TABLES

Table A-1. Fish Tissue Task, Team Contact Information

Name	Task Role	Phone	Fax	Email
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Julie Gish, Columbia Analytical Services	Laboratory QA Manager	(800) 695-7222	(360) 636-1068	jgish@kelso.caslab.com
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Table A-2. Target Analytes for the 2009 Fish Tissue Study

Analyte	Log K_{ow}	Standard Analyte List measured in **ALL** fish tissues collected in 2009	Expanded Analyte List measured in a **subset** of fish tissues collected in 2009
Conventional Parameters			
Total Length	-	√	√
Total Mass	-	√	√
Percent Moisture	-	√	√
Percent Lipids	-	√	√
Metals/Metalloids			
Aluminum	-	√	√
Antimony	-	√	√
Arsenic (Total)	-	√	√
Arsenic (Inorganic species)	-		√
Barium	-	√	√
Beryllium	-	√	√
Bismuth	-		√
Boron	-		√
Cadmium	-	√	√
Calcium	-	√	√
Cerium	-		√
Cesium	-		√
Chromium	-	√	√
Cobalt	-	√	√
Copper	-	√	√
Dysprosium	-		√
Erbium	-		√
Europium	-		√
Fluoride	-		√
Gadolinium	-		√
Gallium	-		√
Germanium	-		√
Gold	-		√
Holmium	-		√
Indium	-		√
Iron	-	√	√
Lanthanum	-		√
Lead	-	√	√
Lithium	-		√
Lutetium	-		√
Magnesium	-	√	√
Manganese	-	√	√
Mercury	-	√	√
Molybdenum	-	√	√
Neodymium	-		√
Nickel	-	√	√
Niobium	-		√
Potassium	-	√	√
Praseodymium	-		√
Rubidium	-		√
Samarium	-		√
Scandium	-		√
Selenium	-	√	√
Silver	-	√	√
Sodium	-	√	√
Strontium	-		√
Tantalum	-		√
Tellurium	-		√
Terbium	-		√
Thallium	-	√	√
Thorium	-		√
Thulium	-		√
Tin	-		√
Titanium	-		√

Table A-2. Target Analytes for the 2009 Fish Tissue Study

Analyte	Log K_{ow}	Standard Analyte List measured in **ALL** fish tissues collected in 2009	Expanded Analyte List measured in a **subset** of fish tissues collected in 2009
Metals/Metalloids (continued)			
Tungsten	-		√
Uranium	-	√	√
Vanadium	-	√	√
Ytterbium	-		√
Yttrium	-		√
Zinc	-	√	√
Zirconium	-		√
Dioxins/Furans			
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	8.20	√	√
1,2,3,4,6,7,8-Heptachlorodibenzofuran	7.92	√	√
1,2,3,4,7,8,9-Heptachlorodibenzofuran	7.92	√	√
1,2,3,4,7,8-Hexachlorodibenzodioxin	8.21	√	√
1,2,3,4,7,8-Hexachlorodibenzofuran	7.58	√	√
1,2,3,6,7,8-Hexachlorodibenzodioxin	8.21	√	√
1,2,3,6,7,8-Hexachlorodibenzofuran	7.58	√	√
1,2,3,7,8,9-Hexachlorodibenzodioxin	8.21	√	√
1,2,3,7,8,9-Hexachlorodibenzofuran	7.00	√	√
1,2,3,7,8-Pentachlorodibenzofuran	6.79	√	√
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	6.30	√	√
2,3,4,6,7,8-Hexachlorodibenzofuran	7.58	√	√
2,3,4,7,8-Pentachlorodibenzofuran	6.92	√	√
2,3,7,8-Tetrachlorodibenzodioxin	6.80	√	√
2,3,7,8-Tetrachlorodibenzofuran	6.53	√	√
Octachlorodibenzodioxin	8.20	√	√
Octachlorodibenzofuran	8.60	√	√
PCBs			
Aroclor 1016	4.38		
Aroclor 1221	4.09		
Aroclor 1232	4.54		
Aroclor 1242	4.11		
Aroclor 1248	6.20		
Aroclor 1254	6.30		
Aroclor 1260	6.80		
Total PCBs	>4.0		
PCB Congeners (Dioxin-Like Congeners)	>4.0	√	√
PCB Congeners (All 209 Congeners)	>4.0	√	√
PAHs			
Acenaphthylene	4.07		√
Anthracene	4.45		√
Benzo(a)anthracene	5.79		√
Benzo(a)pyrene	5.97		√
Benzo(b)fluoranthene	6.60		√
Benzo(ghi)perylene	6.63		√
Benzo(k)fluoranthene	6.84		√
Chrysene	5.73		√
Dibenzo(a,h)anthracene	6.50		√
Fluoranthene	5.16		√
Fluorene	4.18		√
Indeno[1,2,3-cd]pyrene	6.70		√
Phenanthrene	4.57		√
Pyrene	4.88		√
Polybrominated Diphenylethers (PBDEs)			
PBDEs (17, 28, 47, 49, 66, 71, 85, 99, 100, 128, 138, 153, 154, 183, 184, 190, 191, 203, 206, 209)[a]	5.87-8.9		√
Pesticides			
2,4'-DDD	6.02		√
4,4'-DDD	6.02		√
2,4'-DDE	6.51		√
4,4'-DDE	6.51		√

Table A-2. Target Analytes for the 2009 Fish Tissue Study

Analyte	Log K_{ow}	Standard Analyte List measured in **ALL** fish tissues collected in 2009	Expanded Analyte List measured in a **subset** of fish tissues collected in 2009
Pesticides (continued)			
2,4'-DDT	6.91		√
4,4'-DDT	6.91		√
Aldrin	6.50		√
delta-BHC	4.14		√
alpha-Chlordane (cis-)	6.16		√
gamma-Chlordane (trans-)	6.16		√
cis-Nonachlor	6.20		√
trans-Nonachlor	6.20		√
Oxychlordane	6.16		√
Dieldrin	5.40		√
Endrin	5.20		√
Endrin aldehyde	4.80		√
Endrin ketone	5.20		√
Heptachlor	6.10		√
Heptachlor epoxide	5.40		√
Hexachlorobenzene	5.73		√
Hexachlorobutadiene	4.78		√
Methoxychlor	5.08		√
Toxaphene	5.90		√
SVOCs			
1,1'-Biphenyl	4.01		√
1,2,4-Trichlorobenzene	4.02		√
4-Bromophenyl-phenylether	4.94		√
4-Chlorophenyl-phenyl ether	4.08		√
bis(2-Ethylhexyl)phthalate	7.60		√
Butyl benzyl phthalate	4.91		√
Dibenzofuran	4.12		√
Di-n-butyl phthalate	4.90		√
Di-n-octylphthalate	8.10		√
Hexachlorocyclopentadiene	5.04		√
Hexachloroethane	4.14		√
Pentachlorophenol	5.12		√

Notes:

Log K_{ow} - Results are as presented in the draft SLERA (TCAI 2008). Octanol-water partition coefficient, the ratio of the concentration of a chemical in octanol and in water at equilibrium and at a specified temperature. Octanol is an organic solvent that is used as a surrogate for natural organic matter (e.g., lipids). Also, a Log Kow $\geq$ 4.0 is indicative of a bioaccumulative compound. Values obtained from the Hazardous Substances DataBank (HSDB) (http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB) or Oak Ridge National Laboratory Risk Assessment Information System (http://rais.ornl.gov/cgi-bin/tox/TOX_select?select=csf).

n/a - Not applicable, K_{ow} <4.0, COI will not be analyzed in fish tissues.

[a] Capability to analyze tissues for all of these BDE congeners is uncertain, and will depend on the selected laboratory.

Table A-3. Recommended Methods for Analysis of COIs in Fish Tissue Samples

Analytes	Analytical method	Description	Container	Holding Time	Preservation
Metals/Metalloids	EPA Method 6010 EPA Method 6020 EPA Method 7471B/EPA Method 1631B or E (Hg) EPA 7000 Series Methods (various metals)	ICP-AES ICP-MS CV-AAS	Aluminum foil, Resealable plastic bag (whole fish)	1 year, except Hg is 6 months	Frozen at -20 °C
Inorganic Arsenic	EPA Method 1632A	HG-QFAAS	Aluminum foil, Resealable plastic bag (whole fish)	2 years	Frozen at -20 °C
PCBs (Congeners)	EPA Method 1668A	HRGC/HRMS	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
Dioxins/Furans	EPA Method 1613B	HRGC/HRMS	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
PBDEs	EPA Method 1614	HRGC/HRMS	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
PAHs	EPA Method 8270 (modified)	GC-MS-SIM	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
Pentachlorophenol	EPA Method 8151M	GC-ECD	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
Chlorinated Pesticides	EPA Method 8081B or Method 1856A	GC-ECD	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
SVOCs	EPA Method 8270D	GC-MS	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
% Lipids		Freeze-dry/Gravimetric	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C
% Moisture		Freeze-dry/Gravimetric	Aluminum foil, Resealable plastic bag (whole fish)	1 year	Frozen at -20 °C

Notes:

EPA 7000 Series methods may be required for various individual methods

Recommended methods only; final methods will be selected for use based on target detection limits for the specific COIs.

Quantitation limits for the selected analytical methods will be included in the QAPP once a Contract Laboratory has been selected.

CV-AAS	Cold vapour - atomic adsorption spectrometry
GC-ECD	Gas chromatography - electron capture detection
GC-MS	Gas chromatography - mass spectrometry
GC-MS-SIM	Gas chromatography - mass spectrometry (selected ion monitoring)
HG-QFAAS	Hydride generation - quartz furnace atomic adsorption spectrometry
HRGC/HRMS	High resolution gas chromatography - high resolution mass spectrometry
ICP-AES	Inductively-coupled plasma - atomic emission spectrometry
ICP-MS	Inductively-coupled plasma - mass spectrometry

Table A-4. Principal Questions and Alternative Actions

Principal Question	Alternative Actions
Will reproduction, growth or survival of aquatic-dependent wildlife be adversely affected by the concentration of COIs in the fish in their diet that come from the Site?	• Define remedial alternatives for sediment and/or water exposures to fish for the areas of the Site that pose unacceptable risk. • For areas of the Site found to have potentially elevated risks, compare estimated exposures to regional background to determine if potential risks are specific to the Site. • For areas of the Site found to have potentially elevated risks, refine risk estimates through determination of bioavailability of COIs in sediments and site-specific sediment-to-biota accumulation factors. • Take no action.
Will growth, reproduction, or survival of fish be adversely affected by the concentration of COIs in their bodies or in prey fish?	• Define remedial alternatives for sediment and/or water exposures to fish for the areas of the Site that pose unacceptable risk. • For areas of the Site found to have potentially elevated risks, compare estimated exposures to regional background to determine if risks are specific to the Site. • For areas of the Site found to have potentially elevated risks, refine risk estimates through determination of bioavailability of COIs in sediments and site-specific sediment-to-biota accumulation factors. • Take no action.
Will the health of recreational anglers or subsistence harvesters be adversely affected by consuming fish caught from the Site, and if so, which species and size classes are contributing the most to the risk estimate?	• For areas of the Site found to have potentially elevated risks: - Evaluate remedial alternatives for source control, surface water and sediment to reduce fish uptake of contaminants in areas with unacceptable risks. - Refine HHRA risk estimates through additional data collection (if necessary) - Take no action.

Table A-5. Wildlife Species Representative of the Major Piscivorous Feeding Guilds at the UCR

Wildlife Species	Feeding Guild
Bald eagle (*Haliaeetus leucocephalus*)	Large size carnivore (fish + other items)
Osprey (*Pandion haliaetus*)	Medium size avian piscivore
Belted kingfisher (*Megaceryle alcyon*)	Small size avian piscivore
Great blue heron (*Ardea herodias*)	Large size avian carnivore (fish + other items)
Lesser scaup (*Aythya affinis*)	Small size avian piscivore
Mink (*Mustela vison*)	Small size mammalian carnivore (fish + other items)
River otter (*Lontra canadensis*)	Medium size mammalian piscivore
Raccoon (*Procyon lotor*)	Medium size mammalian omnivore (fish + other items)

Table A-6. Diets of Wildlife Species Representative of Relevant Feeding Guilds

Species	Size Class	N	Freq. of Consuming (%)	Prey Items	Reference
Bald Eagle - breeding season				Largscale sucker, American shad, common carp, other cyprinids, salmon, steelhead, black crappie, other centrarchids, yellow perch, sturgeon, shiner perch, unidentified Gadidae	Watson et al. (1991)
	<10 cm		25%		
	>60 cm		6%		
Bald Eagle - non breeding season					
	<10 cm		8%		
	>60 cm		16%		
Bald Eagle	185 - 498 cm	18		trout	Jackman et al. (1999)
	244 - 854 cm	85		common carp	
	194 - 527 cm	64		hardhead	
	278 - 631 cm	28		Sacramento squafish	
	180 - 341 cm	98		Tui chub	
	131 - 587 cm	228		Sacramento sucker	
	251 - 551 cm	17		Channel catfish	
	129 - 356 cm	456		brown bullhead	
Osprey	0-10 cm	5	3.3%	Brown bullhead, rainbow trout, kokanee salmon, mtn. whitefish, northern squawfish, yellow perch, largescale sucker	Van Daele & Van Daele (1982)
	11-20 cm	64	42.1%		
	21-30 cm	71	46.7%		
	31-40 cm	10	6.6%		
	>41 cm	2	1.3%		
Great Blue Heron					Alexander (1977)
	1 in (2.54 cm)		9%		
	2 in (5.08 cm)		16%		
	3 in (7.62 cm)		8%		
	4 in (10.16 cm)		8%		
	5 in (12.7 cm)		15%		
	6 in (15.24 cm)		21%		
	7 in (17.8 cm)		6%		
	8 in (20.3 cm)		5%		
	9 in (22.9 cm)		5%		
	10-13 in (25-33 cm)		9%		
Belted Kingfisher					Davis (1982)
	4-6 cm		12%		
	6-8 cm		36%		
	8-10 cm		29%		
	10-12 cm		21%		
	12-14 cm		3%		
Belted Kingfisher					Salyer & lagler (1949)
	Ave length = 7.6 cm				
	Range = 2.5-17.8 cm				
Belted Kingfisher					Alexander (1977)
	1 in (2.54 cm)		32%		
	2 in (5.08 cm)		47%		
	3 in (7.62 cm)		13%		
	4 in (10.16 cm)		7%		
	5 in (12.7 cm)		2%		
Otter	Burbot (17-24 cm)		56%	Burbot, cyprinids, trout, pike, perch, eel	Erlinge (1969)
	Cyprinids		-		
	>15 cm		9%		
	<15 cm		11%		
	Pike		11%		
	<20 cm, 45%		-		
	>20 cm, 55%		-		
	Trout		-		
	< 15 cm, 76%		-		
	> 15 cm, 24%		-		
	Perch		5%		
	Eel		8%		

Table A-6. Diets of Wildlife Species Representative of Relevant Feeding Guilds

Species	Size Class	N	Freq. of Consuming (%)	Prey Items	Reference
Otter	Roach			Roach, Eels, Perch,	Wise et al. (1981)
	0-9 cm		~25%	Pike, Salmonids	
	9- 15 cm		~72%		
	> 15 cm		~3%		
	Eels				
	< 20 cm		~12%		
	20-30 cm		~42%		
	30-40 cm		~40%		
	>40 cm		~6%		
	Perch				
	0-9 cm		~48%		
	9- 15 cm		~43%		
	> 15 cm		~9%		
	Pike				
	< 20 cm		~12%		
	20-50 cm		~39%		
	>50 cm		~49%		
	Salmonids				
	0-9 cm		~47%		
	9- 15 cm		~37%		
	15-21 cm		~8%		
	>21 cm		~8%		
Otter	11-20 cm		50%		USEPA (1993)
	>20 cm		50%		
Mink	Roach			Roach, Eels, Perch,	Wise et al. (1981)
	0-9 cm		~40%	Pike, Salmonids	
	9- 15 cm		~57%		
	> 15 cm		~3%		
	Eels				
	< 20 cm		~8%		
	20-30 cm		~53%		
	30-40 cm		~35%		
	>40 cm		~4%		
	Perch				
	0-9 cm		~28%		
	9- 15 cm		~58%		
	> 15 cm		~14%		
	Pike				
	< 20 cm		~0%		
	20-50 cm		~90%		
	>50 cm		~10%		
	Salmonids				
	0-9 cm		~40%		
	9- 15 cm		~43%		
	15-21 cm		~5%		
	>21 cm		~12%		
Mink	1 in (2.54 cm)		9%		Alexander (1977)
	2 in (5.08 cm)		22%		
	3 in (7.62 cm)		6%		
	4 in (10.16 cm)		34%		
	5 in (12.7 cm)		16%		
	6 in (15.24 cm)		9%		
	7 in (17.8 cm)		3%		
Mink	Burbot (17-24 cm)			Burbot, cyprinids,	Erlinge (1969)
	Cyprinids			trout, pike, perch	
	>15 cm		0%		
	<15 cm		100%		
	Pike				
	<20 cm		89%		
	>20 cm		11%		
	Trout				
	< 15 cm		100%		
	> 15 cm		0		
	Perch				

Table A-7. UCR Fish Species and Life History Information

Common Name	Latin Name	General Habitat	Home Range	Spawning Time	Primary Juvenile Prey Items	Primary Adult Prey Items
Black crappie	*Pomoxis nigromaculatus*	Associated with large beds of aquatic plants and sandy to mucky bottoms	Narrow	Spring-Summer	Zooplankton and aquatic insects	Zooplankton, aquatic insects, and fish
Bridgelip sucker	*Catostomus columbianus*	Cold water and gravel or rocky bottoms; quieter backwaters or edges of rivers with sand and mud bottom; lake margins	Narrow	Spring to June	Periphyton, plant material	Periphyton, detritus, zooplankton, aquatic insects, benthic invertebrates, mussels, annelids
Brook trout	*Salvelinus fontinalis*	May move from streams into lakes to avoid high temperatures in summer	Large	Late summer or Fall	Zooplankton	Zooplankton, aquatic insects, fish
Brown trout	*Salmo trutta*	Deep water pools	Large	Late summer or Fall	Aquatic insects, benthic invertebrates	Aquatic insects, zooplankton, fish (perch, salmonids)
Bull trout	*Salvelinus confluentus*	In lakes, inhabits all depths in fall, winter, and spring; moves to cooler, deeper water for summer.	Large	Late summer or Fall	Aquatic and terrestrial insects, benthic invertebrates, fish	Aquatic and terrestrial insects, benthic invertebrates, fish
Burbot	*Lota lota*	Between 31-100 m deep, cooler waters	Narrow	December/January to March	Zooplankton and aquatic insects	Fish (sculpin, perch, salmonids), zooplankton, aquatic insects, crayfish
Carp	*Cyprinus carpio*	Usually in shallow water with abundant vegetation and little or no current	Narrow to Large	Spring and Summer	Algae, zooplankton	Algae, periphyton, detritus, zooplankton, aquatic insects
Chinook salmon	*Oncorhynchus tshawytscha*	Deep water	Large	Stocked - do not reproduce in Lake Roosevelt	Zooplankton and aquatic and terrestrial insects	Zooplankton and aquatic and terrestrial insects
Chiselmouth	*Acrocheilus alutaceus*	Shallow water near margins of lakes and in flowing pools and runs over sand and gravel in creeks and small to medium rivers	Narrow	June-July	Algae, zooplankton, aquatic and terrestrial insects, detritus	Algae, zooplankton, aquatic and terrestrial insects, detritus

Table A-7. UCR Fish Species and Life History Information

Common Name	Latin Name	General Habitat	Home Range	Spawning Time	Primary Juvenile Prey Items	Primary Adult Prey Items
Cutthroat trout	*Oncorhynchus clarki*	Primarily in tributaries or deep water pools.	Large	March-July	Zooplankton and aquatic and terrestrial insects	Zooplankton and aquatic and terrestrial insects
Kokanee	*Oncorhynchus nerka*	Warm quiet waters	Potentially large	August - November	Zooplankton and aquatic and terrestrial insects	Zooplankton and aquatic and terrestrial insects
Lake whitefish	*Coregonus clupeaformis*	Prefers deep cold waters, deeper pelagic areas of Lake Roosevelt	Narrow	Fall (October - January)	Zooplankton	Zooplankton, aquatic and terrestrial insects, benthic invertebrates
Largemouth bass	*Micropterus salmoides*	Warm quiet waters with low turbidity, soft bottom, and beds of aquatic plants	Narrow	Spring and Summer	Zooplankton and aquatic and terrestrial insects, fish (sculpin)	Zooplankton and aquatic and terrestrial insects, fish (sculpin)
Largescale sucker	*Catostomus macrocheilus*	Lake or stream bottom near tributary mouths (shallow to 80 ft)	Large	April - June	Zooplankton	Periphyton, detritus, zooplankton, aquatic insects, benthic invertebrates, snails, annelids
Longnose dace	*Rhinichthys cataractae*	Inshore waters of lakes over gravel or boulder bottoms. May move offshore to deeper water in summer in warm lakes	Narrow	Spring and Summer	Aquatic insects, insect larvae	Aquatic insects, insect larvae
Longnose sucker	*Catostomus catostomus*	Bottom dweller in lakes and tributary streams	Narrow	Spring	Periphyton, plant material	Periphyton, detritus, zooplankton, aquatic insects, benthic invertebrates, snails, annelids
Mottled sculpin	*Cottus bairdi*	Prefers pools with quiet water with substrates of sand, gravel, or rubble	Narrow	February - June	Zooplankton and aquatic insects	Zooplankton, aquatic insects, benthic invertebrates, fish eggs
Mountain whitefish	*Prosopium williamsoni*	Cold mountain lakes (to depths of at least 10 m) and fast, clear or silty streams with large pools	Large	September - December	Zooplankton and aquatic insects, benthic invertebrates	Zooplankton and aquatic insects, benthic invertebrates

Table A-7. UCR Fish Species and Life History Information

Common Name	Latin Name	General Habitat	Home Range	Spawning Time	Primary Juvenile Prey Items	Primary Adult Prey Items
Northern pikeminnow	*Ptychocheilus oregonensis*	Shallows near shore in the summer, and move off to benthic habitats in the winter	Narrow	May - August	Aquatic and terrestrial insects, benthic invertebrates	Fish (sculpin, perch, salmonids), zooplankton, aquatic and terrestrial insects, benthic invertebrates
Peamouth chub	*Mylocheilus caurinus*	May occur in shallows at night, deep water by day, and spawns in shallows over gravel or rubble	Narrow	May - June	Zooplankton and aquatic and terrestrial insects	Zooplankton and aquatic and terrestrial insects, snails
Prickly sculpin	*Cottus asper*	Prefers pools with quiet water with substrates of sand, gravel, or rubble	Narrow	April - June	Zooplankton and aquatic insects	Zooplankton, aquatic insects, benthic invertebrates, small fish, fish eggs
Pumpkinseed	*Lepomis gibbosus*	Prefers shallow, quiet, clear water with aquatic vegetation and some organic debris	Narrow	Spring and Summer	Aquatic insects, small molluscs, zooplankton, benthic invertebrates	Aquatic insects, small molluscs, zooplankton, benthic invertebrates
Rainbow trout (wild and hatchery)	*Oncorhynchus mykiss*	Often in cool clear lakes and cool swift streams with silt-free substrate	Narrow	Spring - Fall	Zooplankton and aquatic insects	Zooplankton and aquatic insects, snails, annelids, small fish
Redside shiner	*Richardsonius balteatus*	Slow current; usually over mud or sand, often near vegetation	Narrow	June - July	Algae, zooplankton, terrestrial insects	Zooplankton, aquatic and terrestrial insects, benthic invertebrates, fish eggs
Shorthead sculpin	*Cottus confusus*	Inhabit cold swift riffle reaches with rubble or gravel substrates	Narrow	Spring	Zooplankton and aquatic insects	Zooplankton, aquatic insects, benthic invertebrates, fish eggs
Slimy sculpin	*Cottus cognatus*	Found along gravel or soft sediment beaches and stream inlets	Narrow	Spring	Zooplankton and aquatic insects	Zooplankton, aquatic insects, benthic invertebrates, fish eggs

Table A-7. UCR Fish Species and Life History Information

Common Name	Latin Name	General Habitat	Home Range	Spawning Time	Primary Juvenile Prey Items	Primary Adult Prey Items
Smallmouth bass	*Micropterus dolomieui*	Deep still pools	Narrow	Spring	Zooplankton and aquatic insects	Fish (sculpin, perch, salmonids), zooplankton, aquatic insects
Speckled dace	*Rhinichthys osculus*	Usually found in shallow water, and rocky substrates	Narrow	Early spring to late summer	Zooplankton	Zooplanktons, aquatic insects, insect larvae, algae, periphyton, benthic invertebrates
Tench	*Tinca tinca*	Shallow portions of lakes and ponds, backwaters and other slow-moving areas of small to large rivers	Narrow	May - June	Algae, zooplankton	Zooplankton, detritus, aquatic insects, snails
Torrent sculpin	*Cottus rhotheus*	Inhabit cold swift riffle reaches with rubble or gravel substrates	Narrow	January - April	Zooplankton and aquatic insects	Zooplankton, aquatic insects, benthic invertebrates, small fish, fish eggs
Walleye	*Sander vitreum*	Generally in moderately deep waters. Avoids bright light.	Large	March to May	Zooplankton, aquatic insects, fish	Fish (sculpin, perch, salmonids), zooplankton, aquatic insects
White sturgeon	*Acipenser transmontanus*	Bottom-dwelling in rough substrate	Large	Spring and early summer (Waneta Dam and Northport)	Insects, insect larvae, benthic invertebrates, snails	Insects, benthic invertebrates, fish, annelids, snails
Yellow bullhead	*Ictalurus natalis*	Shallow weedy parts of clear warm lakes	Narrow	Spring - early summer	Periphyton, plant material, aquatic insects, molluscs	Periphyton, plant material, aquatic insects, molluscs
Yellow perch	*Perca flavescens*	Associated with aquatic plants and shallow water in lakes	Narrow	Spring	Zooplankton and aquatic insects	Zooplankton, aquatic insects, and fish (sculpin)

Notes:
Information in this table compiled from Black et al. (2003); Lee et al. (2003), Fields et al. (2004), Scofield et al. (2004), Pavlik-Kunkel et al. (2005), Lee et al. (2006), and Wydowski and Whitney (2003).

Table A-8. Summary of the Percent Relative Abundance of Fish Species Collected via Boat Electrofishing in Lake Roosevelt, WA (1994-2004)

Species	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Black crappie	<1	<1	<1	0	<1	<1	1	1	<1	1	2
Bridgelip sucker	<1	<1	0	<1	<1	<1	0	<1	1	0	<1
Brown trout	<1	<1	2	<1	<1	2	<1	1	1	1	1
Bull trout	<1	<1	0	0	0	0	0	0	0	0	0
Burbot	<1	<1	3	4	2	3	3	1	1	1	1
Carp	1	2	<1	7	1	<1	0	0	0	0	1
Chinook salmon	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	0
Chiselmouth	0	0	0	0	0	0	0	<1	0	0	0
Cottidae spp. (Sculpin)	16	6	<1	2	6	0	<1	1	<1	2	1
Cutthroat trout	0	0	<1	0	0	0	0	0	0	0	0
Eastern brook trout	<1	<1	3	<1	<1	2	<1	2	1	1	<1
Kokanee salmon	4	22	13	1	8	11	4	16	6	25	3
Lake whitefish	<1	<1	2	<1	<1	1	<1	<1	<1	1	1
Largemouth bass	0	0	<1	<1	<1	0	1	1	0	0	<1
Largescale sucker	36	30	2	52	28	23	23	18	16	12	7
Longnose sucker	2	<1	0	<1	<1	1	2	1	2	<1	2
Mountain whitefish	<1	<1	<1	<1	<1	<1	<1	1	1	<1	<1
Northern pikeminnow	4	2	1	2	<1	<1	1	2	2	1	2
Peamouth	0	0	0	<1	<1	0	0	0	0	1	1
Pumpkinseed	2	0	0	<1	0	0	0	0	<1	0	0
Rainbow trout	7	5	14	5	12	21	20	22	22	14	14
Redside shiner	<1	<1	0	<1	0	0	1	<1	0	0	0
Smallmouth bass	8	10	9	9	6	7	9	7	10	14	23
Tench	<1	<1	<1	<1	<1	<1	<1	<1	<1	0	<1
Unidentified sucker	0	<1	0	0	0	0	0	<1	0	0	0
Walleye	7	11	48	12	34	25	30	20	31	21	22
White sturgeon	0	0	0	0	0	0	0	0	0	0	0
Yellow bullhead	<1	<1	0	0	0	0	<1	0	0	<1	0
Yellow perch	12	7	2	3	<1	<1	3	4	3	6	18

Notes:

Table re-created from Lee et al. (2006), Table 92.

Species abundunce measurements reflect the sampling gear that was used, therefore the values presented in this table may not accurately reflect the true species abundance in the UCR. However, the data provide a reasonable indication of the species that are common and likely to be caught using standard fish sampling gear.

Table B-1. Proposed Sample Sizes for the 2009 Fish Tissue Sampling

Species	Number of Composite Samples [a]					
	FSCA 1	FSCA 2	FSCA 3	FSCA 4	FSCA 5	FSCA 6
<15 cm Size Class						
Species-specific composites [b]	6 WB	6 WB	6 WB	6 WB	6 WB	6 WB
≥ 15 – ≤ 30 cm Size Class						
Species-specific composites [c]	6 WB	6 WB	6 WB	6 WB	6 WB	6 WB
>30 cm Size Class						
Walleye	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R
Smallmouth bass	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R
Burbot	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R
Largescale sucker	6F & 6R*	6F & 6R*	6F & 6R*	6F & 6R*	6F & 6R*	6F & 6R*
Lake Whitefish	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R
Rainbow trout	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R
Kokanee	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R	6F & 6R
Total=	96	96	96	96	96	96

Notes:

FSCA - Fish Sampling Collection Area

WB – Whole body

F – Fillet

R - Remaining tissue after filleting

* - Largescale suckers will have the gut contents removed prior to analysis of the remainder

[a] One well-homogenized composite sample for each tissue type from each species will be used to produce triplicate samples for quality assurance of the homogenization.

[b] At least one composite will be formed for each of the three general feeding guilds: benthic, invertivorous, and omnivorous fish.

[c] At least one composite will be formed for each of the three general feeding guilds: benthic, omnivorous, and piscivorous fish.

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
Conventional Parameters											
Total length	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total mass	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Percent moisture	n/a	n/a	n/a	n/a	n/a	0.1	n/a	0.1	n/a	n/a	n/a
Percent lipids	n/a	n/a	n/a	n/a	n/a	0.1	n/a	0.1	n/a	n/a	n/a
Metals/Metalloids (mg/kg-dry weight)											
Aluminum	3.2	n/a	n/a	11.5	2.3	2	0.4	**0.40**	71	2.40	4.4
Antimony	0.0013	n/a	n/a	n/a	n/a	0.05	0.02	**0.020**	8	0.10	0.03
Arsenic-Total	0.00048	20	4	5.1	1	0.025	0.005	**0.005**	97	0.05	0.0064
Arsenic-Inorganic (As^{+3})	0.00048	n/a	n/a	n/a	n/a	0.025	0.005	**0.005**	37	0.0008	0.00064
Arsenic-Inorganic (As^{+5})	0.00048	n/a	n/a	n/a	n/a	0.025	0.005	**0.005**	37	0.0008	0.00064
Arsenic-Inorganic (MMA)	0.00048	n/a	n/a	n/a	n/a	0.125	n/a	**0.125**	37	0.0008	0.00064
Arsenic-Inorganic (DMA)	0.00048	n/a	n/a	n/a	n/a	0.125	n/a	**0.125**	37	0.0008	0.00064
Barium	0.65	n/a	n/a	308	61.6	0.05	0.01	**0.010**	100	0.28	2.9
Beryllium	0.0065	n/a	n/a	n/a	n/a	0.020	0.004	**0.0040**	13	0.004	0.082
Bismuth	n/a	n/a	n/a	n/a	n/a	0.1	0.003	**0.0030**	n/a	n/a	n/a
Boron	0.65	n/a	n/a	66	13.2	1	0.2	**0.20**	n/a	n/a	n/a
Cadmium	0.0032	55	11	3.4	0.7	0.020	0.005	**0.005**	85	0.01	0.041
Calcium	n/a	n/a	n/a	n/a	n/a	10	TBD[h]	**10**	100	167	n/a
Cerium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Cesium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Chromium	4.9	9.4	1.9	6.1	1.2	0.2	0.07	**0.07**	100	0.24	0.18
Cobalt	0.065	n/a	n/a	17.4	3.5	0.020	0.002	**0.0020**	96	0.004	0.82
Copper	0.13	50	10	9.3	1.9	0.1	0.03	**0.03**	100	0.18	0.3
Dysprosium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Erbium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Europium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Fluoride	0.19	n/a	n/a	n/a	n/a	5	TBD[h]	**5**	n/a	n/a	n/a
Gadolinium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Gallium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Germanium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Gold	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Holmium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Indium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Iron	2.30	n/a	n/a	n/a	n/a	2	0.7	**0.070**	100	2.11	25
Lanthanum	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Lead	n/a	7040	1,408	3.7	0.75	0.020	0.005	**0.005**	89	0.01	0.06
Lithium	0.065	n/a	n/a	n/a	n/a	0.5	0.3	**0.300**	n/a	n/a	n/a
Lutetium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Magnesium	n/a	n/a	n/a	n/a	n/a	5	TBD[h]	**5**	100	129	n/a

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
Metals/Metalloids (mg/kg-dry weight) (continued)											
Manganese	0.45	n/a	n/a	306	61	0.05	0.02	**0.02**	100	0.11	5.8
Mercury	0.00024	n/a	n/a	0.01	0.002	0.001	0.0002	**0.00020**	100	0.04	0.004
Molybdenum	0.016	n/a	n/a	1.5	0.3	0.05	0.02	**0.020**	n/a	n/a	n/a
Neodymium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Nickel	0.065	n/a	n/a	10	2.0	0.2	0.025	**0.0**	96	0.03	0.39
Niobium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Potassium	n/a	n/a	n/a	n/a	n/a	100	TBD[h]	**100**	100	1578	n/a
Praseodymium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Rubidium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Samarium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Scandium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Selenium	0.016	n/a	n/a	0.7	0.1	0.1	0.02	**0.0**	100	0.21	0.21
Silver	0.016	3000	600	4.6	0.9	0.02	0.006	**0.01**	5	0.05	0.037
Sodium	n/a	n/a	n/a	n/a	n/a	20	TBD[h]	**20**	100	350	n/a
Strontium	1.90	n/a	n/a	n/a	n/a	0.1	0.02	**0.020**	n/a	n/a	n/a
Tantalum	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Tellurium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Terbium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Thallium	0.00023	n/a	n/a	n/a	n/a	0.02	0.002	**0.00**	4	0.05	0.003
Thorium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Thulium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Tin	n/a	n/a	n/a	n/a	n/a	0.1	0.3	**0.30**	n/a	n/a	n/a
Titanium	n/a	n/a	n/a	n/a	n/a	0.2	0.1	**0.10**	n/a	n/a	n/a
Tungsten	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Uranium	0.0097	n/a	n/a	18	3.7	0.02	0.002	**0.0020**	80	0.0006	0.008
Vanadium	0.0032	2.04	0.4	0.8	0.2	0.2	0.07	**0.070**	36	0.08	0.04
Ytterbium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Yttrium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Zinc	0.97	1900	380	151	30	0.5	0.08	**0.08**	100	5.19	12.4
Zirconium	n/a	n/a	n/a	n/a	n/a	0.05	TBD[h]	**0.05**	n/a	n/a	n/a
Dioxins/Furans (ng/kg-wet weight) [i]											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	0.00048	n/a	n/a	n/a	n/a	5	0.429	**5.0**	44	0.11	0.67
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.573	**5.0**	7	0.08	0.67
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.593	**5.0**	0	0.04	0.67
1,2,3,4,7,8-Hexachlorodibenzodioxin	0.00048	n/a	n/a	n/a	n/a	5	0.407	**5.0**	3	0.20	0.07
1,2,3,4,7,8-Hexachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.573	**5.0**	4	0.06	0.07
1,2,3,6,7,8-Hexachlorodibenzodioxin	0.00048	n/a	n/a	n/a	n/a	5	0.429	**5.0**	29	0.14	0.07
1,2,3,6,7,8-Hexachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.138	**5.0**	3	0.06	0.07
1,2,3,7,8,9-Hexachlorodibenzodioxin	0.00048	n/a	n/a	n/a	n/a	5	0.235	**5.0**	7	0.08	0.07

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
Dioxins/Furans (ng/kg-wet weight) [i] (continued)											
1,2,3,7,8,9-Hexachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.265	**5.0**	1	0.10	0.07
1,2,3,7,8-Pentachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.277	**5.0**	10	0.09	0.13
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.00048	n/a	n/a	n/a	n/a	5	0.319	**5.0**	13	0.13	0.01
2,3,4,6,7,8-Hexachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.313	**5.0**	2	0.06	0.07
2,3,4,7,8-Pentachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	5	0.261	**5.0**	9	0.13	0.01
2,3,7,8-Tetrachlorodibenzodioxin	0.00048	16.7 [j]	n/a	5.9	1.2	1	0.119	**1**	5	0.18	0.01
2,3,7,8-Tetrachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	1	0.113	**1**	93	0.36	0.01
Octachlorodibenzodioxin	0.00048	n/a	n/a	n/a	n/a	10	0.831	**10**	30	0.51	6
Octachlorodibenzofuran	0.00048	n/a	n/a	n/a	n/a	10	0.738	**10**	5	0.16	6
PCBs Congeners (ng/Kg-wet weight) [i, k]											
2-MoCB	n/a	n/a	n/a	n/a	n/a	80	8	**80**	n/a [n]	n/a [n]	60
3-MoCB	n/a	n/a	n/a	n/a	n/a	4	0.4	**4**	n/a [n]	n/a [n]	60
4-MoCB	n/a	n/a	n/a	n/a	n/a	80	9	**80**	n/a [n]	n/a [n]	60
2,2'-DiCB	n/a	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
2,3-DiCB	n/a	n/a	n/a	n/a	n/a	20	1	**20**	n/a [n]	n/a [n]	60
2,3'-DiCB	n/a	n/a	n/a	n/a	n/a	20	1	**20**	n/a [n]	n/a [n]	60
2,4-DiCB	n/a	n/a	n/a	n/a	n/a	20	2	**20**	n/a [n]	n/a [n]	60
2,4'-DiCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,5-DiCB	n/a	n/a	n/a	n/a	n/a	20	2	**20**	n/a [n]	n/a [n]	60
2,6-DiCB	n/a	n/a	n/a	n/a	n/a	20	2	**20**	n/a [n]	n/a [n]	60
3,3'-DiCB	n/a	n/a	n/a	n/a	n/a	400	10	**400**	n/a [n]	n/a [n]	60
3,4-DiCB+3,4'-DiCB	n/a	n/a	n/a	n/a	n/a	40	3	**40**	n/a [n]	n/a [n]	60
3,5-DiCB	n/a	n/a	n/a	n/a	n/a	40	3	**40**	n/a [n]	n/a [n]	60
4,4'-DiCB	n/a	n/a	n/a	n/a	n/a	200	18	**200**	n/a [n]	n/a [n]	60
2,2',3-TrCB	n/a	n/a	n/a	n/a	n/a	40	4	**40**	n/a [n]	n/a [n]	60
2,2',4-TrCB	n/a	n/a	n/a	n/a	n/a	80	9	**80**	n/a [n]	n/a [n]	60
2,2',5-TrCB+2,4,6-TrCB	n/a	n/a	n/a	n/a	n/a	200	20	**200**	n/a [n]	n/a [n]	60
2,2',6-TrCB	n/a	n/a	n/a	n/a	n/a	40	4	**40**	n/a [n]	n/a [n]	60
2,3,3'-TrCB+ 2,4,4'-TrCB	n/a	n/a	n/a	n/a	n/a	200	19	**200**	n/a [n]	n/a [n]	60
2,3,4-TrCB+2',3,4-TrCB	n/a	n/a	n/a	n/a	n/a	80	5	**80**	n/a [n]	n/a [n]	60
2,3,4'-TrCB	n/a	n/a	n/a	n/a	n/a	80	9	**80**	n/a [n]	n/a [n]	60
2,3,5-TrCB	n/a	n/a	n/a	n/a	n/a	80	5	**80**	n/a [n]	n/a [n]	60
2,3,6-TrCB	n/a	n/a	n/a	n/a	n/a	80	5	**80**	n/a [n]	n/a [n]	60
2,3',4-TrCB	n/a	n/a	n/a	n/a	n/a	80	5	**80**	n/a [n]	n/a [n]	60
2,3',5-TrCB+2,4,5-TrCB	n/a	n/a	n/a	n/a	n/a	80	8	**80**	n/a [n]	n/a [n]	60

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
PCBs Congeners (ng/Kg-wet weight) [i, k] (continued)											
2,3',6-TrCB	n/a	n/a	n/a	n/a	n/a	80	6	**80**	n/a [n]	n/a [n]	60
2,4',5-TrCB	n/a	n/a	n/a	n/a	n/a	200	15	**200**	n/a [n]	n/a [n]	60
2,4',6-TrCB	n/a	n/a	n/a	n/a	n/a	80	8	**80**	n/a [n]	n/a [n]	60
2',3,5-TrCB	n/a	n/a	n/a	n/a	n/a	80	7	**80**	n/a [n]	n/a [n]	60
3,3',4-TrCB	n/a	n/a	n/a	n/a	n/a	80	8	**80**	n/a [n]	n/a [n]	60
3,3',5-TrCB	n/a	n/a	n/a	n/a	n/a	80	8	**80**	n/a [n]	n/a [n]	60
3,4,4'-TrCB	n/a	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	60
3,4,5-TrCB	n/a	n/a	n/a	n/a	n/a	80	8	**80**	n/a [n]	n/a [n]	60
3,4',5-TrCB	n/a	n/a	n/a	n/a	n/a	80	9	**80**	n/a [n]	n/a [n]	60
2,2',3,4-TeCB+2,3',4',6-TeCB+2,2'.3,3'-TeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,4'-TeCB	n/a	n/a	n/a	n/a	n/a	80	6	**80**	n/a [n]	n/a [n]	60
2,2',3,5-TeCB+2,3',5',6-TeCB	n/a	n/a	n/a	n/a	n/a	200	9	**200**	n/a [n]	n/a [n]	60
2,2',3,5'-TeCB+2,2'3,4'-TeCB+2356-TeCB	n/a	n/a	n/a	n/a	n/a	200	19	**200**	n/a [n]	n/a [n]	60
2,2',3,6-TeCB+2,2'4,6'-TeCB	n/a	n/a	n/a	n/a	n/a	80	5	**80**	n/a [n]	n/a [n]	60
2,2',3,6'-TeCB	n/a	n/a	n/a	n/a	n/a	80	10	**80**	n/a [n]	n/a [n]	60
2,2',4,5-TeCB	n/a	n/a	n/a	n/a	n/a	80	8	**80**	n/a [n]	n/a [n]	60
2,2',4,5'-TeCB+2,3',4,6-TeCB	n/a	n/a	n/a	n/a	n/a	200	11	**200**	n/a [n]	n/a [n]	60
2,2',4,6-TeCB+2,2',5,6'-TeCB	n/a	n/a	n/a	n/a	n/a	80	6	**80**	n/a [n]	n/a [n]	60
2,2',5,5'-TeCB	n/a	n/a	n/a	n/a	n/a	200	19	**200**	n/a [n]	n/a [n]	60
2,2',6,6'-TeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,3,3',4-TeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,3,3',4'-TeCB	n/a	n/a	n/a	n/a	n/a	80	10	**80**	n/a [n]	n/a [n]	60
2,3,3',5-TeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,3,3',5'-TeCB	n/a	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	60
2,3,3',6-TeCB+2,3,4,6-TeCB+2,4,4',6-TeCB	n/a	n/a	n/a	n/a	n/a	80	6	**80**	n/a [n]	n/a [n]	60
2,3,4,4'-TeCB	n/a	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	60
2,3,4',5-TeCB	n/a	n/a	n/a	n/a	n/a	200	14	**200**	n/a [n]	n/a [n]	60
2,3,4',6-TeCB	n/a	n/a	n/a	n/a	n/a	80	7	**80**	n/a [n]	n/a [n]	60
2,3',4,4'-TeCB	n/a	n/a	n/a	n/a	n/a	200	16	**200**	n/a [n]	n/a [n]	60
2,3',4,5-TeCB	n/a	n/a	n/a	n/a	n/a	200	15	**200**	n/a [n]	n/a [n]	60
2,3',4,5'-TeCB	n/a	n/a	n/a	n/a	n/a	200	15	**200**	n/a [n]	n/a [n]	60
2,3',4',5-TeCB+2,3,4,5-TeCB+2,4,4',5-TeCB +2',3,4',5-TeCB	n/a	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
2,3',5,5'-TeCB	n/a	n/a	n/a	n/a	n/a	200	16	**200**	n/a [n]	n/a [n]	60

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
PCBs Congeners (ng/Kg-wet weight) [i, k] (continued)											
3,3',4,4'-TeCB	0.00048	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
3,3',4,5-TeCB	n/a	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
3,3',4,5'-TeCB	n/a	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
3,3',5,5'-TeCB	n/a	n/a	n/a	n/a	n/a	200	18	**200**	n/a [n]	n/a [n]	60
3,4,4',5-TeCB	0.00048	n/a	n/a	n/a	n/a	200	18	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4-PeCB	n/a	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	60
2,2',3,3',5-PeCB+2,2',4,4',5-PeCB	n/a	n/a	n/a	n/a	n/a	200	22	**200**	n/a [n]	n/a [n]	60
2,2',3,3',6-PeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,4,4'-PeCB+2,3,4,5,6-PeCB	n/a	n/a	n/a	n/a	n/a	80	10	**80**	n/a [n]	n/a [n]	60
2,2',3,4,5-PeCB+2,2',3,4,5'-PeCB +2,2',3',4,5-PeCB+2,3,3',4,5'-PeCB +2,3',4,4',6-PeCB+2',3,4,5,6'-PeCB	n/a	n/a	n/a	n/a	n/a	200	15	**200**	n/a [n]	n/a [n]	60
2,2',3,4,6-PeCB+2,2',3,4,6-PeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,4,6'-PeCB	n/a	n/a	n/a	n/a	n/a	200	19	**200**	n/a [n]	n/a [n]	60
2,2',3,4',5-PeCB+2,2',4,5,5'-PeCB +2,3,3',5',6-PeCB	n/a	n/a	n/a	n/a	n/a	400	24	**400**	n/a [n]	n/a [n]	60
2,2',3,5,5'-PeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,5,6-PeCB+2,2',4,4',6-PeCB	n/a	n/a	n/a	n/a	n/a	200	22	**200**	n/a [n]	n/a [n]	60
2,2',3,5,6'-PeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,5',6-PeCB	n/a	n/a	n/a	n/a	n/a	200	22	**200**	n/a [n]	n/a [n]	60
2,2',3,6,6'-PeCB	n/a	n/a	n/a	n/a	n/a	200	21	**200**	n/a [n]	n/a [n]	60
2,2',3',4,6-PeCB+2,2',4,5,6'-PeCB	n/a	n/a	n/a	n/a	n/a	200	22	**200**	n/a [n]	n/a [n]	60
2,2',4,5',6-PeCB	n/a	n/a	n/a	n/a	n/a	200	23	**200**	n/a [n]	n/a [n]	60
2,2',4,6,6'-PeCB	n/a	n/a	n/a	n/a	n/a	200	23	**200**	n/a [n]	n/a [n]	60
2,3,3'4,4'-PeCB	0.00048	n/a	n/a	n/a	n/a	80	11	**80**	n/a [n]	n/a [n]	60
2,3,3',4,5-PeCB	n/a	n/a	n/a	n/a	n/a	200	14	**200**	n/a [n]	n/a [n]	60
2,3,3',4',5-PeCB+2',3,4,5,5'-PeCB	n/a	n/a	n/a	n/a	n/a	400	27	**400**	n/a [n]	n/a [n]	60
2,3,3',4,6-PeCB	n/a	n/a	n/a	n/a	n/a	80	10	**80**	n/a [n]	n/a [n]	60
2,3,3',4',6-PeCB+2,3,4,4',6-PeCB	n/a	n/a	n/a	n/a	n/a	400	24	**400**	n/a [n]	n/a [n]	60
2,3,3',5,5'-PeCB	n/a	n/a	n/a	n/a	n/a	400	24	**400**	n/a [n]	n/a [n]	60
2,3,3',5,6-PeCB	n/a	n/a	n/a	n/a	n/a	400	25	**400**	n/a [n]	n/a [n]	60
2,3,4,4',5-PeCB	0.00048	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	13
2,3,4',5,6-PeCB	n/a	n/a	n/a	n/a	n/a	80	10	**80**	n/a [n]	n/a [n]	60
2,3',4,4',5-PeCB	0.00048	n/a	n/a	n/a	n/a	200	19	**200**	n/a [n]	n/a [n]	60
2,3',4,5,5'-PeCB	n/a	n/a	n/a	n/a	n/a	200	15	**200**	n/a [n]	n/a [n]	60

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
PCBs Congeners (ng/Kg-wet weight) [i, k] (continued)											
2,3',4,5,6-PeCB	n/a	n/a	n/a	n/a	n/a	200	21	**200**	n/a [n]	n/a [n]	60
2',3,3',4,5-PeCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2',3,4,4',5-PeCB	0.00048	n/a	n/a	n/a	n/a	200	15	**200**	n/a [n]	n/a [n]	60
3,3',4,4',5-PeCB	0.00048	n/a	n/a	n/a	n/a	200	14	**200**	n/a [n]	n/a [n]	0.067
3,3',4,5,5'-PeCB	n/a	n/a	n/a	n/a	n/a	400	28	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,4'-HxCB+2,3,4,4',5,6-HxCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,5-HxCB+2,2',3,4,4',5'-HxCB +2.3.3'4',5,6-HxCB	n/a	n/a	n/a	n/a	n/a	200	21	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,5'-HxCB	n/a	n/a	n/a	n/a	n/a	200	14	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,6-HxCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,6'-HxCB	n/a	n/a	n/a	n/a	n/a	200	12	**200**	n/a [n]	n/a [n]	60
2,2',3,3',5,5'-HxCB	n/a	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
2,2',3,3',5,6-HxCB	n/a	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	60
2,2',3,3',5,6'-HxCB+2,2',3,5,5',6-HxCB	n/a	n/a	n/a	n/a	n/a	200	11	**200**	n/a [n]	n/a [n]	60
2,2',3,3',6,6'-HxCB	n/a	n/a	n/a	n/a	n/a	80	9	**80**	n/a [n]	n/a [n]	60
2,2',3,4,4',5-HxCB	n/a	n/a	n/a	n/a	n/a	400	30	**400**	n/a [n]	n/a [n]	60
2,2',3,4,4',6-HxCB+2,2',3,4,4',6-HxCB	n/a	n/a	n/a	n/a	n/a	200	20	**200**	n/a [n]	n/a [n]	60
2,2',3,4,5,5'-HxCB	n/a	n/a	n/a	n/a	n/a	80	9	**80**	n/a [n]	n/a [n]	60
2,2',3,4,5,6-HxCB	n/a	n/a	n/a	n/a	n/a	400	31	**400**	n/a [n]	n/a [n]	60
2,2',3,4,5,6'-HxCB	n/a	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	60
2,2',3,4,5',6-HxCB	n/a	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
2,2',3,4,6,6'-HxCB	n/a	n/a	n/a	n/a	n/a	400	32	**400**	n/a [n]	n/a [n]	60
2,2',3,4',5,5'-HxCB	n/a	n/a	n/a	n/a	n/a	200	18	**200**	n/a [n]	n/a [n]	60
2,2',3,4',5,6-HxCB+2,2',3,4',5,6-HxCB	n/a	n/a	n/a	n/a	n/a	200	18	**200**	n/a [n]	n/a [n]	60
2,2',3,4',5,6'-HxCB	n/a	n/a	n/a	n/a	n/a	400	32	**400**	n/a [n]	n/a [n]	60
2,2',3,4',6,6'-HxCB	n/a	n/a	n/a	n/a	n/a	400	33	**400**	n/a [n]	n/a [n]	60
2,2',3,5,6,6'-HxCB	n/a	n/a	n/a	n/a	n/a	400	24	**400**	n/a [n]	n/a [n]	60
2,2',4,4',5,5'-HxCB+2,3',4,4',5',6-HxCB	n/a	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	60
2,2',4,4',5',6-HxCB	n/a	n/a	n/a	n/a	n/a	200	11	**200**	n/a [n]	n/a [n]	60
2,2',4,4',6,6'-HxCB	n/a	n/a	n/a	n/a	n/a	400	34	**400**	n/a [n]	n/a [n]	60
2,3,3',4,4',5-HxCB+2,3,3',4,4',5'-HxCB	0.00048	n/a	n/a	n/a	n/a	200	13	**200**	n/a [n]	n/a [n]	13
2,3,3',4,4',6-HxCB	n/a	n/a	n/a	n/a	n/a	80	10	**80**	n/a [n]	n/a [n]	60
2,3,3',4,5,5'-HxCB	n/a	n/a	n/a	n/a	n/a	400	35	**400**	n/a [n]	n/a [n]	60
2,3,3',4,5,6-HxCB	n/a	n/a	n/a	n/a	n/a	200	21	**200**	n/a [n]	n/a [n]	60

Table B-2. Target Analyte List and Analytical Concentration Goals

Analyte	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
PCBs Congeners (ng/Kg-wet weight) [i, k] (continued)											
2,3,3',4,5',6-HxCB	n/a	n/a	n/a	n/a	n/a	400	35	**400**	n/a [n]	n/a [n]	60
2,3,3',4',5,5'-HxCB	n/a	n/a	n/a	n/a	n/a	400	35	**400**	n/a [n]	n/a [n]	60
2,3,3',4',5',6-HxCB	n/a	n/a	n/a	n/a	n/a	400	14	**400**	n/a [n]	n/a [n]	60
2,3,3',5,5',6-HxCB	n/a	n/a	n/a	n/a	n/a	400	36	**400**	n/a [n]	n/a [n]	60
2,3',4,4',5,5'-HxCB	0.00048	n/a	n/a	n/a	n/a	200	11	**200**	n/a [n]	n/a [n]	60
3,3',4,4',5,5'-HxCB	0.00048	n/a	n/a	n/a	n/a	200	16	**200**	n/a [n]	n/a [n]	0.67
2,2',3,3',4,4',5-HpCB	n/a	n/a	n/a	n/a	n/a	200	16	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,4',6-HpCB+2,2',3,3',4,4',6-HpCB	n/a	n/a	n/a	n/a	n/a	400	37	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,5,5'-HpCB	n/a	n/a	n/a	n/a	n/a	400	38	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,5,6'-HpCB	n/a	n/a	n/a	n/a	n/a	200	19	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,5',6-HpCB	n/a	n/a	n/a	n/a	n/a	400	38	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,6,6'-HpCB	n/a	n/a	n/a	n/a	n/a	400	39	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4',5,6-HpCB	n/a	n/a	n/a	n/a	n/a	200	14	**200**	n/a [n]	n/a [n]	60
2,2',3,3',5,5',6-HpCB	n/a	n/a	n/a	n/a	n/a	200	22	**200**	n/a [n]	n/a [n]	60
2,2',3,3',5,6,6'-HpCB	n/a	n/a	n/a	n/a	n/a	200	23	**200**	n/a [n]	n/a [n]	60
2,2',3,4,4',5,5'-HpCB+2,3,3'4',5,5',6-HpCB	n/a	n/a	n/a	n/a	n/a	200	14	**200**	n/a [n]	n/a [n]	60
2,2',3,4,4',5,6-HpCB	n/a	n/a	n/a	n/a	n/a	400	40	**400**	n/a [n]	n/a [n]	60
2,2',3,4,4',5,6'-HpCB	n/a	n/a	n/a	n/a	n/a	400	40	**400**	n/a [n]	n/a [n]	60
2,2',3,4,4',5',6-HpCB	n/a	n/a	n/a	n/a	n/a	400	40	**400**	n/a [n]	n/a [n]	60
2,2',3,4,4',6,6'-HpCB	n/a	n/a	n/a	n/a	n/a	400	40	**400**	n/a [n]	n/a [n]	60
2,2',3,4,5,5',6-HpCB	n/a	n/a	n/a	n/a	n/a	400	40	**400**	n/a [n]	n/a [n]	60
2,2',3,4,5,6,6'-HpCB	n/a	n/a	n/a	n/a	n/a	400	41	**400**	n/a [n]	n/a [n]	60
2,2',3,4,5,5',6-HpCB	n/a	n/a	n/a	n/a	n/a	200	19	**200**	n/a [n]	n/a [n]	60
2,2',3,4',5,6,6'-HpCB	n/a	n/a	n/a	n/a	n/a	200	23	**200**	n/a [n]	n/a [n]	60
2,3,3',4,4',5,5'-HpCB	0.00048	n/a	n/a	n/a	n/a	200	18	**200**	n/a [n]	n/a [n]	60
2,3,3',4,4',5,6-HpCB	n/a	n/a	n/a	n/a	n/a	200	23	**200**	n/a [n]	n/a [n]	60
2,3,3',4,4',5',6-HpCB	n/a	n/a	n/a	n/a	n/a	400	42	**400**	n/a [n]	n/a [n]	60
2,3,3',4,5,5',6-HpCB	n/a	n/a	n/a	n/a	n/a	400	42	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,4',5,5'-OcCB	n/a	n/a	n/a	n/a	n/a	200	17	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,4',5,6-OcCB	n/a	n/a	n/a	n/a	n/a	400	43	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,4',5,6'-OcCB	n/a	n/a	n/a	n/a	n/a	400	43	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,4',6,6'-OcCB	n/a	n/a	n/a	n/a	n/a	400	25	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,5,5',6-OcCB+2,2',3,3',4,5,5',6'-OcCB	n/a	n/a	n/a	n/a	n/a	200	20	**200**	n/a [n]	n/a [n]	60
2,2',3,3',4,5,6,6'-OcCB	n/a	n/a	n/a	n/a	n/a	400	25	**400**	n/a [n]	n/a [n]	60

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
PCBs Congeners (ng/Kg-wet weight) [i, k] (continued)											
2,2',3,3',4,5',6,6'-OcCB	n/a	n/a	n/a	n/a	n/a	400	44	**400**	n/a [n]	n/a [n]	60
2,2',3,3',5,5',6,6'-OcCB	n/a	n/a	n/a	n/a	n/a	400	44	**400**	n/a [n]	n/a [n]	60
2,2',3,4,4',5,5',6-OcCB	n/a	n/a	n/a	n/a	n/a	400	44	**400**	n/a [n]	n/a [n]	60
2,2',3,4,4',5,6,6'-OcCB	n/a	n/a	n/a	n/a	n/a	400	45	**400**	n/a [n]	n/a [n]	60
2,3,3',4,4',5,5',6-OcCB	n/a	n/a	n/a	n/a	n/a	400	45	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,4',5,5',6-NoCB	n/a	n/a	n/a	n/a	n/a	400	45	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,4',5,6,6'-NoCB	n/a	n/a	n/a	n/a	n/a	400	45	**400**	n/a [n]	n/a [n]	60
2,2',3,3',4,5,5',6,6'-NoCB	n/a	n/a	n/a	n/a	n/a	400	46	**400**	n/a [n]	n/a [n]	60
DeCB	n/a	n/a	n/a	n/a	n/a	200	15	**200**	n/a [n]	n/a [n]	60
PAHs (µg/kg-wet weight)											
2-Methylnaphthalene	13	n/a	n/a	17641	3,528	1	0.44	**0.44**	n/a	n/a	n/a
Acenaphthene	190	n/a	n/a	n/a	n/a	0.5	0.11	**0.11**	n/a	n/a	n/a
Acenaphthylene	n/a	n/a	n/a	n/a	n/a	0.5	0.069	**0.069**	n/a	n/a	n/a
Anthracene	970	n/a	n/a	n/a	n/a	0.5	0.065	**0.065**	n/a	n/a	n/a
Benzo(a)anthracene	0.05	n/a	n/a	n/a	n/a	0.5	0.066	**0.066**	n/a	n/a	n/a
Benzo(a)pyrene	0.005	n/a	n/a	321	64	0.5	0.081	**0.081**	n/a	n/a	n/a
Benzo(b)fluoranthene	0.05	n/a	n/a	n/a	n/a	0.5	0.07	**0.07**	n/a	n/a	n/a
Benzo(ghi)perylene	n/a	n/a	n/a	n/a	n/a	0.5	0.073	**0.073**	n/a	n/a	n/a
Benzo(k)fluoranthene	0.5	n/a	n/a	n/a	n/a	0.5	0.056	**0.056**	n/a	n/a	n/a
Chrysene	5	n/a	n/a	n/a	n/a	0.5	0.076	**0.076**	n/a	n/a	n/a
Dibenzo(a,h)anthracene	0.005	n/a	n/a	n/a	n/a	0.5	0.059	**0.059**	n/a	n/a	n/a
Fluoranthene	130	n/a	n/a	n/a	n/a	0.5	0.09	**0.09**	n/a	n/a	n/a
Fluorene	130	n/a	n/a	n/a	n/a	0.5	0.15	**0.15**	n/a	n/a	n/a
Indeno[1,2,3-cd]pyrene	0.05	n/a	n/a	n/a	n/a	0.5	0.064	**0.064**	n/a	n/a	n/a
Naphthalene	65	n/a	n/a	n/a	n/a	1	0.4	**0.4**	n/a	n/a	n/a
Phenanthrene	n/a	n/a	n/a	n/a	n/a	0.5	0.36	**0.36**	n/a	n/a	n/a
Pyrene	97	n/a	n/a	n/a	n/a	0.5	0.098	**0.098**	n/a	n/a	n/a
Polybrominated Diphenylethers (PBDEs) (ng/kg-wet weight) [i, l]											
2,2',4-TriBDE (BDE-17)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,4,4'-TriBDE (BDE-28)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,2',4,4'-TetraBDE (BDE-47)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,2',4,5'-TetraBDE (BDE-49)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,3',4,4'-TetraBDE (BDE-66)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,3',4',6-TetraBDE (BDE-71)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,2',3,4,4'-PentaBDE (BDE-85)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,2',4,4',5-PentaBDE (BDE-99)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a
2,2',4,4',6-PentaBDE (BDE-100)	n/a	n/a	n/a	n/a	n/a	2	TBD [h]	**2**	n/a	n/a	n/a

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
Polybrominated Diphenylethers (PBDEs) (ng/kg-wet weight) [i,l] (continued)											
2,2',3,3',4,4'-HexaBDE (BDE-128)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,2',3,4,4',5'-HexaBDE (BDE-138)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,2',4,4',5,5'-HexaBDE (BDE-153)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,2',4,4',5,6'-HexaBDE (BDE-154)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,2',3,4,4',5',6-HeptaBDE (BDE-183)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,2',3,4,4',6,6'-HeptaBDE (BDE-184)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,3,3',4,4',5,6-HeptaBDE (BDE-190)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,3,3',4,4',5',6-HeptaBDE (BDE-191)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,2',3,4,4',5,5',6-OctaBDE (BDE-203)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
2,2',3,3',4,4',5,5',6-NonaBDE (BDE-206)	n/a	n/a	n/a	n/a	n/a	2	TBD[h]	**2**	n/a	n/a	n/a
Decabromodiphenyl ether (BDE-209)	n/a	n/a	n/a	n/a	n/a	20	TBD[h]	**20**	n/a	n/a	n/a
Pesticides (µg/kg-wet weight)											
2,4'-DDD	0.3	n/a	n/a	n/a	n/a	1	0.38	**0.38**	n/a	n/a	n/a
4,4'-DDD	0.3	n/a	n/a	n/a	n/a	1	0.11	**0.11**	n/a	n/a	n/a
2,4'-DDE	0.21	n/a	n/a	n/a	n/a	1	0.21	**0.21**	n/a	n/a	n/a
4,4'-DDE	0.21	n/a	n/a	n/a	n/a	1	0.16	**0.16**	n/a	n/a	n/a
2,4'-DDT	0.21	n/a	n/a	n/a	n/a	1	0.21	**0.21**	n/a	n/a	n/a
4,4'-DDT	0.21	n/a	n/a	n/a	n/a	1	0.43	**0.43**	n/a	n/a	n/a
Total DDT	n/a	608 [m]	n/a	520	104	1	n/a	**1**	n/a	n/a	n/a
Aldrin	0.0042	n/a	n/a	n/a	n/a	1	0.23	**0.23**	n/a	n/a	n/a
delta-BHC	n/a	n/a	n/a	n/a	n/a	1	0.16	**0.16**	n/a	n/a	n/a
alpha-Chlordane (cis-)	0.21	n/a	n/a	n/a	n/a	1	0.15	**0.15**	n/a	n/a	n/a
gamma-Chlordane (trans-)	0.21	n/a	n/a	n/a	n/a	1	0.26	**0.26**	n/a	n/a	n/a
cis-Nonachlor	n/a	n/a	n/a	n/a	n/a	1	0.19	**0.19**	n/a	n/a	n/a
trans-Nonachlor	n/a	n/a	n/a	n/a	n/a	1	0.14	**0.14**	n/a	n/a	n/a
Oxychlordane	n/a	n/a	n/a	n/a	n/a	1	0.19	**0.19**	n/a	n/a	n/a
Total Chlordane	n/a	n/a	n/a	4903	981	1	n/a	**1**	n/a	n/a	n/a
Dieldrin	0.0045	120	24	n/a	n/a	1	0.25	**0.25**	n/a	n/a	n/a
Endrin	0.97	1.2	0.24	n/a	n/a	1	0.22	**0.22**	n/a	n/a	n/a
Endrin aldehyde	n/a	n/a	n/a	n/a	n/a	1	0.25	**0.25**	n/a	n/a	n/a
Endrin ketone	n/a	n/a	n/a	n/a	n/a	1	0.28	**0.28**	n/a	n/a	n/a
Heptachlor	0.016	n/a	n/a	n/a	n/a	1	0.66	**0.66**	n/a	n/a	n/a
Heptachlor epoxide	0.0079	80	16	n/a	n/a	1	0.38	**0.38**	n/a	n/a	n/a
Hexachlorobenzene	0.045	468,000	93,600	n/a	n/a	1	0.31	**0.31**	n/a	n/a	n/a
Hexachlorobutadiene	0.93	n/a	n/a	n/a	n/a	1	0.13	**0.13**	n/a	n/a	n/a
Methoxychlor	16	n/a	n/a	n/a	n/a	1	1	**1**	n/a	n/a	n/a
Toxaphene	0.066	n/a	n/a	n/a	n/a	50	21	**21**	n/a	n/a	n/a

Table B-2. Target Analyte List and Analytical Concentration Goals

	Risk Based Concentrations (RBCs)					Laboratory			EPA 2005 Tissue Results		
Analyte	Human Health [a]	Fish [b]	Fish RBC/5	Piscivorous Wildlife [c]	Wildlife RBC/5	MRL [d]	MDL [d]	**2009 ACGs [e]**	FOD (%) [f]	Minimum Measured Concentration	2005 ACGs [g]
SVOCs (µg/kg-wet weight)											
1,1'-Biphenyl	160	n/a	n/a	n/a	n/a	0.5	0.17	**0.17**	n/a	n/a	n/a
1,2,4-Trichlorobenzene	32	n/a	n/a	n/a	n/a	40	4.2	**4.2**	n/a	n/a	n/a
4-Bromophenyl-phenylether	n/a	n/a	n/a	n/a	n/a	40	4.1	**4.1**	n/a	n/a	n/a
4-Chlorophenyl-phenyl ether	n/a	n/a	n/a	n/a	n/a	40	3.0	**3.0**	n/a	n/a	n/a
bis(2-Ethylhexyl)phthalate	5.2	n/a	n/a	2520	504	200	66	**66**	n/a	n/a	n/a
Butyl benzyl phthalate	650	n/a	n/a	n/a	n/a	40	7.3	**7.3**	n/a	n/a	n/a
Dibenzofuran	3.2	n/a	n/a	n/a	n/a	40	2.6	**2.6**	n/a	n/a	n/a
Di-n-butyl phthalate	320	n/a	n/a	252	50	100	100	**100**	n/a	n/a	n/a
Di-n-octylphthalate	n/a	n/a	n/a	n/a	n/a	40	11	**11**	n/a	n/a	n/a
Hexachlorocyclopentadiene	19	n/a	n/a	n/a	n/a	1000	330	**330**	n/a	n/a	n/a
Hexachloroethane	3.2	n/a	n/a	n/a	n/a	40	12	**12**	n/a	n/a	n/a
Pentachlorophenol	0.6	n/a	n/a	15419	3,084	5	0.4	**0.4**	n/a	n/a	n/a

Notes:

RBC - Risk-based concentration

ACG - Analytical Concentration Goals

n/a - Not available

MRL - Method reporting limit

TBD - To be determined

[a] Lowest Fish RBCs for Human Health provided by EPA, Region 10 (see Appendix E).

[b] Fish RBCs for metals are listed as dry weight no-observed-adverse-effects-concentrations in food of fish. For organics, concentrations are provided as wet weight concentrations in whole fish. Source: Windward (2004), except where noted

[c] Wildlife RBCs derived from the exposure factors and TRVs provided in the draft SLERA (TCAI 2008). Additional TRVs identified from Sample et al. (1996). Wildlife RBCs represent the lowest concentration for piscivorous wildlife (great blue heron, osprey, belted kingfisher, mink, and otter) using the following equation:

Wildlife RBC (mg/kg-ww) = (TRV x BW) / (FIR)

Where: TRV - Toxicity reference value (mg/kg-day)
BW - Body weight (kg)
FIR - Food ingestion rate (kg/d-wet)

[d] MRLs and MDLs obtained from Columbia Analytical Services (CAS). Metals MDLs/MRLs are on a dry weight basis, the rest are wet weight.

[e] ACGs represent the lowest RBC value for human health or 1/5th of the fish or wildlife RBCs. If the RBC is lower than the MRL, than the MRL will be used as the ACG. The lowest RBC or MRL is highlighted.

[f] Frequency of detection (FOD) for all tissue types and species collected in 2005 by EPA.

[g] 2005 ACGs represent the analytical goals of the 2005 EPA Phase 1 fish collection study, shown for informational purposes.

[h] The MDL for these analytes have not been completed at this time. The MRL may be adjusted based on the calculated MDL.

[i] These analytes will be reported to an estimated detection limit (EDL). The EDL is sample and analyte specific and is based on the signal and noise on the instrument.

[j] Concentration is for whole fish, and is considered protective of 95 percent of fish species (Steevens et al 2005). Converted from lipid to wet weight assuming 5 percent lipid.

[k] The values listed in the MDL column for the PCB Congener analytes represent the average of the EDLs for four method blanks and are not MDLs.

[l] Capability to analyze tissues for all of these BDE congeners is uncertain, and will depend on the selected laboratory.

[m] Jarvinen et al. (1977).

[n] See USEPA 2007a

Table B-3. Proposed Analyses for the 2009 Fish Tissue Sampling for all FSCAs

	Number of Composite Samples												
Species	TAL Metals/ Metalloids	All Metals/ Metalloids	Total Mercury Analysis on Individual Fillets [a]	Inorganic Arsenic [b]	Dioxins/Furans (17 congeners)	PCBs (209 Congeners), including 12 Dioxin-like congeners	PAHs	Chlorinated Pesticides	PBDEs	SVOCs	Total Length and Weight	% Lipids	% Moisture
<15 cm Size Class													
Whole body composites [c]	36	12	0	0	36	36	12	12	12	12	36	36	36
≥ 15 – ≤ 30 cm Size Class													
Whole body composites [d]	36	12	0	0	36	36	12	12	12	12	36	36	36
>30 cm Size Class													
Walleye													
(Fillet)	36	12	180	12	36	36	12	12	12	12	36	36	36
(Remainder)	36	12	0	0	36	36	12	12	12	12	36	36	36
Smallmouth Bass													
(Fillet)	36	12	180	12	36	36	12	12	12	12	36	36	36
(Remainder)	36	12	0	0	36	36	12	12	12	12	36	36	36
Burbot													
(Fillet)	36	12	0	36	36	36	12	12	12	12	36	36	36
(Remainder)	36	12	0	0	36	36	12	12	12	12	36	36	36
Largescale Sucker													
(Fillet)	36	12	0	12	36	36	12	12	12	12	36	36	36
(Remainder, w/out gut contents)	36	12	0	0	36	36	12	12	12	12	36	36	36
Lake Whitefish													
(Fillet)	36	12	0	12	36	36	12	12	12	12	36	36	36
(Remainder)	36	12	0	0	36	36	12	12	12	12	36	36	36
Rainbow Trout													
(Fillet)	36	12	0	12	36	36	12	12	12	12	36	36	36
(Remainder)	36	12	0	0	36	36	12	12	12	12	36	36	36
Kokanee													
(Fillet)	36	12	0	12	36	36	12	12	12	12	36	36	36
(Remainder)	36	12	0	0	36	36	12	12	12	12	36	36	36
Total =	576	192	360	108	576	576	192	192	192	192	576	576	576

Notes:

See Table A-2 for individual analytes included in each analysis.

PAHs - polycyclic aromatic hydrocarbons

PCBs - polychlorinated biphenyls

PBDEs - polybrominated diphenylethers

SVOCs - semivolatile organic compounds

TAL - Target analyte list for metals.

[a] Additional total mercury analyses will be done on individual fillets from any captured walleye or smallmouth bass >30 cm, even after sufficient number are collected for creating required composites

[b] Inorganic arsenic analysis is important for human health assessments, therefore speciation is limited to large-sized fish that are likely to be consumed by people.

[c] At least one composite will be formed for each of the three general feeding guilds: benthic, invertivorous, and omnivorous fish.

[d] At least one composite will be formed for each of the three general feeding guilds: benthic, omnivorous, and piscivorous fish.

Table B-4. Measurement Quality Objectives for Fish Tissue

Analysis	Bias[1] (percent)	Precision[2, 3] (RPD)	Completeness (percent)
Conventional parameters	75-125	±40	95
Metals	75-125	±40	95
Dioxins and furans	n/a	±40	95
PCB congeners	n/a	±40	95
PAHs	n/a	±40	95
PBDEs	n/a	±40	95
Pesticides	75-125	±40	95
SVOCs	75-125	±40	95

Notes:

PAH = polycyclic aromatic hydrocarbon

PBDE = polybrominated diphenyl ether

PCB = polychlorinated biphenyl

RPD = relative percent difference

SVOC = semivolatile organic compound

n/a = not applicable, matrix spike/matrix spike duplicate samples will not be collected for these analyses.

[1] The bias criteria applies to the matrix spike/matrix spike duplicate analyses. For laboratory control samples, the method or manufacturer specified criteria will be utilized.

[2] The precision criteria applies to the field duplicate results. For laboratory generated duplicates, the method specificed criteria will be utilized.

[3] The RPD criteria will be used if both results are greater than or equal to five-times the sample-specific MRL. If at least one result is less than five-times the sample-specific MRL, the criteria is that the difference between the results must be less than or equal to twice the higher sample-specific MRL.