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
2,4'-DDT	789026	µg/Kg	11%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
4,4'-DDD	72548	µg/Kg	2%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
4,4'-DDE	72559	µg/Kg	11%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
4,4'-DDT	50293	µg/Kg	33%	63	0.72 U	0.70 U	0.20 J	0.69 U	0.82 U	0.84 U	0.69 U
Aldrin	309002	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
alpha-BHC	319846	µg/Kg	2%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
beta-BHC	319857	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L				
Date Collected:	08-Apr-05	08-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1272	1261	1282	1282	1289	1277	1278				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L
delta-BHC	319868	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
Dieldrin	60571	µg/Kg	0%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
Endosulfan I	959988	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
Endosulfan II	33213659	µg/Kg	0%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
Endrin	72208	µg/Kg	0%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
Endrin aldehyde	7421934	µg/Kg	0%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
Endrin ketone	53494705	µg/Kg	0%	63	0.72 U	0.70 U	0.80 U	0.69 U	0.82 U	0.84 U	0.69 U
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
gamma-Chlordane	5566347	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
Heptachlor	76448	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
Hexachlorobenzene	118741	µg/Kg	6%	63	0.36 U	0.35 U	0.11 J	0.34 U	0.41 U	0.41 U	0.34 U
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
Methoxychlor	72435	µg/Kg	5%	63	3.6 U	3.5 U	4.0 U	3.4 U	4.1 U	4.1 U	3.4 U
Oxychlordane	27304138	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
Toxaphene	8001352	µg/Kg	0%	63	36 U	35 U	40 U	34 U	41 U	41 U	34 U
trans-Nonachlor	39765805	µg/Kg	0%	63	0.36 U	0.35 U	0.40 U	0.34 U	0.41 U	0.41 U	0.34 U
CLP TCL SVOC											
1,1'-Biphenyl	92524	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	230 U	220 U	250 U	220 U	260 U	260 U	220 U
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
2,4-Dichlorophenol	120832	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
2,4-Dimethylphenol	105679	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
2,4-Dinitrophenol	51285	µg/Kg	0%	53	230 U	220 U	250 U	220 U	260 U	260 U	220 U
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
2-Chloronaphthalene	91587	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L
Date Collected:	08-Apr-05	08-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample
Elevation:	1272	1261	1282	1282	1289	1277	1278

Analyte	CAS	Units	Frequency		Number		of		of		of	
			Detection	Samples	Detection	Samples	Detection	Samples	Detection	Samples	Detection	Samples
2-Chlorophenol	95578	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
2-Methylphenol	95487	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
2-Nitroaniline	88744	µg/Kg	0%	63	230 U	220 U	250 U	220 U	260 U	260 U	220 U	220 U
2-Nitrophenol	88755	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
3-Nitroaniline	99092	µg/Kg	0%	63	230 U	220 U	250 U	220 U	260 U	260 U	220 U	220 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	230 U	220 U	250 U	220 U	260 U	260 U	220 U	220 U
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
4-Chloroaniline	106478	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
4-Methylphenol	106445	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
4-Nitroaniline	100016	µg/Kg	0%	63	230 U	220 U	250 U	220 U	260 U	260 U	220 U	220 U
4-Nitrophenol	100027	µg/Kg	0%	63	230 U	220 U	250 U	220 U	260 U	260 U	220 U	220 U
Acetophenone	98862	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Atrazine	1912249	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Benzaldehyde	100527	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Benzoic acid	65850	µg/Kg	0%	46	90 UJ	88 UJ	99 UJ	86 UJ	100 UJ	100 UJ	86 UJ	86 UJ
Benzyl alcohol	100516	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Caprolactam	105602	µg/Kg	3%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Carbazole	86748	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Diethyl phthalate	84662	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Dimethyl phthalate	131113	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Hexachloroethane	67721	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Isophorone	78591	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U
Nitrobenzene	98953	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U	86 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event
Upper Columbia River RI/FS

Station ID:	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L				
Date Collected:	08-Apr-05	08-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05				
Sample Type:	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample				
Elevation:	1272	1261	1282	1282	1289	1277	1278				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM729B2	RM729B3	RM735B1c	RM735B1L	RM735B1R	RM735B2c	RM735B2L
Pentachlorophenol	87865	µg/Kg	0%	63	230 U	220 U	250 U	220 U	260 U	260 U	220 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
Phenol	108952	µg/Kg	0%	63	90 U	88 U	99 U	86 U	100 U	100 U	86 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	0.66 U	0.47 U	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	0.15 U	0.28 U	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	0.043 U	0.034 U	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	0.055 J	0.037 U	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	0.029 U	0.043 U	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	0.051 J	0.038 U	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	0.035 U	0.043 U	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	0.038 U	0.036 J	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	0.042 U	0.053 U	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	0.022 J	0.025 U	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	0.026 J	0.035 U	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	0.031 U	0.056 U	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	0.050 J	0.061 J	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	0.035 U	0.040 U	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	0.58	0.56	--	--	--	--	--
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	1.5	0.92	--	--	--	--	--
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	0.33 J	0.47 J	--	--	--	--	--
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	0.37	0.23	--	--	--	--	--
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	0.23	0.39	--	--	--	--	--
Octachlorodibenzodioxin	3268879	pg/g	58%	36	4.2	2.2 U	--	--	--	--	--
Octachlorodibenzofuran	39001020	pg/g	58%	36	0.33 U	0.26 U	--	--	--	--	--
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	0.022	0.040	--	--	--	--	--
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	0.23	0.22	--	--	--	--	--
TEQ WHO-98	TEQ	pg/g	92%	36	0.13	0.060	--	--	--	--	--
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	0.044	0.040 U	--	--	--	--	--
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	1.1	1.0	--	--	--	--	--

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM735B2R	RM735B3c	RM735B3L	RM735B3R	RM742B1	RM742B2	RM742B3
Date Collected:	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	09-Apr-05	09-Apr-05	09-Apr-05
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite
Elevation:	1278	1275	1275	1275	1303	1297	1293

Analyte	CAS	Units	Frequency		Number of						
			Detection	Samples	of						
415.1											
Total organic carbon	E-10195	mg/Kg	98%	63	4,660 J	3,180 J	810 J	5,660 J	3,290 J	771	2,150
CLP TAL TotMetals											
Aluminum	7429905	mg/Kg	100%	63	6,670	5,720	23,100	6,950	18,600	18,600	19,000
Antimony	7440360	mg/Kg	63%	54	14 J	9.6 J	44 J	16 J	48 J	52 J	19 J
Arsenic	7440382	mg/Kg	97%	63	9.3	6.1	36	10	27	25	16
Barium	7440393	mg/Kg	100%	63	512	403	2,250	534	1,750	1,680	1,280
Beryllium	7440417	mg/Kg	100%	63	0.59	0.54 J	1.7	0.57	1.3	1.3	1.2
Cadmium	7440439	mg/Kg	86%	63	3.7	3.7	0.48	4.8	1.4	1.2	1.0
Calcium	7440702	mg/Kg	100%	63	37,400	30,400	80,300	46,100	66,900	63,300	58,700
Chromium	7440473	mg/Kg	100%	63	28	27	145	33	128	123	101
Cobalt	7440484	mg/Kg	100%	63	11	12	57	14	51	49	30
Copper	7440508	mg/Kg	100%	63	328	364	3,290	491	2,350	2,240	1,620
Iron	7439896	mg/Kg	100%	63	40,100	34,600	254,000 D	51,500	211,000 D	187,000 D	197,000 D
Lead	7439921	mg/Kg	100%	63	194	174	535	217	266	231	276
Magnesium	7439954	mg/Kg	100%	63	16,200	13,400	6,200	16,400	8,290	7,070	6,670
Manganese	7439965	mg/Kg	100%	63	642	672	4,780 D	961	3,680 D	3,680 D	3,080
Mercury	7439976	mg/Kg	68%	63	0.14	0.17	0.017 J	0.12 J	0.65	0.030 J	0.028 J
Nickel	7440020	mg/Kg	100%	63	13	11	17	12	12	12	9.3
Potassium	7440097	mg/Kg	100%	63	1,210	1,210	4,730	1,290	3,750	3,610	3,500
Selenium	7782492	mg/Kg	26%	19	3.7 UJ	3.8 UJ	3.3 UJ	3.8 UJ	3.4 U	3.3 UR	3.7 UR
Silver	7440224	mg/Kg	#VALUE!	63	1.1 UJ	1.1 UJ	0.95 UJ	1.1 UJ	0.97 U	0.93 UJ	1.1 UJ
Sodium	7440235	mg/Kg	89%	63	294 J	249 J	2,780	361 J	1,840	1,770	1,300
Thallium	7440280	mg/Kg	5%	63	2.7 U	2.7 U	2.4 U	2.7 U	2.4 U	2.3 UJ	2.7 UJ
Uranium	7440611	mg/Kg	27%	63	21 U	22 U	19 U	22 U	82	84 J	65 J
Vanadium	7440622	mg/Kg	100%	63	26	20	43	23	40	38	37
Zinc	7440666	mg/Kg	100%	63	2,630	2,760	22,200 D	3,910	16,900 J	15,200 D	14,900 D
CLP TCL PAH											
2-Methylnaphthalene	91576	µg/Kg	35%	63	2.0 J	0.70 J	0.20 J	0.60 J	4.0 U	4.0 U	5.0 U
Acenaphthene	83329	µg/Kg	11%	63	5.0 U	2.0 J	0.20 J	5.0 U	4.0 U	4.0 U	5.0 U
Acenaphthylene	208968	µg/Kg	14%	63	2.0 J	6.0 U	4.0 U	5.0 U	4.0 U	4.0 U	5.0 U
Anthracene	120127	µg/Kg	13%	63	1.0 J	2.0 J	4.0 U	5.0 U	4.0 U	4.0 U	5.0 U
Benzo(a)anthracene	56553	µg/Kg	30%	63	8.0	11	0.30 J	0.80 J	4.0 U	4.0 U	5.0 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM735B2R	RM735B3c	RM735B3L	RM735B3R	RM742B1	RM742B2	RM742B3				
Date Collected:	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	09-Apr-05	09-Apr-05	09-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1278	1275	1275	1275	1303	1297	1293				
Analyte	CAS	Units	Frequency of Detection	Number of Samples							
Benzo(a)pyrene	50328	µg/Kg	24%	63	12	9.0	4.0 U	5.0 U	4.0 U	4.0 U	5.0 U
Benzo(b)fluoranthene	205992	µg/Kg	24%	63	5.0 U	6.0 U	0.30 J	5.0 U	4.0 U	4.0 U	5.0 U
Benzo(ghi)perylene	191242	µg/Kg	32%	63	9.0	5.0	4.0 U	0.60 J	0.20 J	4.0 U	5.0 U
Benzo(k)fluoranthene	207089	µg/Kg	14%	63	5.0 U	6.0 U	0.50 J	5.0 U	4.0 U	4.0 U	5.0 U
Chrysene	218019	µg/Kg	54%	63	13	14	0.50 J	1.0 J	4.0 U	4.0 U	5.0 U
Dibenzo(a,h)anthracene	53703	µg/Kg	17%	63	3.0 J	3.0 J	4.0 U	5.0 U	4.0 U	4.0 U	5.0 U
Dibenzofuran	132649	µg/Kg	22%	63	2.0 J	0.90 J	4.0 U	0.20 J	4.0 U	4.0 U	5.0 U
Fluoranthene	206440	µg/Kg	48%	63	27	21	0.30 J	1.0 J	4.0 U	4.0 U	5.0 U
Fluorene	86737	µg/Kg	14%	63	3.0 J	2.0 J	4.0 U	5.0 U	4.0 U	4.0 U	5.0 U
Indeno[1,2,3-cd]pyrene	193395	µg/Kg	25%	63	11	7.0	4.0 U	0.60 J	4.0 U	4.0 U	5.0 U
Naphthalene	91203	µg/Kg	16%	63	2.0 J	1.0 J	3.6 U	4.3 U	4.0 U	4.0 U	5.0 U
Phenanthrene	85018	µg/Kg	44%	63	27	22	0.20 J	0.80 J	0.20 J	0.30 J	5.0 U
Pyrene	129000	µg/Kg	48%	63	24	20	0.30 J	1.0 J	4.0 U	4.0 U	5.0 U
CLP TCL PCBs											
PCB-1016	12674112	µg/Kg	0%	63	1.0 U	1.1 U	0.87 U	1.1 U	0.85 U	0.85 UJ	0.96 U
PCB-1221	11104282	µg/Kg	0%	63	4.0 U	4.6 U	3.6 U	4.2 U	3.4 U	3.4 UJ	3.9 U
PCB-1232	11141165	µg/Kg	0%	63	4.0 U	4.6 U	3.6 U	4.2 U	3.4 U	3.4 UJ	3.9 U
PCB-1242	53469219	µg/Kg	0%	63	1.0 U	1.1 U	0.87 U	1.1 U	0.85 U	0.85 UJ	0.96 U
PCB-1248	12672296	µg/Kg	0%	63	1.0 U	1.1 U	0.87 U	1.1 U	0.85 U	0.85 UJ	0.96 U
PCB-1254	11097691	µg/Kg	0%	63	1.0 U	1.1 U	0.87 U	1.1 U	0.85 U	0.85 UJ	0.96 U
PCB-1260	11096825	µg/Kg	0%	63	1.0 U	1.1 U	0.87 U	1.1 U	0.85 U	0.85 UJ	0.96 U
CLP TCL Pesticides											
2,4'-DDD	53190	µg/Kg	0%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U
2,4'-DDE	3424826	µg/Kg	5%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U
2,4'-DDT	789026	µg/Kg	11%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U
4,4'-DDD	72548	µg/Kg	2%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U
4,4'-DDE	72559	µg/Kg	11%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U
4,4'-DDT	50293	µg/Kg	33%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.36 J
Aldrin	309002	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U
alpha-BHC	319846	µg/Kg	2%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U
alpha-Chlordane	5103719	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U
beta-BHC	319857	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U
cis-Nonachlor	5103731	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM735B2R	RM735B3c	RM735B3L	RM735B3R	RM742B1	RM742B2	RM742B3					
Date Collected:	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	09-Apr-05	09-Apr-05	09-Apr-05					
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite					
Elevation:	1278	1275	1275	1275	1303	1297	1293					
Analyte	CAS	Units	Frequency of Detection	Number of Samples								
delta-BHC	319868	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Dieldrin	60571	µg/Kg	0%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U	
Endosulfan I	959988	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Endosulfan II	33213659	µg/Kg	0%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U	
Endosulfan sulfate	1031078	µg/Kg	0%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U	
Endrin	72208	µg/Kg	0%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U	
Endrin aldehyde	7421934	µg/Kg	0%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U	
Endrin ketone	53494705	µg/Kg	0%	63	0.81 U	0.93 U	0.70 U	0.85 U	0.68 U	0.68 U	0.78 U	
gamma-BHC (Lindane)	58899	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
gamma-Chlordane	5566347	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Heptachlor	76448	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Heptachlor epoxide	1024573	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Hexachlorobenzene	118741	µg/Kg	6%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Hexachlorobutadiene	87683	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Methoxychlor	72435	µg/Kg	5%	63	4.0 U	4.6 U	3.5 U	4.2 U	3.4 U	3.4 U	3.8 U	
Oxychlordane	27304138	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
Toxaphene	8001352	µg/Kg	0%	63	40 U	46 U	35 U	42 U	34 U	34 U	38 U	
trans-Nonachlor	39765805	µg/Kg	0%	63	0.40 U	0.46 U	0.35 U	0.42 U	0.34 U	0.34 U	0.38 U	
CLP TCL SVOC												
1,1'-Biphenyl	92524	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
1,2,4-Trichlorobenzene	120821	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
1,2-Dichlorobenzene	95501	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
1,3-Dichlorobenzene	541731	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
1,4-Dichlorobenzene	106467	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
2,2'-oxybis(1-chloropropane)	108601	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
2,4,5-Trichlorophenol	95954	µg/Kg	0%	63	260 U	290 U	220 U	270 U	210 U	210 U	240 U	
2,4,6-Trichlorophenol	88062	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
2,4-Dichlorophenol	120832	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
2,4-Dimethylphenol	105679	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
2,4-Dinitrophenol	51285	µg/Kg	0%	53	260 U	290 U	220 U	270 U	210 U	210 U	240 U	
2,4-Dinitrotoluene	121142	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
2,6-Dinitrotoluene	606202	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	
2-Chloronaphthalene	91587	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U	

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

Upper Columbia River RI/FS

Station ID:	RM735B2R	RM735B3c	RM735B3L	RM735B3R	RM742B1	RM742B2	RM742B3				
Date Collected:	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	09-Apr-05	09-Apr-05	09-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1278	1275	1275	1275	1303	1297	1293				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM735B2R	RM735B3c	RM735B3L	RM735B3R	RM742B1	RM742B2	RM742B3
2-Chlorophenol	95578	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
2-Methylphenol	95487	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
2-Nitroaniline	88744	µg/Kg	0%	63	260 U	290 U	220 U	270 U	210 U	210 U	240 U
2-Nitrophenol	88755	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
3,3'-Dichlorobenzidine	91941	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
3-Nitroaniline	99092	µg/Kg	0%	63	260 U	290 U	220 U	270 U	210 U	210 U	240 U
4,6-Dinitro-2-methylphenol	534521	µg/Kg	0%	63	260 U	290 U	220 U	270 U	210 U	210 U	240 U
4-Bromophenyl-phenylether	101553	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
4-Chloro-3-methylphenol	59507	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
4-Chloroaniline	106478	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
4-Chlorophenyl-phenyl ether	7005723	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
4-Methylphenol	106445	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
4-Nitroaniline	100016	µg/Kg	0%	63	260 U	290 U	220 U	270 U	210 U	210 U	240 U
4-Nitrophenol	100027	µg/Kg	0%	63	260 U	290 U	220 U	270 U	210 U	210 U	240 U
Acetophenone	98862	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Atrazine	1912249	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Benzaldehyde	100527	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Benzoic acid	65850	µg/Kg	0%	46	100 UJ	120 UJ	87 UJ	110 UJ	85 UJ	85 UJ	95 UJ
Benzyl alcohol	100516	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
bis(2-Chloroethoxy)methane	111911	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Bis(2-chloroethyl)ether	111444	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Bis(2-ethylhexyl)phthalate	117817	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Butyl benzyl phthalate	85687	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Caprolactam	105602	µg/Kg	3%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Carbazole	86748	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Di-n-butyl phthalate	84742	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Di-n-octylphthalate	117840	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Diethyl phthalate	84662	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Dimethyl phthalate	131113	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Hexachloroethane	67721	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Isophorone	78591	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
N-Nitrosodi-n-propylamine	621647	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
N-Nitrosodiphenylamine	86306	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Nitrobenzene	98953	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U

TABLE B-1

Beach Data Listing--UCR 2005 Sediment Sampling Event

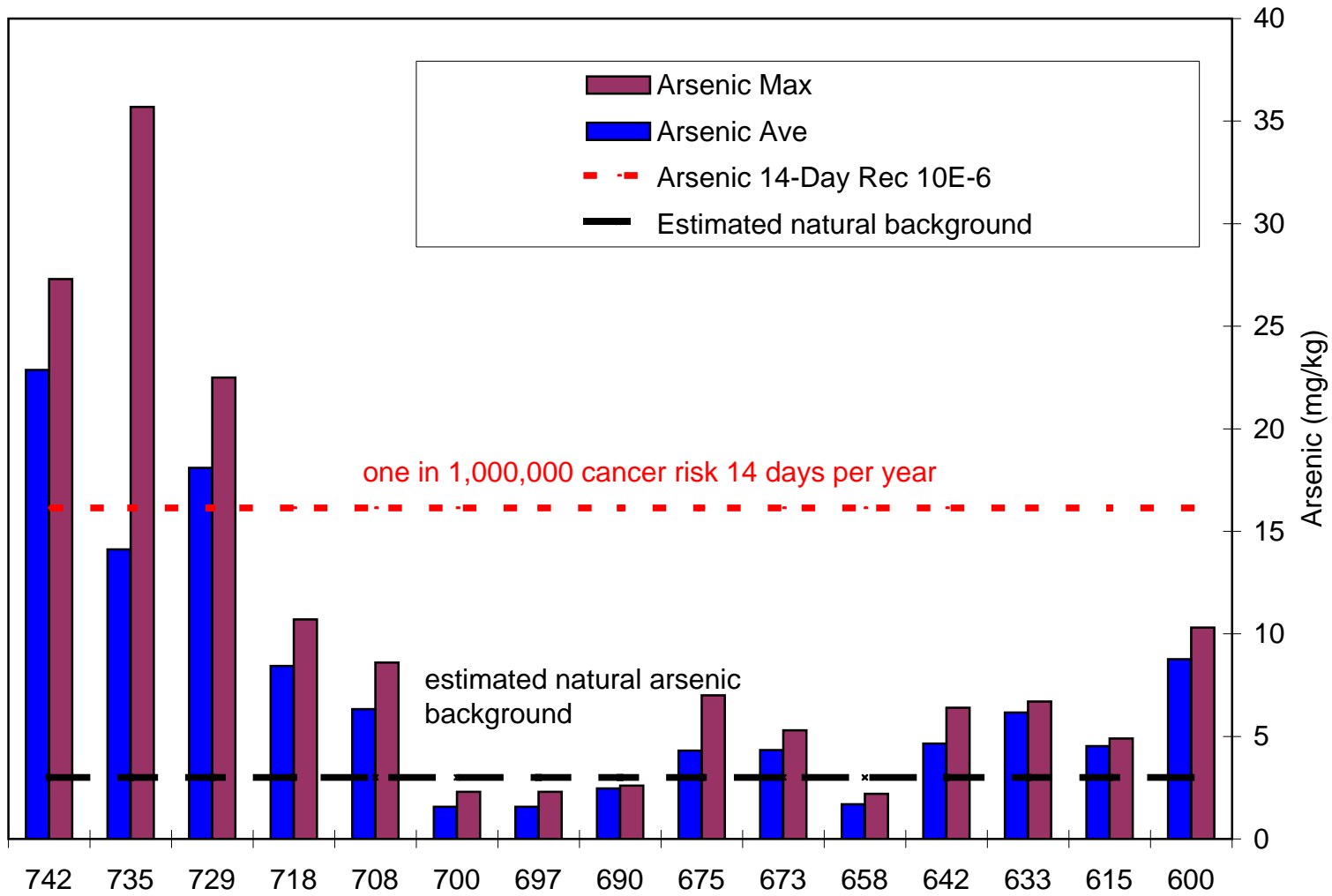
Upper Columbia River RI/FS

Station ID:	RM735B2R	RM735B3c	RM735B3L	RM735B3R	RM742B1	RM742B2	RM742B3				
Date Collected:	11-Apr-05	11-Apr-05	11-Apr-05	11-Apr-05	09-Apr-05	09-Apr-05	09-Apr-05				
Sample Type:	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample	Beach Subsample Composite	Beach Subsample Composite	Beach Subsample Composite				
Elevation:	1278	1275	1275	1275	1303	1297	1293				
Analyte	CAS	Units	Frequency of Detection	Number of Samples	RM735B2R	RM735B3c	RM735B3L	RM735B3R	RM742B1	RM742B2	RM742B3
Pentachlorophenol	87865	µg/Kg	0%	63	260 U	290 U	220 U	270 U	210 U	210 U	240 U
Perchlorocyclopentadiene	77474	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Phenol	108952	µg/Kg	0%	63	100 U	120 U	87 U	110 U	85 U	85 U	95 U
Dioxins and Furans											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	pg/g	47%	36	--	--	--	--	0.31 U	0.23 U	0.38 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	pg/g	58%	36	--	--	--	--	0.085 U	0.094 U	0.12 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	pg/g	3%	36	--	--	--	--	0.034 U	0.038 U	0.040 U
1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	pg/g	39%	36	--	--	--	--	0.041 U	0.056 U	0.034 U
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	pg/g	11%	36	--	--	--	--	0.028 U	0.027 U	0.034 U
1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	pg/g	44%	36	--	--	--	--	0.040 U	0.055 U	0.035 U
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	pg/g	19%	36	--	--	--	--	0.027 U	0.028 U	0.029 U
1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	pg/g	42%	36	--	--	--	--	0.040 U	0.055 U	0.034 U
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	pg/g	6%	36	--	--	--	--	0.039 U	0.036 U	0.039 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	pg/g	28%	36	--	--	--	--	0.028 U	0.026 U	0.024 U
1,2,3,7,8-Pentachlorodibenzofuran	57117416	pg/g	19%	36	--	--	--	--	0.021 U	0.019 U	0.034 U
2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	pg/g	17%	36	--	--	--	--	0.026 U	0.027 U	0.029 U
2,3,4,7,8-Pentachlorodibenzofuran	57117314	pg/g	33%	36	--	--	--	--	0.038 U	0.034 U	0.045 U
2,3,7,8-Tetrachlorodibenzodioxin	1746016	pg/g	19%	36	--	--	--	--	0.057 U	0.034 U	0.052 U
2,3,7,8-Tetrachlorodibenzofuran	51207319	pg/g	64%	36	--	--	--	--	0.36	0.43	0.24 J
Heptachlorodibenzodioxin (Total)	37871004	pg/g	83%	36	--	--	--	--	0.65	0.47	0.75
Heptachlorodibenzofuran (Total)	38998753	pg/g	72%	36	--	--	--	--	0.18 J	0.17 J	0.27 J
Hexachlorodibenzodioxin (Total)	34465468	pg/g	81%	36	--	--	--	--	0.053	0.067	0.034 U
Hexachlorodibenzofuran (Total)	55684941	pg/g	86%	36	--	--	--	--	0.10	0.029 U	0.11
Octachlorodibenzodioxin	3268879	pg/g	58%	36	--	--	--	--	1.8 U	1.3 U	2.7 U
Octachlorodibenzofuran	39001020	pg/g	58%	36	--	--	--	--	0.17 U	0.13 U	0.23 U
Pentachlorodibenzodioxin (Total)	36088229	pg/g	53%	36	--	--	--	--	0.028 U	0.026 U	0.024 U
Pentachlorodibenzofuran (Total)	30402154	pg/g	64%	36	--	--	--	--	0.032	0.064	0.020 U
TEQ WHO-98	TEQ	pg/g	92%	36	--	--	--	--	0.036	0 U	0.024
Tetrachlorodibenzodioxin (Total)	41903575	pg/g	42%	36	--	--	--	--	0.057 U	0.034 U	0.052 U
Tetrachlorodibenzofuran (Total)	55722275	pg/g	81%	36	--	--	--	--	0.59	0.74	0.35

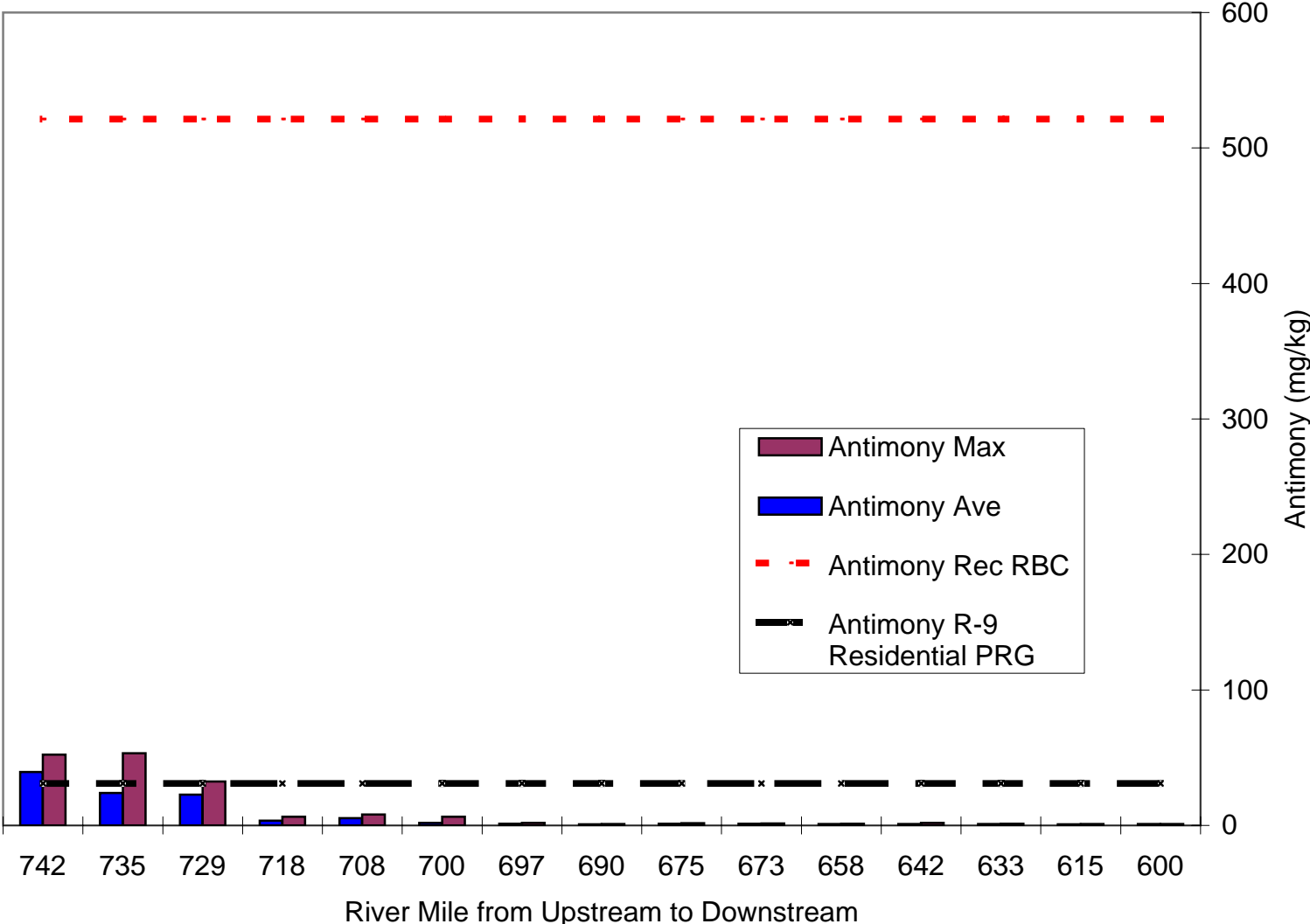
APPENDIX C

Graphs of Metals of Concern Compared with PRGs

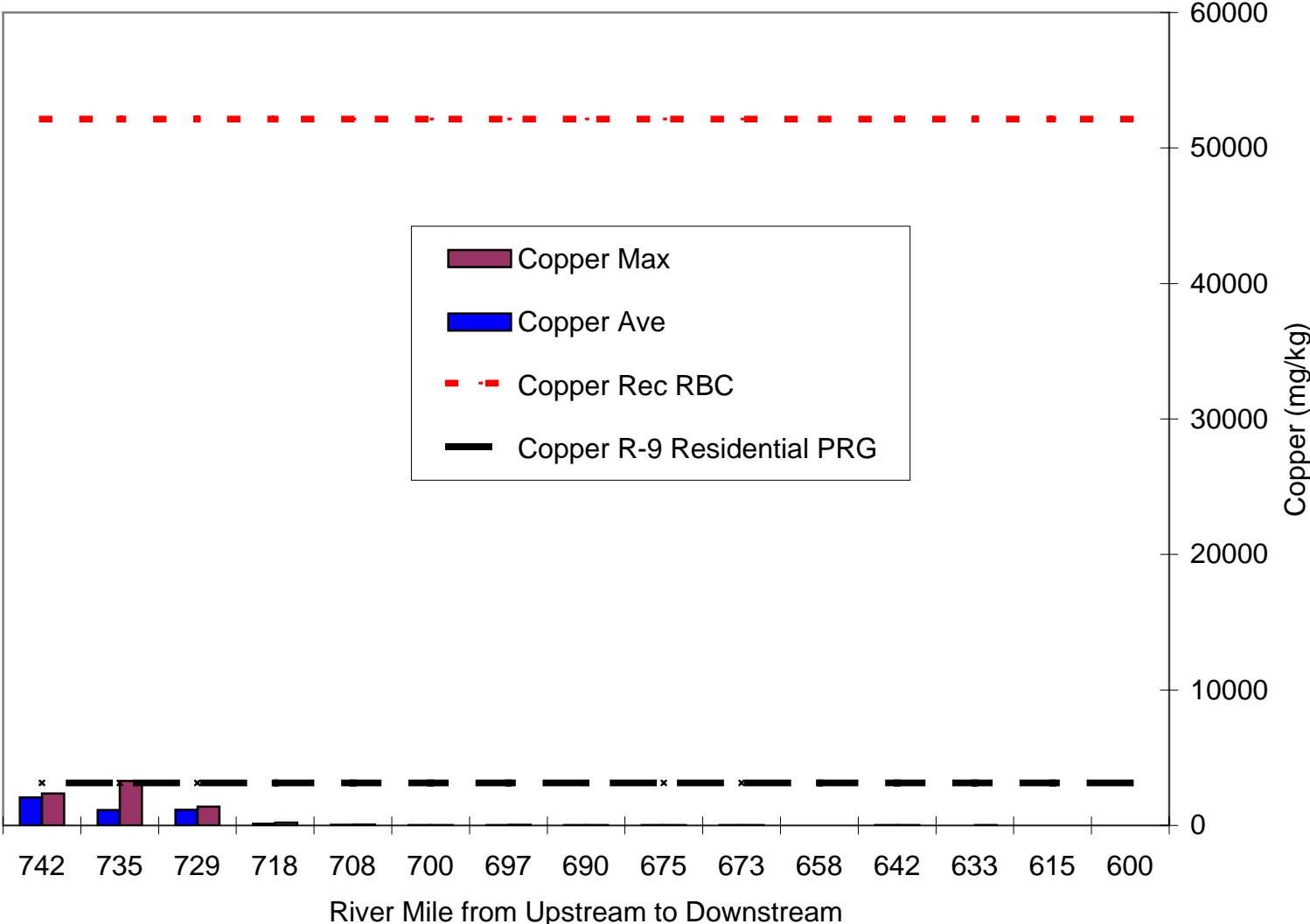
Columbia River - Lake Roosevelt - Arsenic on Beaches



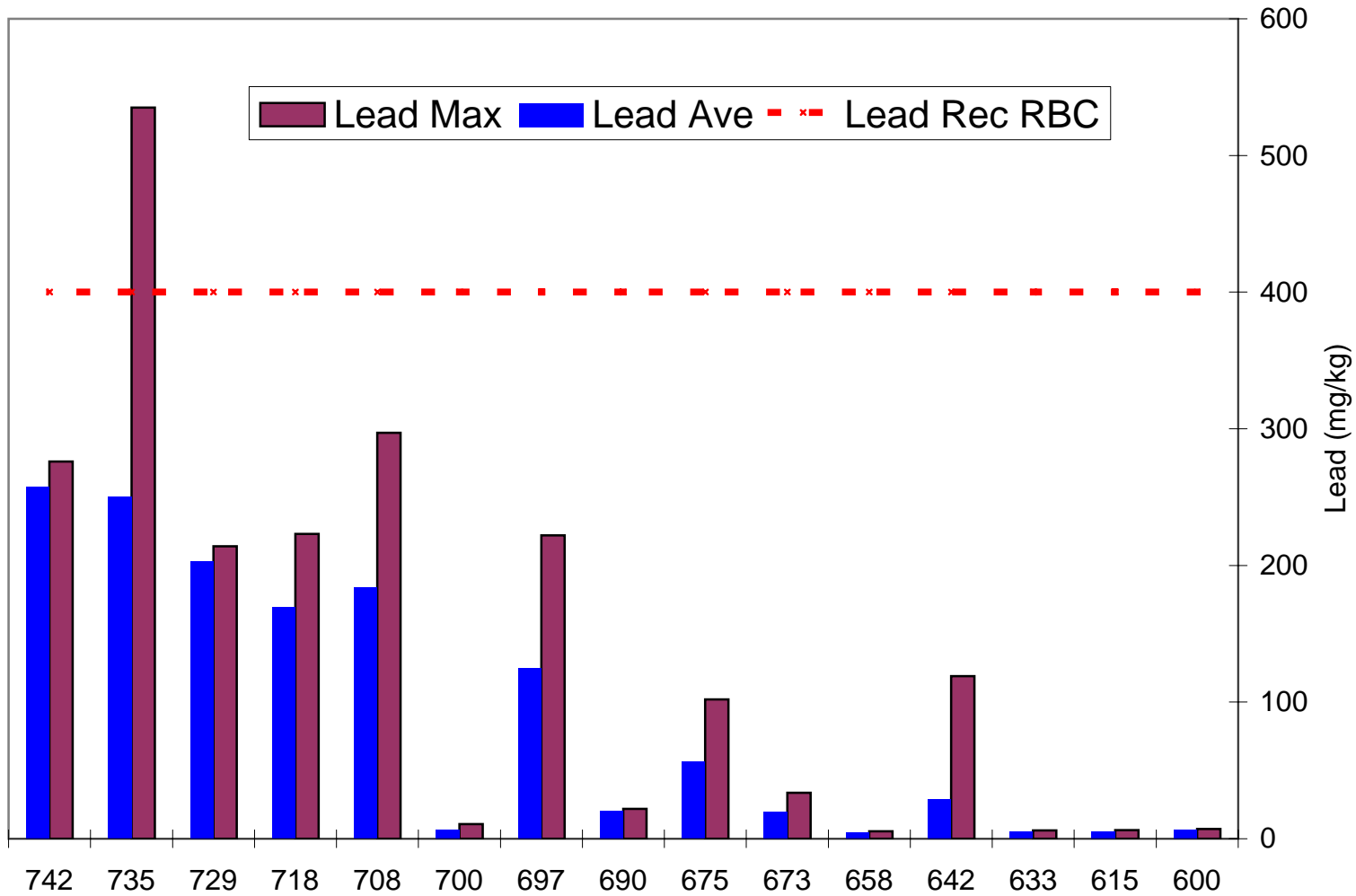
Columbia River - Lake Roosevelt - Antimony on Beaches



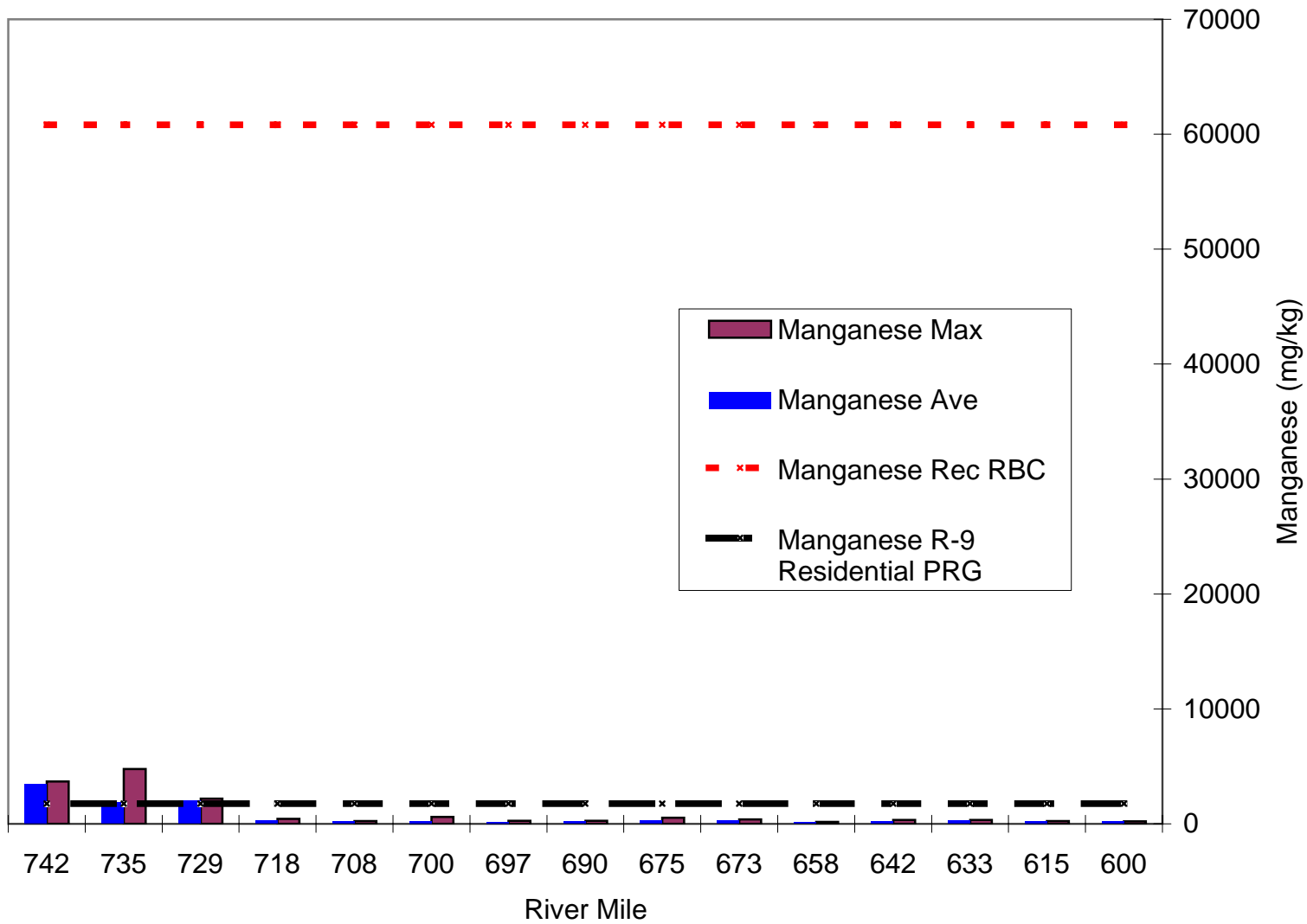
Columbia River - Lake Roosevelt - Copper on Beaches



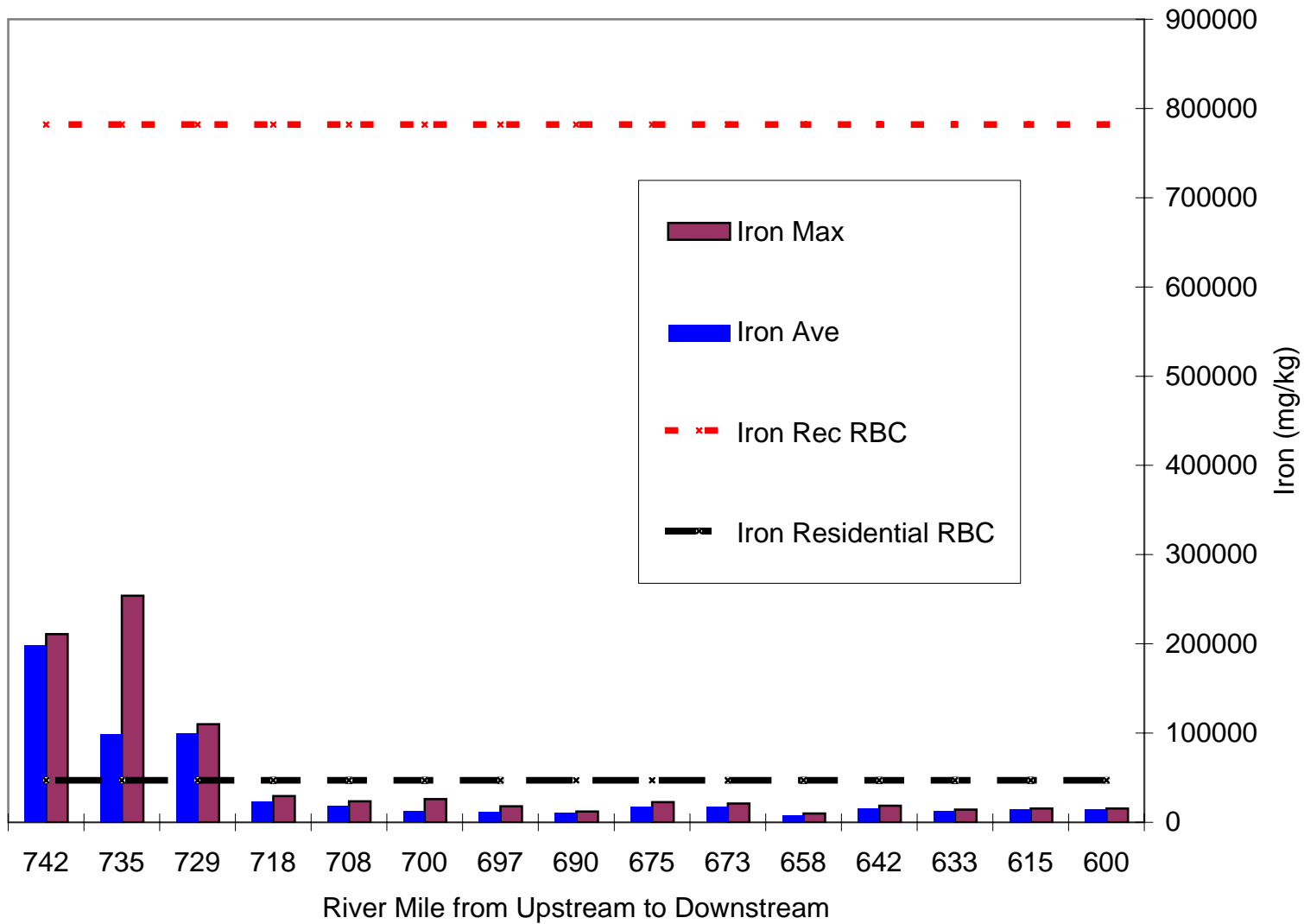
Columbia River - Lake Roosevelt - Lead on Beaches



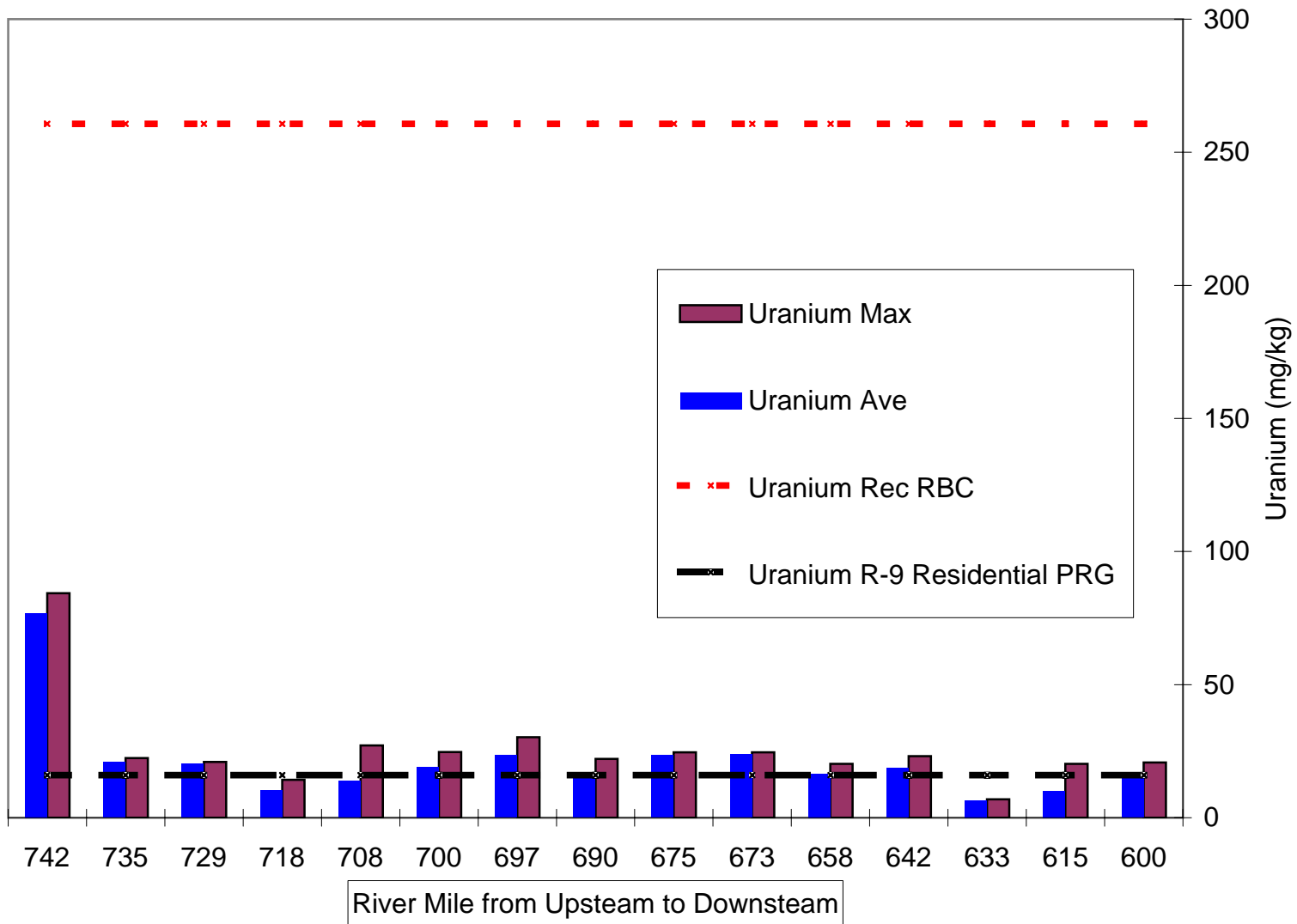
Columbia River - Lake Roosevelt - Manganese on Beaches



Columbia River - Lake Roosevelt - Iron on Beaches



Columbia River - Lake Roosevelt - Uranium on Beaches



APPENDIX D

Recreational PRG Calculation Worksheets

Pathway	Contact Rate IRS,soil or SA,derm. or IR, water (mg/day) adherence (mg/cm-2)		Conversion Factor CF (soil - kg/mg)	Event Frequency EF (days/years) or hr/yr H ₂ O	Duration ED (years)	Body Weight BW (kg)	Averaging Time AT			Age Adjusted Factors mg-yr / kg-day	
							noncarcin. ATn	carcinogens ATc	noncarcinogens (child-adult)	noncarcinogens child,only	carcinogens child-adult
Ingestion Soil RECREATIONAL	300 child 100 adult	1 1	1E-06	14 14	6 24	15 70	2,190 8,760	25,550	154	120	154
Dermal Soil RECREATIONAL	6600 cm ² , child 18000 cm ² , adult	0.2 0.07	1E-06	14 14	6 24	15 70	2,190 8,760	25,550	960	528	960
Ingestion Soil RESIDENTIAL	200 child 100 adult	1 1	1E-06	350 350	6 24	15 70	2,190 8,760	25,550	114	80	114
Dermal Soil RESIDENTIAL	2800 cm ² , child 5700 cm ² , adult	0.2 0.07	1E-06	350 350	6 24	15 70	2,190 8,760	25,500	361	224	361

Chemical	Oral Absorp. ABS _o	Dermal Absorp. ABS _d	Ref. Dose RfD (mg/kg/day)	Hazard Quotient HQ unitless	Target Risk unitless	Slope Factor SF (mg/kg/day) ⁻¹
Arsenic - cancer	0.6	0.03	0.0003	-	1.E-06	1.5
Arsenic - noncancer	0.6	0.03	0.0003	1		

Chemical	Recreational Soil & Dermal (Integrated Adult-Child) mg/kg	Recreational Soil & derm. Kids only mg/kg	Recreational Soil ing. Kids mg/kg	Residential soil ing. (Integrated Adult-Child) mg/kg	Residential Soil & derm. Kids mg/kg	Residential Soil ing. Kids mg/kg
Arsenic - cancer	16.143609			3.7		
As - noncancer		1339	1418		89	97

Pathway	Contact Rate IRS,soil or SA,derm. or IR, water (mg/day)	Conversion Factor CF (soil - kg/mg)	Event Frequency EF (days/years)	Duration ED (years)	Body Weight BW (kg)	Averaging Time AT		Summary Intake Factor (SIF)		
						noncarcin. ATn	carcinogens ATc	noncarcinogens (child-adult)	noncarcinogens child,only	carcinogens child-adult
Ingestion Soil RECREATIONAL	300 child 100 adult	1E-06	14	6 24	15 70	2,190 8,760	25,550	1.97E-07	7.67E-07	8.45E-08
Dermal Soil RECREATIONAL	6600 cm ² , child 18000 cm ² , adult	1.00E-06	14	6 24	15 70	2,190 8,760	25,550	1.13E-05	1.69E-05	4.83E-06
Ingestion Soil RESIDENTIAL	200 child 100 adult	1.00E-06	350	6 24	15 70	2,190 8,760	25,550	3.65E-06	1.28E-05	1.57E-06
Dermal Soil RESIDENTIAL	2800 cm ² , child 5700 cm ² , adult	1.00E-06	350	6 24	15 70	2,190 8,760	25,500	9.83E-05	1.79E-04	4.21E-05

Chemical	Oral Absorp. ABS _o	Dermal Absorp. ABS _d	Adherence Factor (AF) children mg/cm ²	Adherence Factor (AF) adults mg/cm ²	Ref. Dose RfD (mg/kg/day)	Hazard Quotient HQ unitless
Antimony - noncancer	1	0	0.2	0.2	0.0004	1

Chemical	Recreational Soil & derm. Kids only mg/kg	Recreational Soil ing. Kids mg/kg	Residential soil ing. (Integrated Adult-Child) mg/kg	Residential Soil & derm. Kids mg/kg	Residential Soil ing. Kids mg/kg		
Antimony - noncancer	521	521	110	31	31		

Pathway	Contact Rate IRS,soil or SA,derm. or IR, water (mg/day)	Conversion Factor CF (soil - kg/mg)	Event Frequency EF (days/years)	Duration ED (years)	Body Weight BW (kg)	Averaging Time AT		Summary Intake Factor (SIF)		
						noncarcin. ATn	carcinogens ATc	noncarcinogens (child-adult)	noncarcinogens child,only	carcinogens child-adult
Ingestion Soil RECREATIONAL	300 child 100 adult	1E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.97E-07	7.67E-07	8.45E-08
Dermal Soil RECREATIONAL	6600 cm ² , child 18000 cm ² , adult	1.00E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.13E-05	1.69E-05	4.83E-06
Ingestion Soil RESIDENTIAL	200 child 100 adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,550	3.65E-06	1.28E-05	1.57E-06
Dermal Soil RESIDENTIAL	2800 cm ² , child 5700 cm ² , adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,500	9.83E-05	1.79E-04	4.21E-05

Chemical	Oral Absorp. ABSo	Dermal Absorp. ABSd	Adherence Factor (AF) children mg/cm ²	Adherence Factor (AF) adults mg/cm ²	Ref. ^a Dose RfD (mg/kg/day)	Hazard Quotient HQ unitless
Copper - noncancer	1	0	0.2	0.2	0.040	1

RfD for copper is based on Heast as cited by Region 9 PRG

Chemical	Recreational Soil & derm. Kids only mg/kg	Recreational Soil ing. Kids mg/kg	Residential soil ing. (Integrated Adult-Child) mg/kg	Residential Soil & derm. Kids mg/kg	Residential Soil ing. Kids mg/kg		
Copper - noncancer	52143	52143	10950	3129	3129		

Pathway	Contact Rate IRS,soil or SA,derm. or IR, water (mg/day)	Conversion Factor CF (soil - kg/mg)	Event Frequency EF (days/years)	Duration ED (years)	Body Weight BW (kg)	Averaging Time AT		Summary Intake Factor (SIF)		
						noncarcin. ATn	carcinogens ATc	noncarcinogens (child-adult)	noncarcinogens child,only	carcinogens child-adult
Ingestion Soil RECREATIONAL	300 child 100 adult	1E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.97E-07	7.67E-07	8.45E-08
Dermal Soil RECREATIONAL	6600 cm ² , child 18000 cm ² , adult	1.00E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.13E-05	1.69E-05	4.83E-06
Ingestion Soil RESIDENTIAL	200 child 100 adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,550	3.65E-06	1.28E-05	1.57E-06
Dermal Soil RESIDENTIAL	2800 cm ² , child 5700 cm ² , adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,500	9.83E-05	1.79E-04	4.21E-05

Chemical	Oral Absorp. ABSo	Dermal Absorp. ABSd	Adherence Factor (AF) children mg/cm ²	Adherence Factor (AF) adults mg/cm ²	Ref. ³ Dose RfD (mg/kg/day)	Hazard Quotient HQ unitless
Iron - noncancer	1	0	0.2	0.2	0.600	1

Chemical	Recreational Soil & derm. Kids only mg/kg	Recreational Soil ing. Kids mg/kg	Residential soil ing. (Integrated Adult-Child) mg/kg	Residential Soil & derm. Kids mg/kg	Residential Soil ing. Kids mg/kg		
Iron - noncancer	782143	782143	164250	46929	46929		

Pathway	Contact Rate IRS,soil or SA,derm. or IR, water (mg/day)	Conversion Factor CF (soil - kg/mg)	Event Frequency EF (days/years)	Duration ED (years)	Body Weight BW (kg)	Averaging Time AT		Summary Intake Factor (SIF)		
						noncarcin. ATn	carcinogens ATc	noncarcinogens (child-adult)	noncarcinogens child,only	carcinogens child-adult
Ingestion Soil RECREATIONAL	300 child 100 adult	1E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.97E-07	7.67E-07	8.45E-08
Dermal Soil RECREATIONAL	6600 cm ² , child 18000 cm ² , adult	1.00E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.13E-05	1.69E-05	4.83E-06
Ingestion Soil RESIDENTIAL	200 child 100 adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,550	3.65E-06	1.28E-05	1.57E-06
Dermal Soil RESIDENTIAL	2800 cm ² , child 5700 cm ² , adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,500	9.83E-05	1.79E-04	4.21E-05

Chemical	Oral Absorp. ABSo	Dermal Absorp. ABSd	Adherence Factor (AF) children mg/cm ²	Adherence Factor (AF) adults mg/cm ²	Ref. ^a Dose RfD (mg/kg/day)	Hazard Quotient HQ unitless
Manganese - noncancer	1	0	0.2	0.2	0.047	1

*Note: IRIS Mn RfD is 0.14 with a MF of 3 for non-dietary assessments (.14/3 = .047)

Chemical	Recreational Soil & derm. Kids only mg/kg	Recreational Soil ing. Kids mg/kg	Residential soil ing. (Integrated Adult-Child) mg/kg	Residential Soil & derm. Kids mg/kg	Residential Soil ing. Kids mg/kg		
Manganese - noncancer	60833	60833	12775	3650	3650		

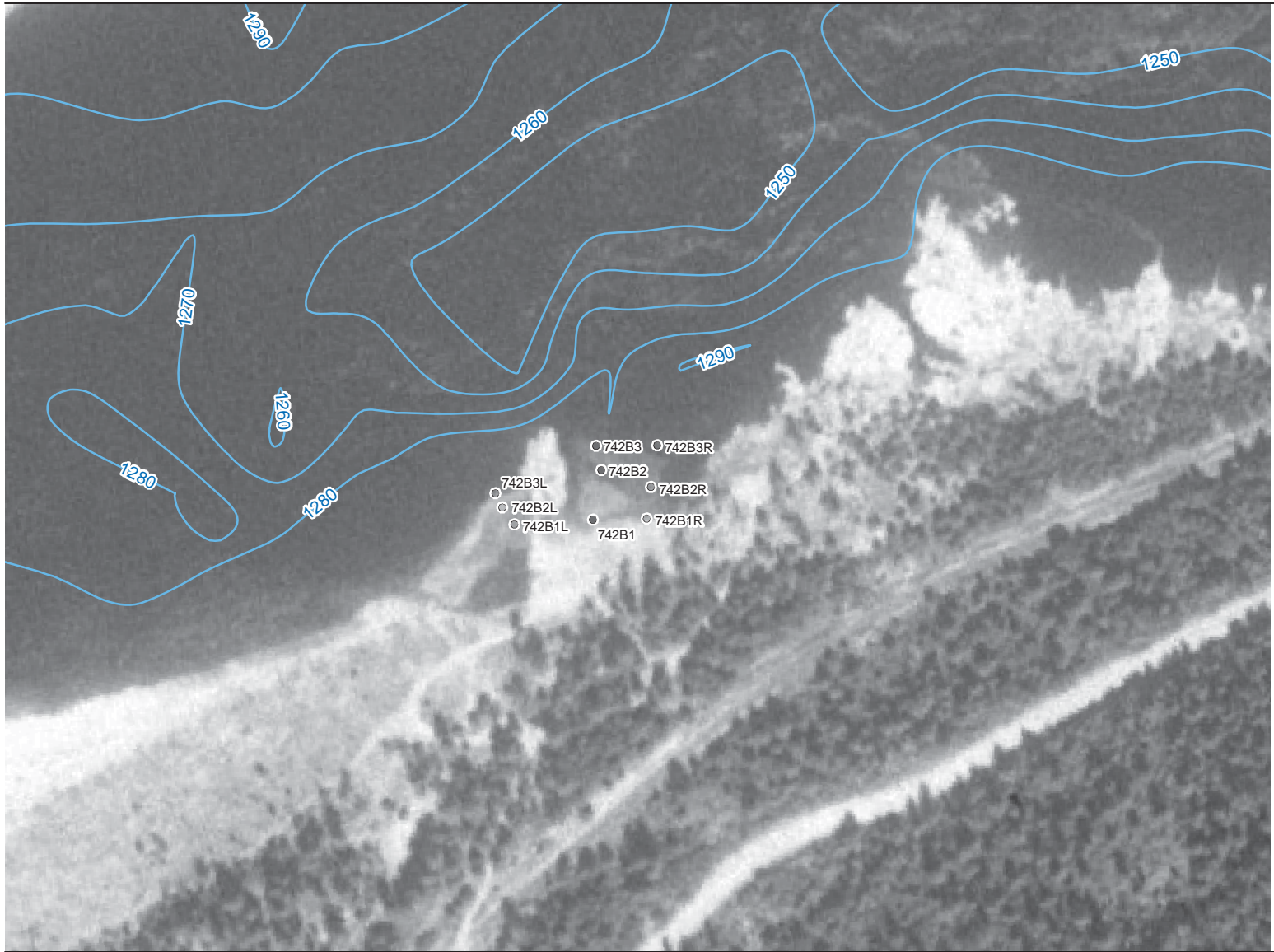
Pathway	Contact Rate IRS,soil or SA,derm. or IR, water (mg/day)	Conversion Factor CF (soil - kg/mg)	Event Frequency EF (days/years)	Duration ED (years)	Body Weight BW (kg)	Averaging Time AT		Summary Intake Factor (SIF)		
						noncarcin. ATn	carcinogens ATc	noncarcinogens (child-adult)	noncarcinogens child,only	carcinogens child-adult
Ingestion Soil RECREATIONAL	300 child 100 adult	1E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.97E-07	7.67E-07	8.45E-08
Dermal Soil RECREATIONAL	6600 cm ² , child 18000 cm ² , adult	1.00E-06	14 14	6 24	15 70	2,190 8,760	25,550	1.13E-05	1.69E-05	4.83E-06
Ingestion Soil RESIDENTIAL	200 child 100 adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,550	3.65E-06	1.28E-05	1.57E-06
Dermal Soil RESIDENTIAL	2800 cm ² , child 5700 cm ² , adult	1.00E-06	350 350	6 24	15 70	2,190 8,760	25,500	9.83E-05	1.79E-04	4.21E-05

Chemical	Oral Absorp. ABSo	Dermal Absorp. ABSd	Adherence Factor (AF) children mg/cm ²	Adherence Factor (AF) adults mg/cm ²	Ref. ^a Dose RfD (mg/kg/day)	Hazard Quotient HQ unitless
Uranium - noncancer	1	0	0.2	0.2	2.E-04	1

Chemical	Recreational Soil & derm. Kids only mg/kg	Recreational Soil ing. Kids mg/kg	Residential soil ing. (Integrated Adult-Child) mg/kg	Residential Soil & derm. Kids mg/kg	Residential Soil ing. Kids mg/kg		
Uranium - noncancer	261	261	55	16	16		

APPENDIX E

Sample Location Maps



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1949 NOAA Bathymetry

- 10-foot Bottom Elevation Contours

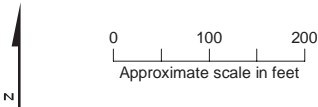
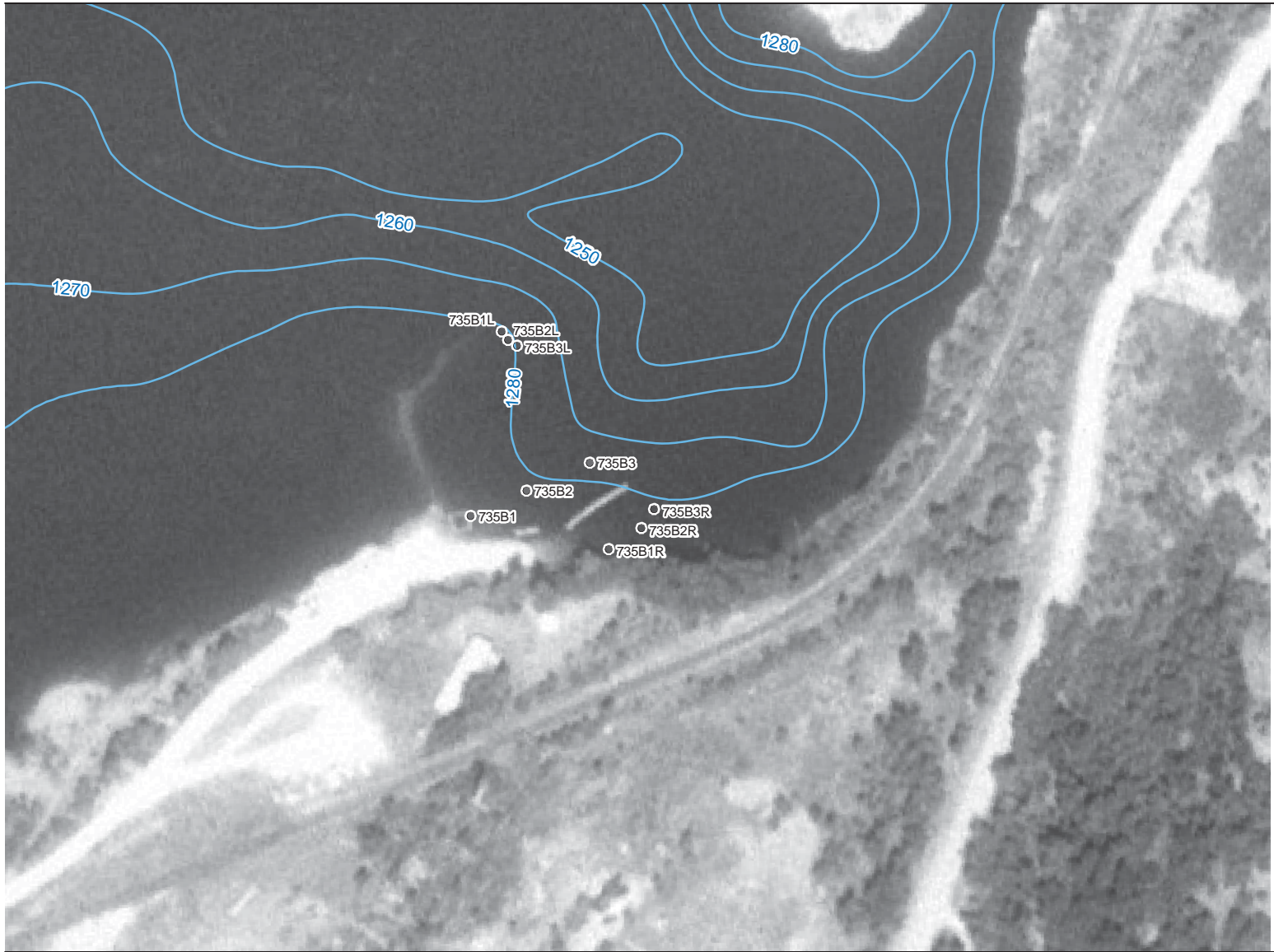


FIGURE 2-13
Black Sand Beach - RM 742
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1949 NOAA Bathymetry

- 10-foot Bottom Elevation Contours

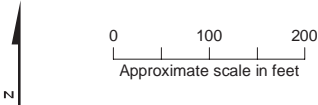
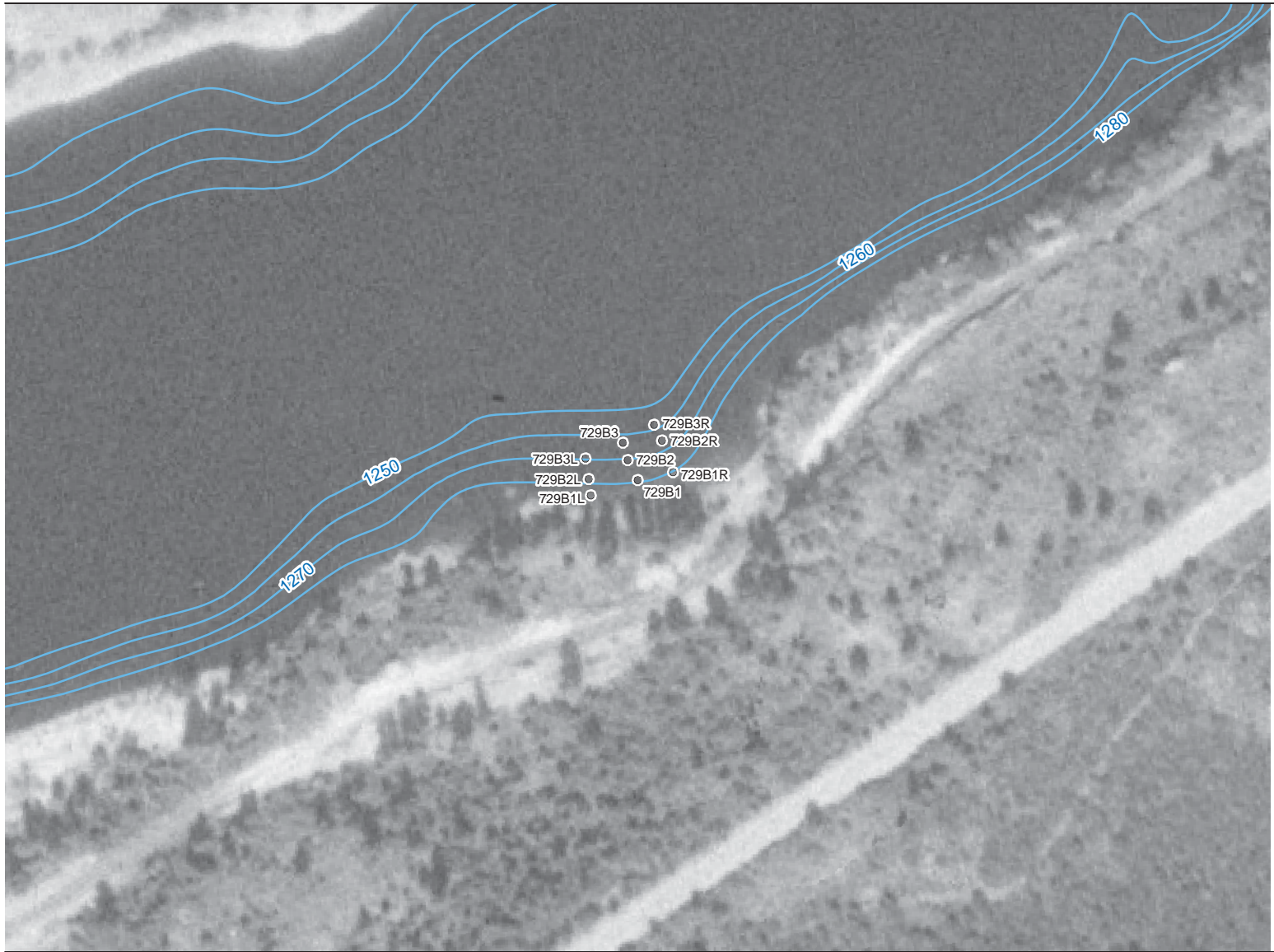


FIGURE 2-14
Northport City Boat Launch
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1949 NOAA Bathymetry

- 10-foot Bottom Elevation Contours

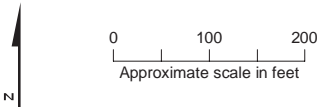
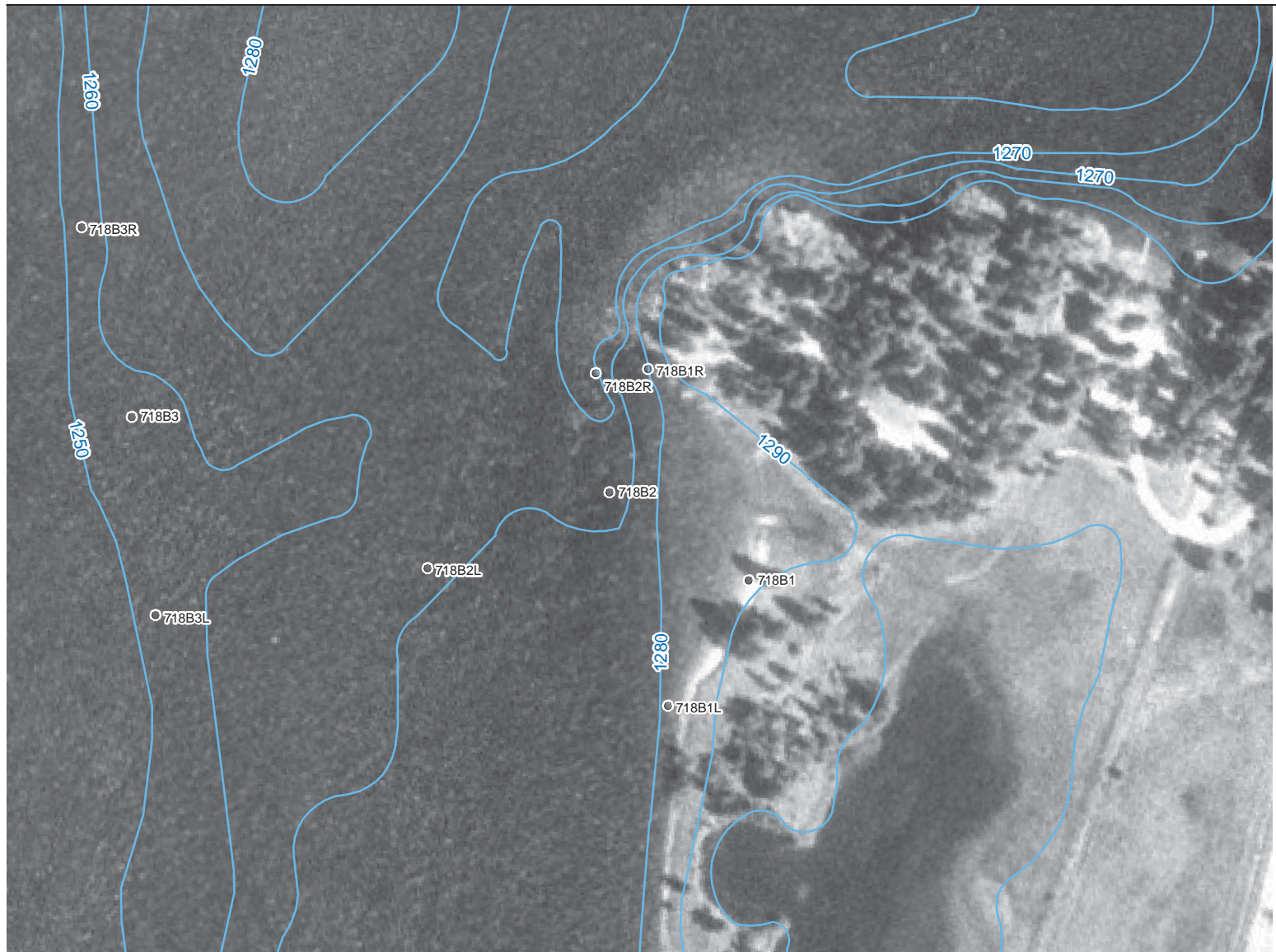


FIGURE 2-15
Dalles Orchard
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

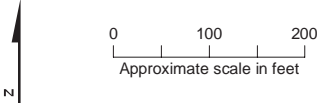
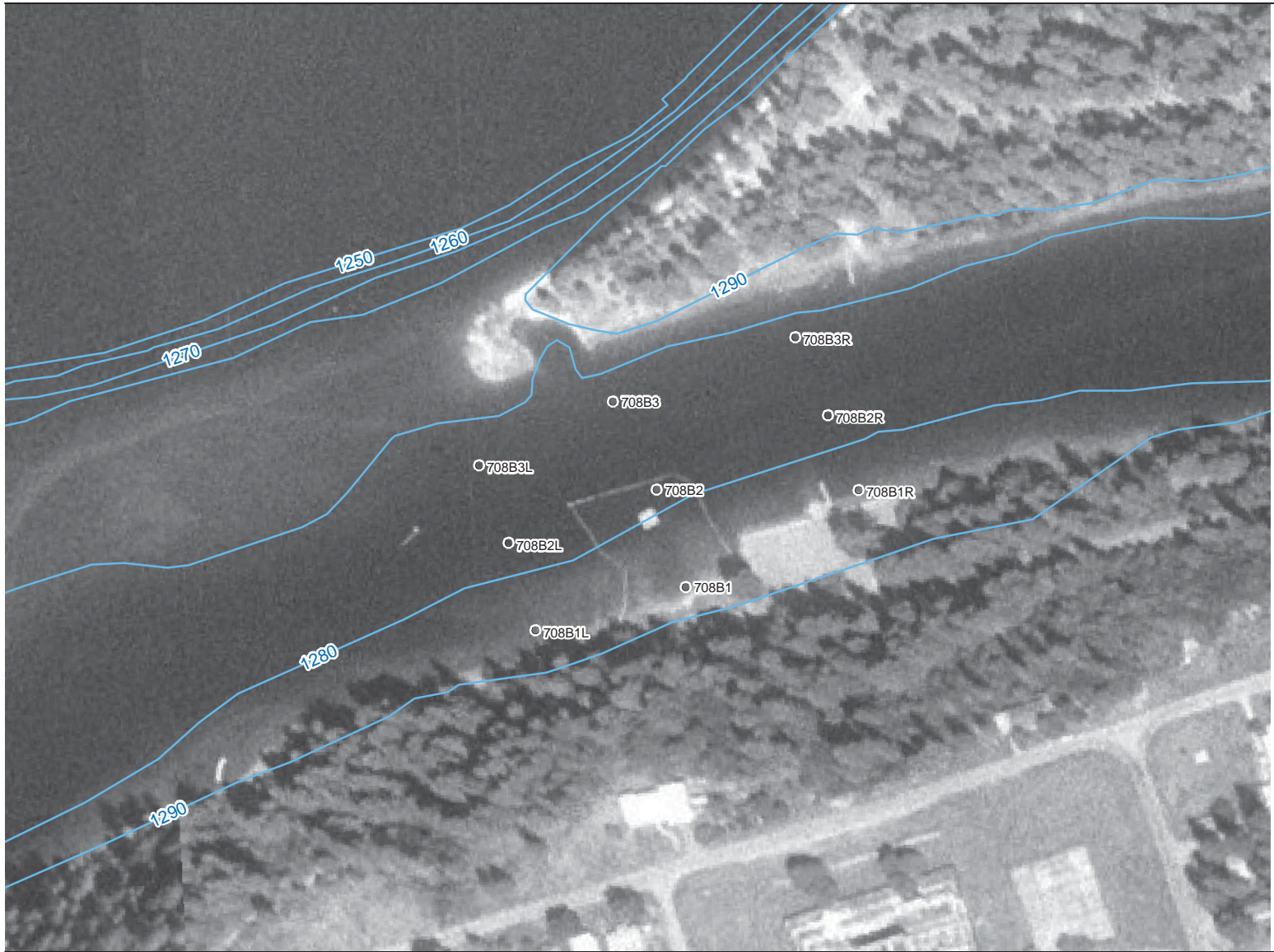


FIGURE 2-16
North Gorge Campground
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

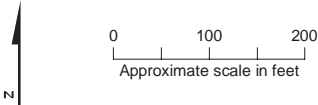


FIGURE 2-17
Marcus Island Campground
2005 Beach Sample Locations
Upper Columbia River RI/FS

2005 Beach Sediment Sample Locations

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

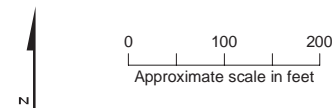
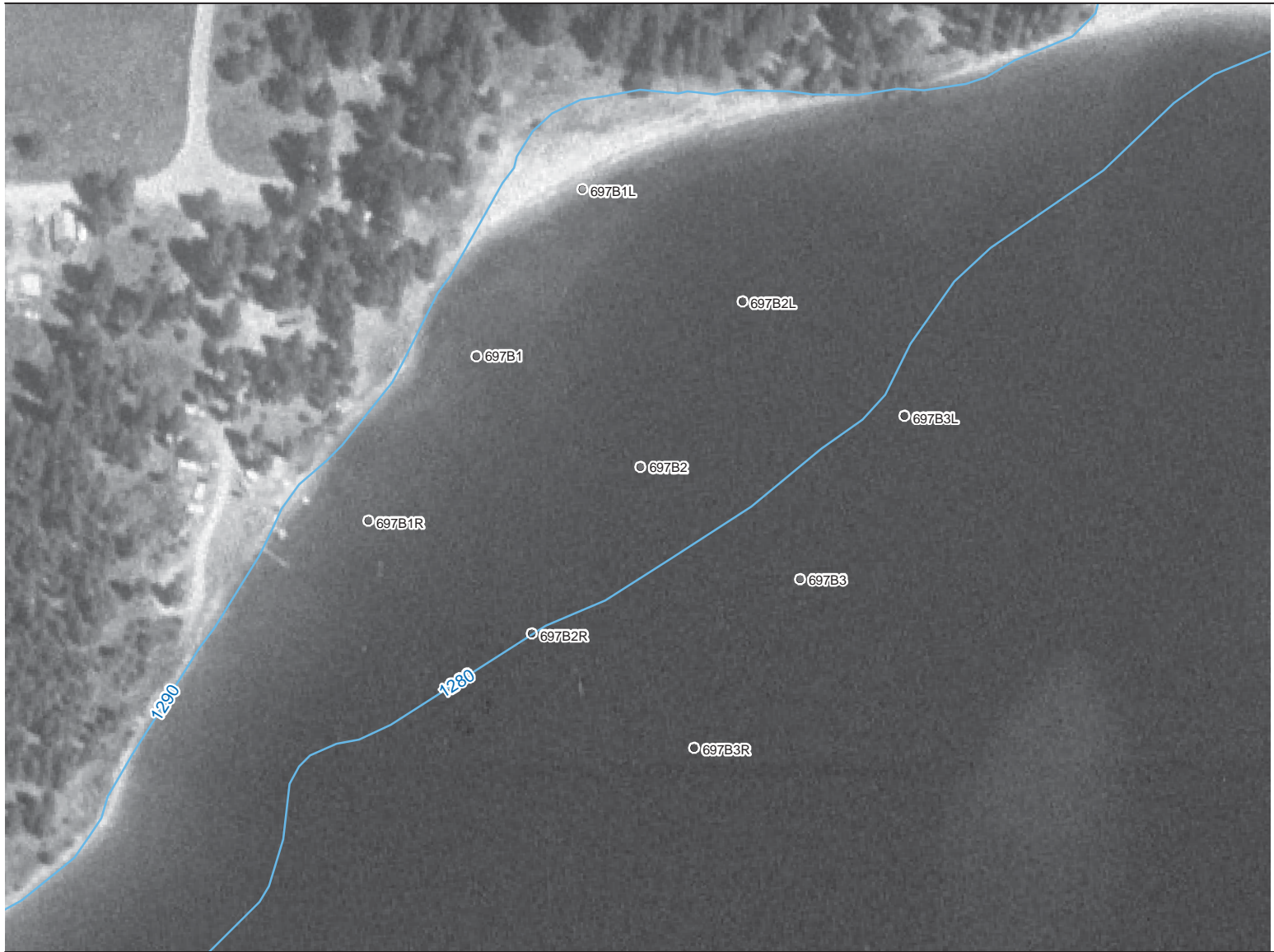


FIGURE 2-18
Kettle Falls Swim Beach
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

— 10-foot Bottom Elevation Contours

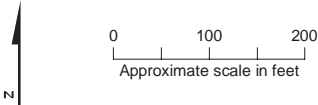
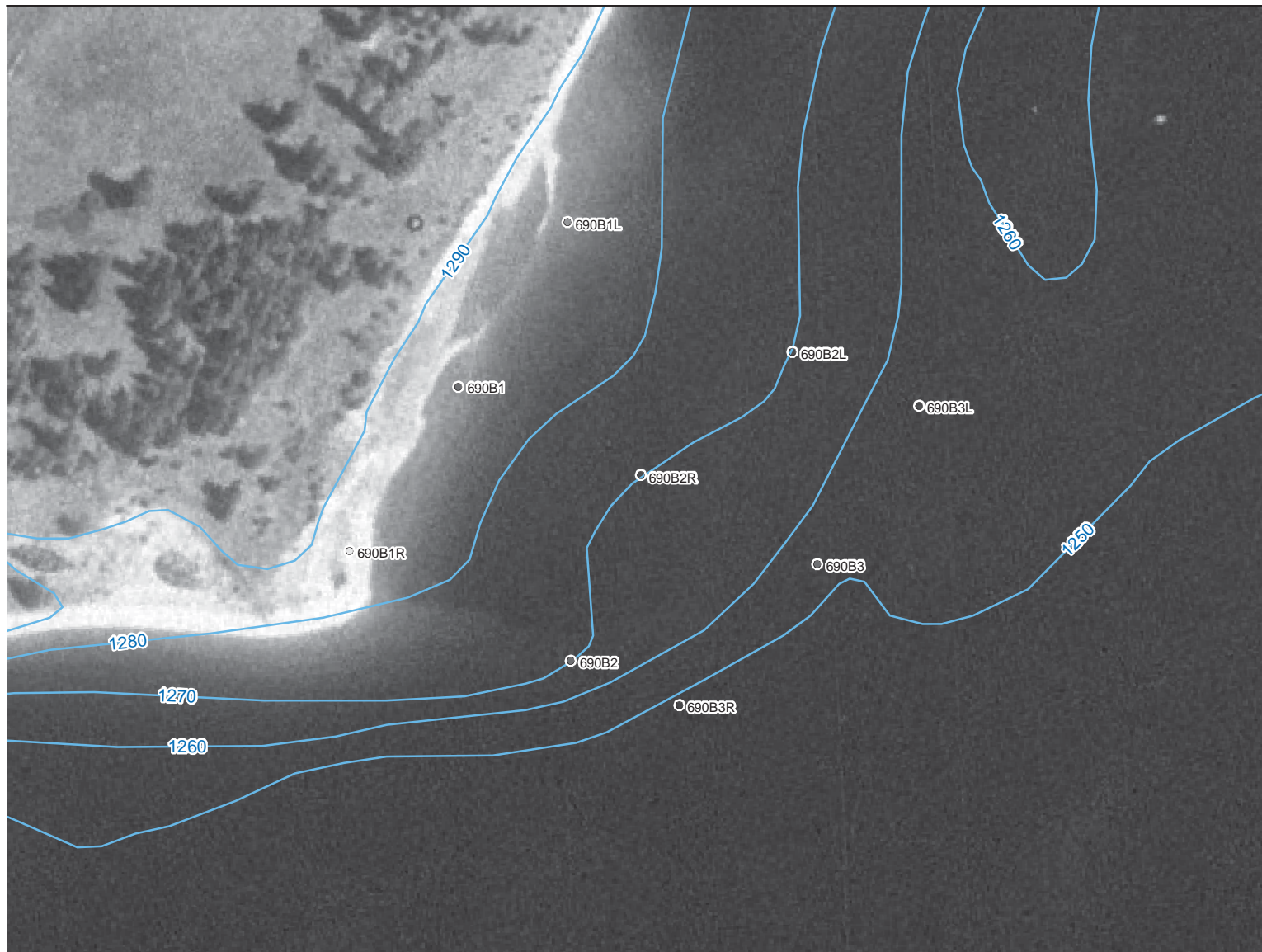


FIGURE 2-19
Haag Cove
2005 Beach Sample Locations
Upper Columbia River RI/FS

2005 Beach Sediment Sample Locations



LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

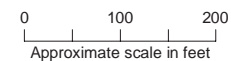
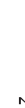
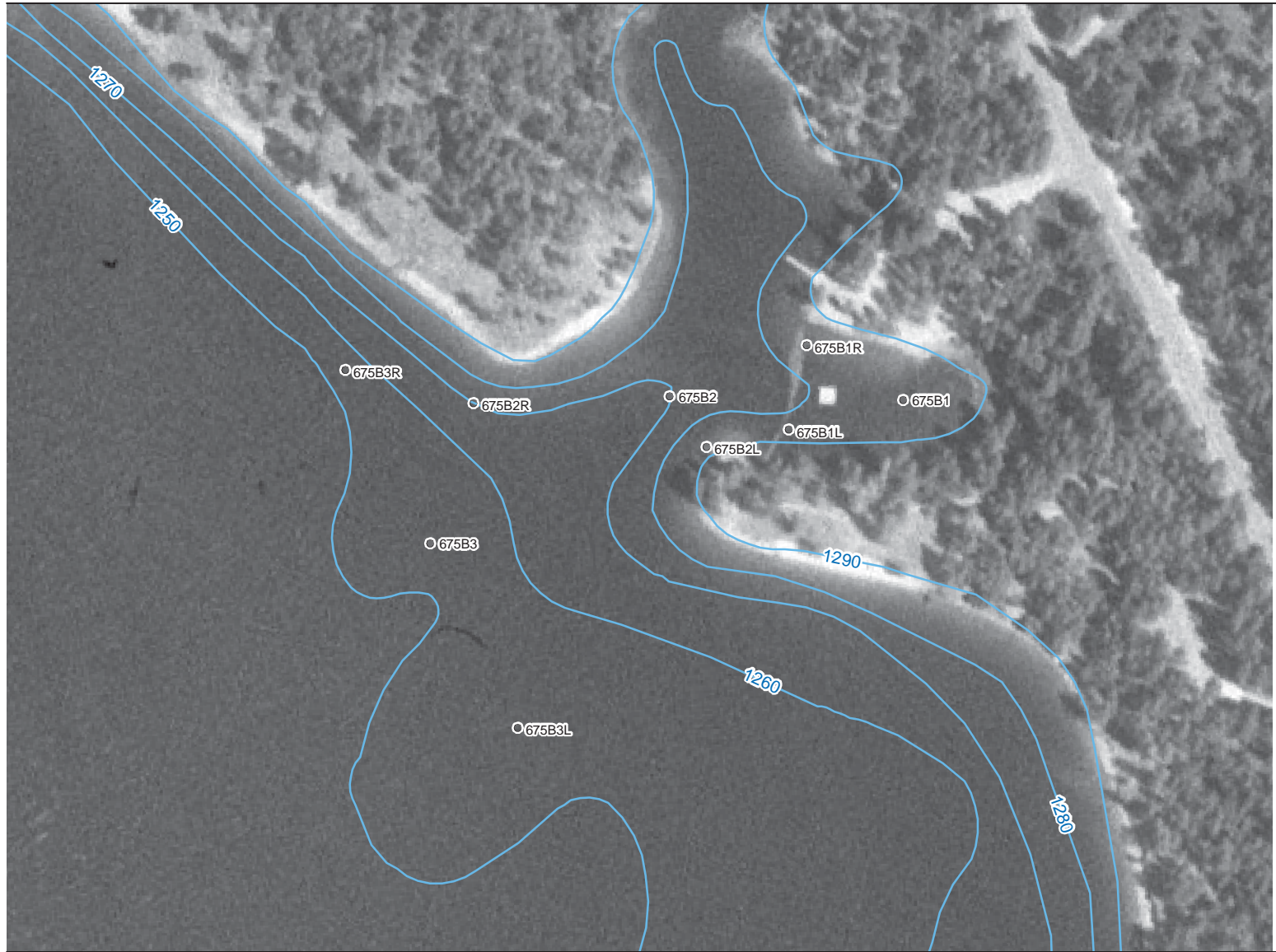


FIGURE 2-20

French Rocks Boat Launch
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

- 2005 Beach Sampling**
- Beach Subsample Composites
 - Beach Subsamples
- 1974 USBR Bathymetry**
- 10-foot Bottom Elevation Contours

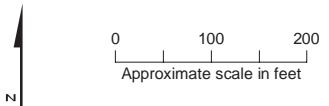
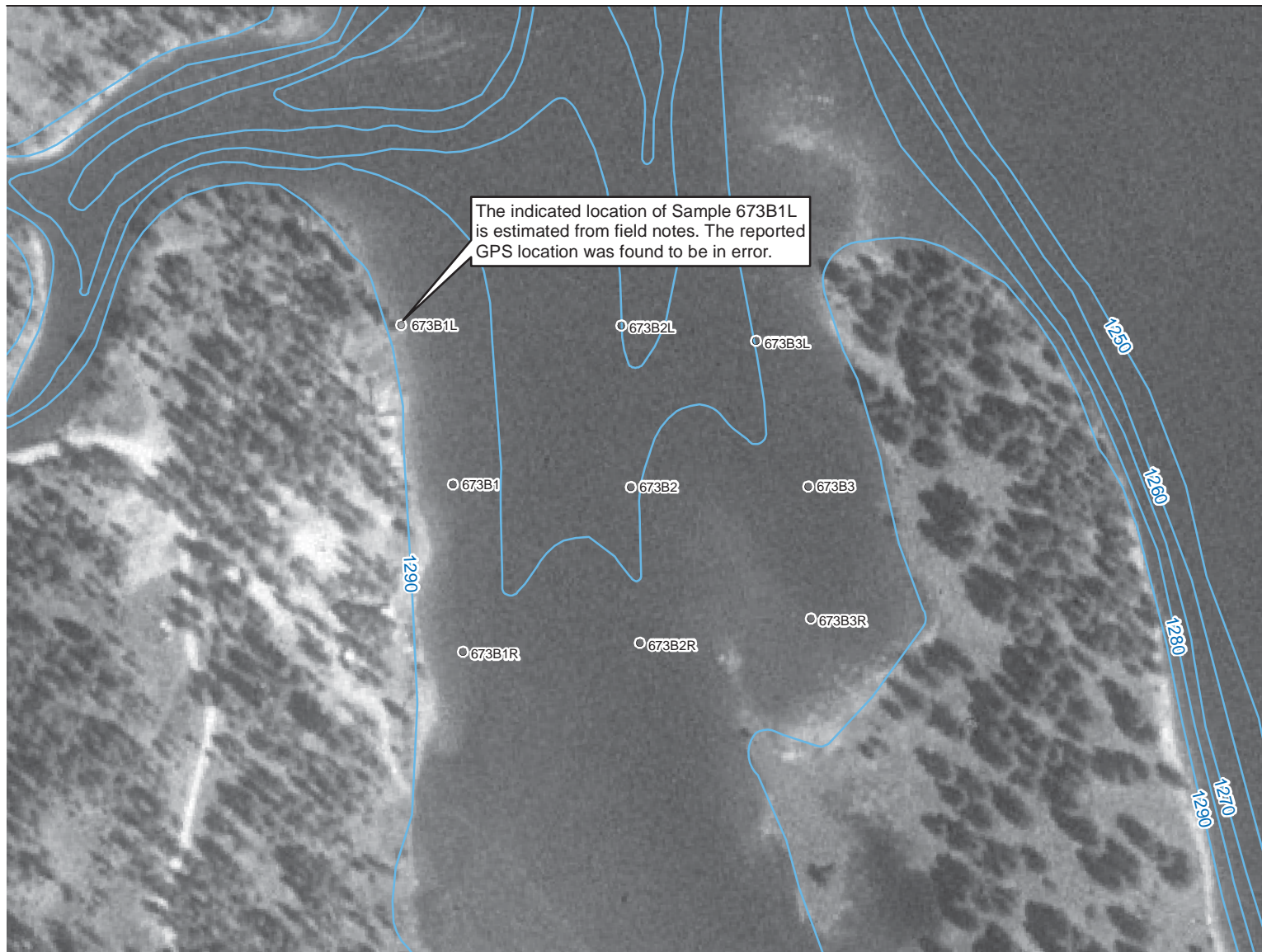


FIGURE 2-21
Cloverleaf Beach
2005 Beach Sample Locations
Upper Columbia River RI/FS

2005 Beach Sediment Sample Locations



LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

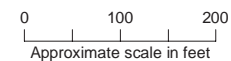
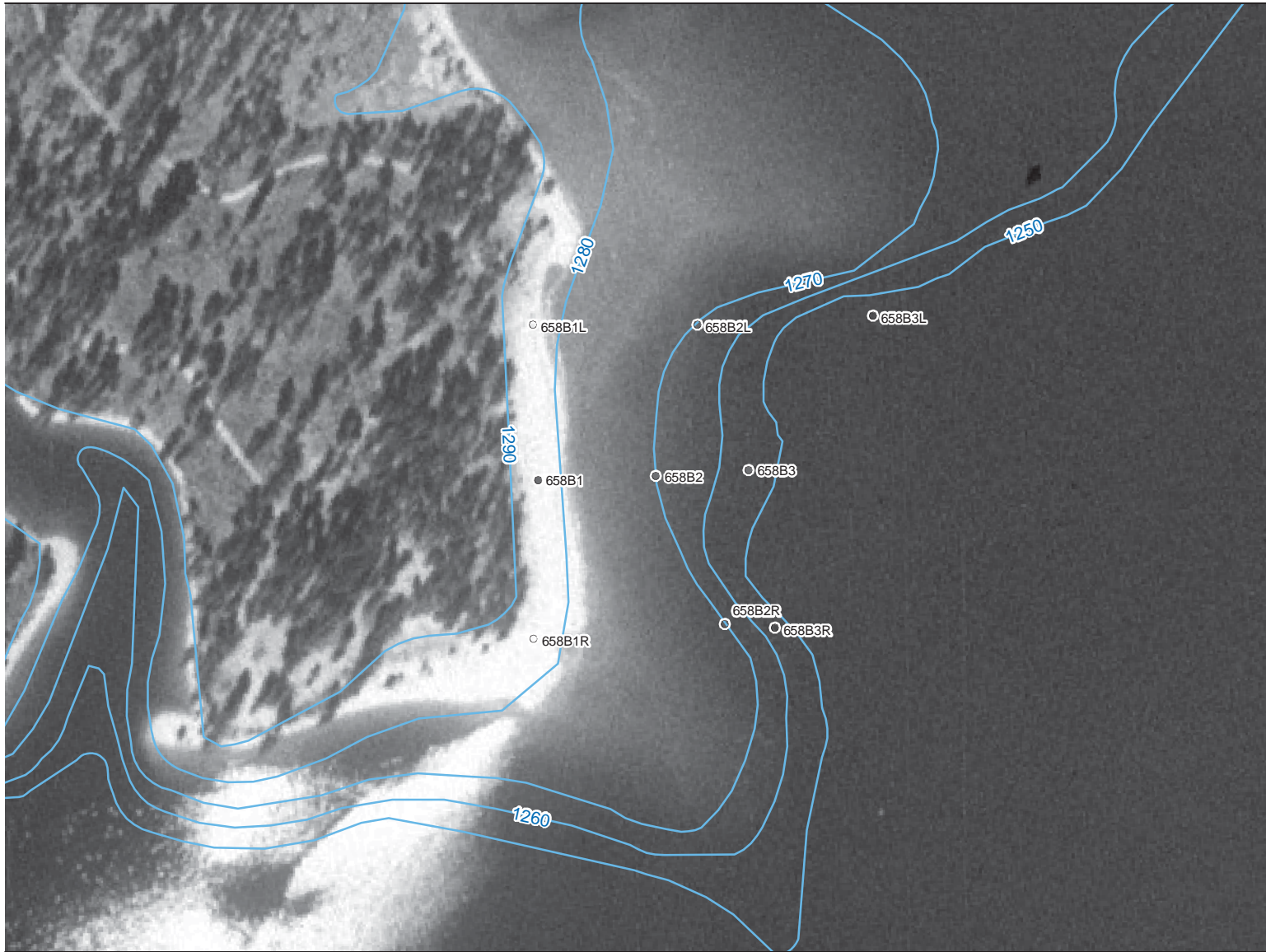


FIGURE 2-22
AA Campground
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

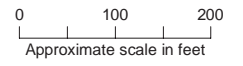
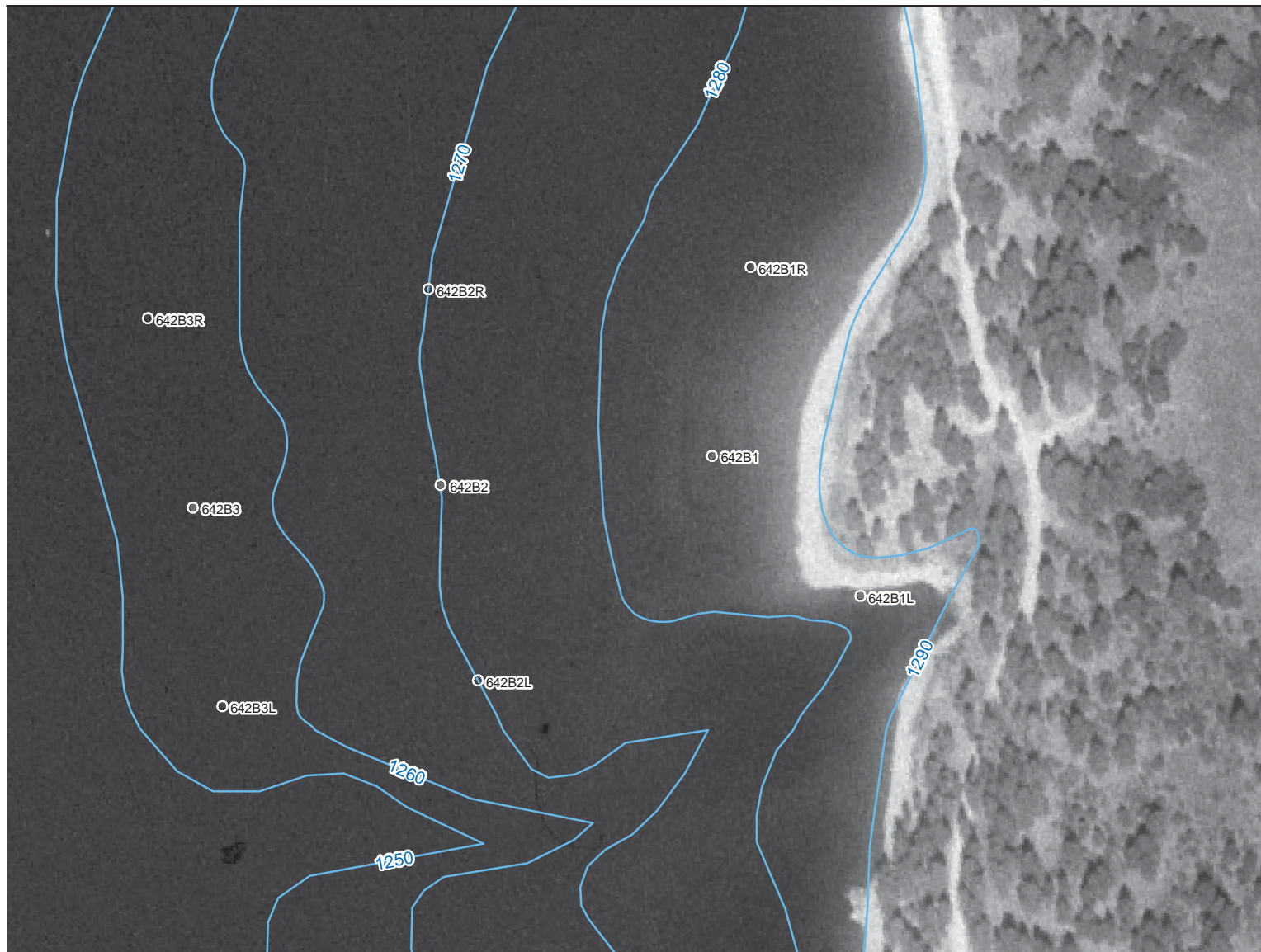


FIGURE 2-23
Rogers Bar Campground
2005 Beach Sample Locations
Upper Columbia River RI/FS

2005 Beach Sediment Sample Locations



LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

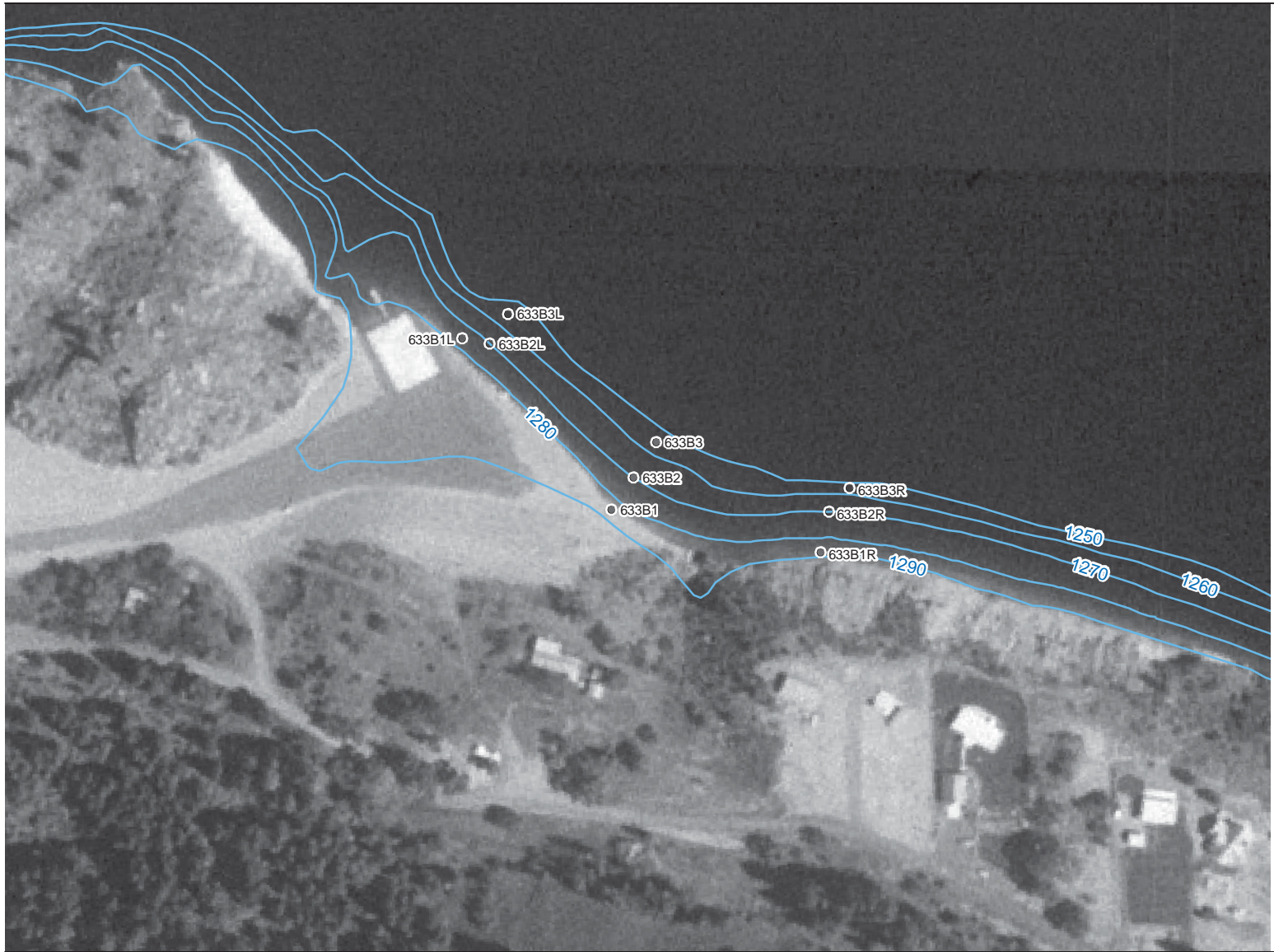
1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours



0 100 200
Approximate scale in feet

FIGURE 2-24
Columbia Campground
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

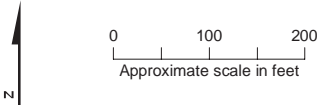
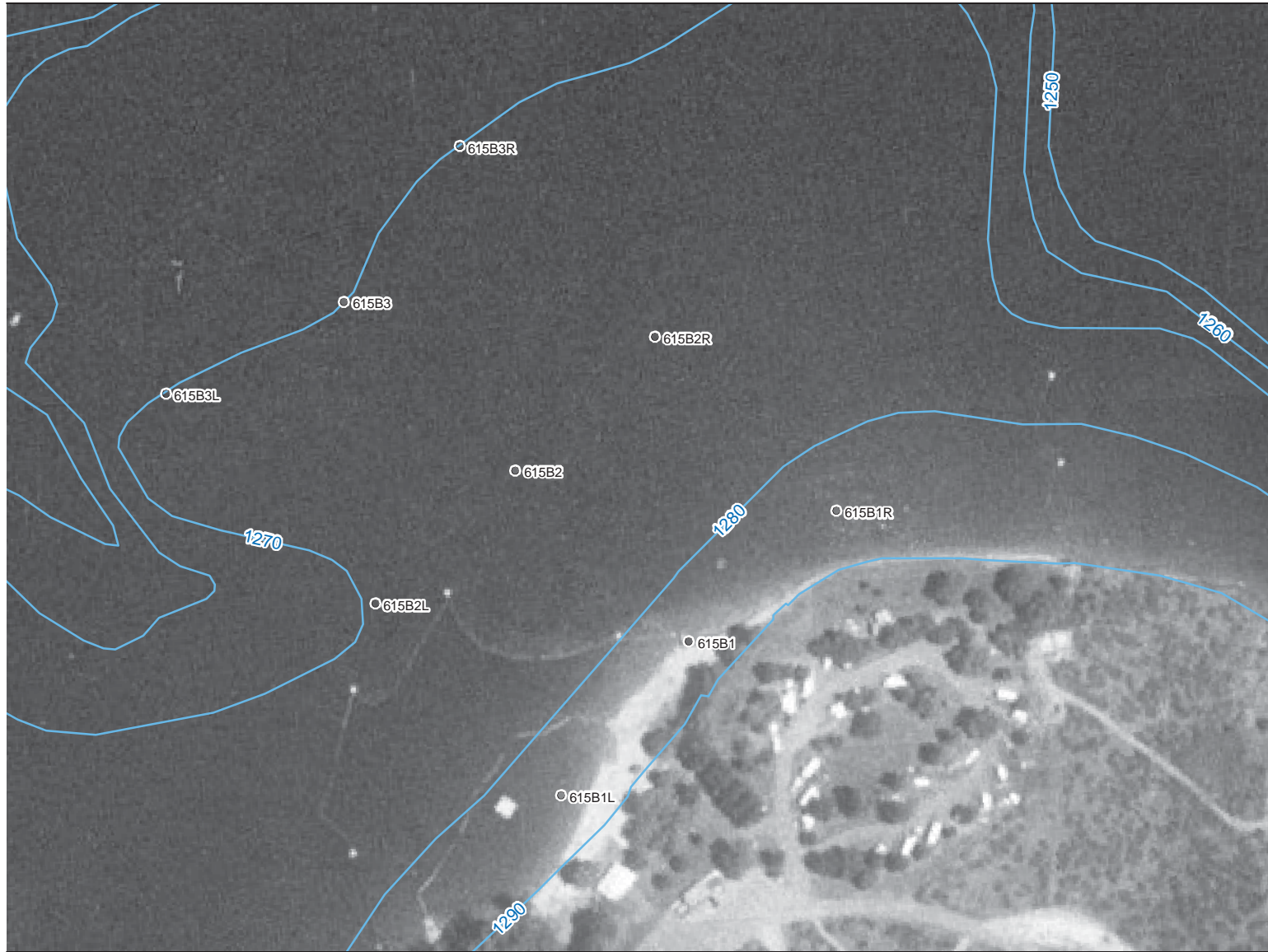


FIGURE 2-25
Lincoln Mill Boat Ramp
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

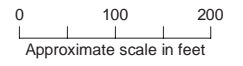
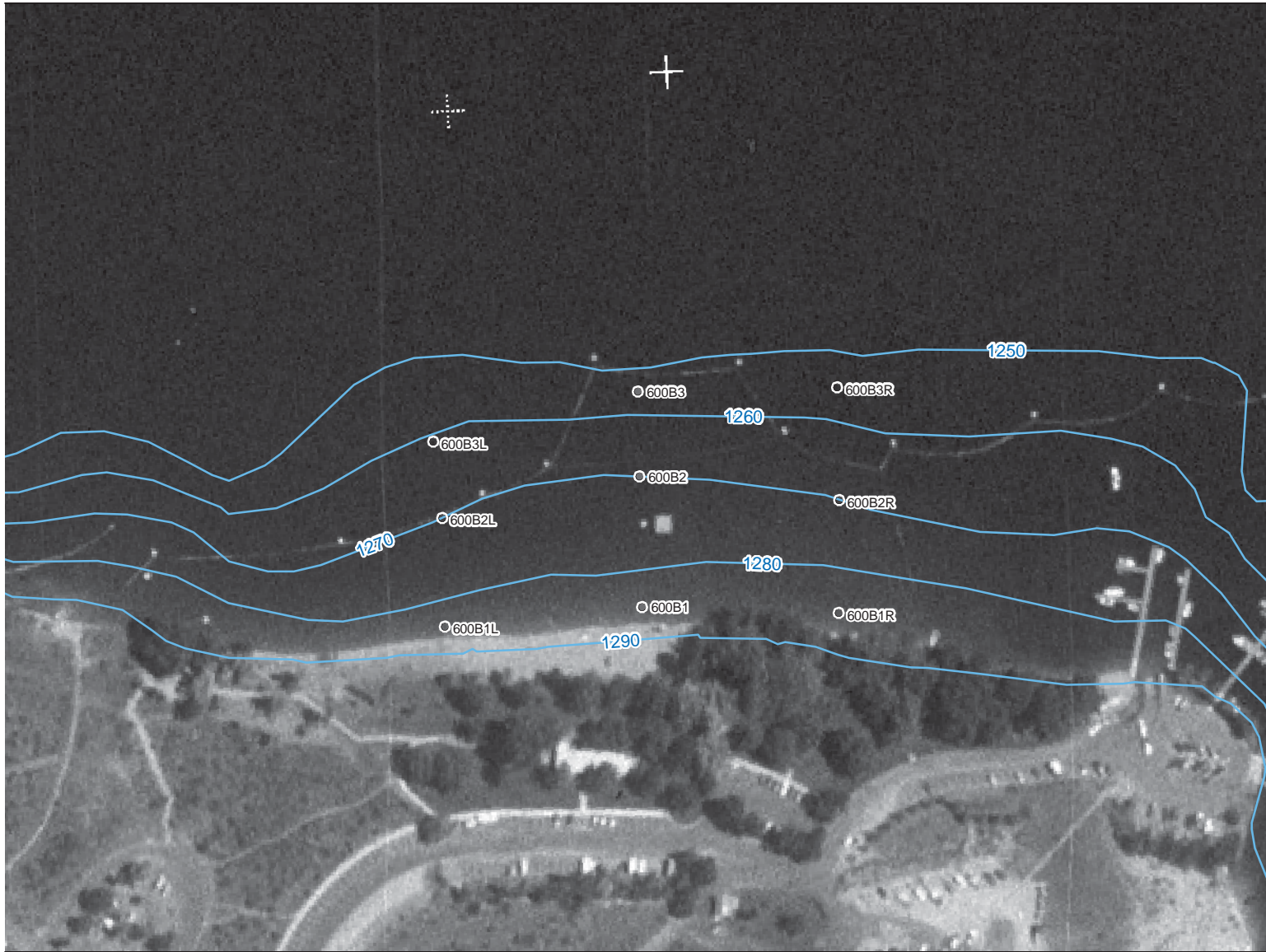


FIGURE 2-26
Kellers Ferry
2005 Beach Sample Locations
Upper Columbia River RI/FS



**2005 Beach
Sediment Sample
Locations**

LEGEND

2005 Beach Sampling

- Beach Subsample Composites
- Beach Subsamples

1974 USBR Bathymetry

- 10-foot Bottom Elevation Contours

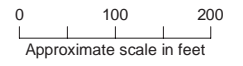


FIGURE 2-27
Spring Canyon Campground
2005 Beach Sample Locations
Upper Columbia River RI/FS