

**Region 10
U.S. Environmental Protection
Agency**

DRAFT FINAL

**Phase I Sediment Sampling
Data Evaluation
Upper Columbia River Site
CERCLA RI/FS
Section 3 pages 66-75**

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SECTION 3

Data Evaluation Approach

Data Evaluation Approach

This section describes the general approach used for selecting and evaluating the analytical data presented in this document. Specifically, this section identifies the data sources that were considered and the sediment quality screening values that were used to select the COIs that were evaluated for presentation in this report. The data evaluated and presented in this report are limited to those used to assess the nature and extent and fate and transport components of the sediment CSM.

3.1 General Approach to Data Evaluation

The Phase I sediment data evaluation presented in this document was conducted according to the following general approach:

1. Identify COIs for sediment based on review of release information, historical information about the facilities, and industry-related chemical literature and comparison of analytical data to screening levels.
2. Update the preliminary conceptual site model for sediment, including the following elements:
 - Characterize the sources potentially associated with the release and transport of the sediment COIs to the site
 - Evaluate the hydraulic processes affecting the transport and deposition of the identified sediment COIs within the site
 - Describe the longitudinal, transverse, and vertical distributions of the identified COIs within the UCR sediments
 - Analyze the distribution of the sediment COIs in localized areas of interest, such as focus areas, beaches, and tributaries
 - Evaluate the potential for the sediment COIs and contaminated sediments to become mobile and contaminate other media or other portions of the site.

More detail is provided in Sections 4 and 5 regarding the specific methods used for each of these activities.

3.2 Data Sources

Numerous studies have been conducted over the years to assess various media and contaminants of interest at the UCR site dating back to the 1970s. The majority of these investigations focused on metals in bed sediment, suspended sediment, surface water, and fish tissue. A limited number of investigations were also conducted to assess dioxins/furans in suspended sediment, surface water, and fish tissue. PCBs were evaluated in two bed

sediment investigations and in one fish tissue investigation. Bioassay testing was conducted in three investigations. A thorough review of the data associated with these studies was conducted as part of planning for the RI. The quality and usability of the different data sets were classified with respect to DQOs developed for RI. For the most part, the data from the more recent studies were found to be of known quality, but incomplete analyte lists, elevated detection limits, and/or inadequate areal coverage limited full use of the data for RI/FS purposes. The results of the review were documented in *Assessment of the Quality and Usability of Analytical Electronic Data – Upper Columbia River Site RI/FS* (CH2M HILL, 2004c).

The Phase I sediment data were collected to provide a data set of known quality for the entire UCR, including banks, beaches, mid-channel areas, tributaries, and reference areas. The Phase I samples were analyzed for an extensive list of potential contaminants, and the analyses were conducted such that detection limits for the different contaminants were sufficiently low to compare to human and ecological screening values. As indicated in Section 2.5, the analytical data from the Phase I sampling were found to be usable for most RI purposes. Data quality issues associated with uranium and antimony analysis may limit quantitative uses of the results in detailed evaluations. However, the data for these metals are usable for COI identification, evaluation of general distribution and concentrations within the UCR, and assessment of risk posed by the sediment COIs to human and ecological receptors.

The Phase I analytical data were compared to historical data to determine whether the Phase I results were consistent with the concentration ranges and spatial trends reported in previous investigations. Figures 3-1 and 3-2 show the concentrations of zinc and mercury in samples collected along the length of the UCR during the different investigations conducted between 1992 and 2005. These two metals were selected for presentation because they have been included in a variety of investigations and because they exhibit the different types of spatial trends that have been previously reported. The 2005 Phase I RI samples are depicted by solid purple squares, and samples from the previous investigations are also indicated by different symbols. These plots show that the ranges and spatial trends exhibited by the historical data are generally encompassed by the 2005 Phase I data set.

Because of the known quality of the Phase I data and because the Phase I data generally encompass the ranges and spatial trends of the historical data, the evaluations presented in Sections 4 and 5 of this report rely solely on Phase I sediment data to draw conclusions about the list of COIs for sediment and about the distribution of COIs in UCR sediment. The introduction to each evaluation presented in Sections 4 and 5 indicates which data were considered in that particular evaluation and whether the data were grouped into different sets and subsets.

3.3 Screening Levels

The selection of COIs described in Section 4 is based on comparison of Phase I RI/FS sediment analytical results for target analytes to sets of published risk-based screening levels. It should be noted that the COI selection process did not involve an assessment of risk, site-specific or otherwise. Nor did the COI selection process entail consideration of the selected published sediment screening values as applicable or relevant and appropriate requirements (ARARs). Rather, the process constituted an initial screening of the large body

of sediment analytical data generated during the Phase I sediment sampling program in order to identify chemicals or locations of possible interest. Site-specific constituents of concern (COCs) for UCR sediments will be identified as part of the human health risk assessment being conducted by USEPA and an ecological risk assessment that will be conducted by Teck Cominco American, Inc.

The screening levels used in identifying COIs are published values comprising a subset of the potential regulatory values for UCR sediment presented in Table A-4 of the QAPP (CH2M HILL, 2005). The sources of the screening levels used are as follows:

- Human Health Criteria
 - EPA Region 9 Preliminary Remediation Goals (PRGs) (USEPA, 2004a)
 - CCT Sediment Cleanup Levels for Protection of Human Health (CTLOC Chapter 4-16, Appendix C). These are carbon-normalized levels; individual sample results must be adjusted to account for organic carbon content prior to comparison to these values.
 - STI Hazardous Substances Control Act (HSCA), Sediment Cleanup Levels Protective of Human Health (SLOC Resolution 2004-85, Appendix B)
- Ecological Criteria
 - Probable Effects Concentrations (PECs), developed as part of consensus-based sediment quality guidelines for freshwater ecosystems (MacDonald et al., 2000)
 - Threshold Effects Concentrations (TECs), developed as part of consensus-based sediment quality guidelines for freshwater ecosystems (MacDonald et al., 2000)

The screening levels for all of the Phase I sediment target analytes are listed in Table 3-1.

TABLE 3-1

Sediment Screening Levels Used for Phase I Data Evaluation

Upper Columbia River R/IFS

Method Type	Analyte	CAS Number	Units	Human Health Screening Levels			Ecological Screening Levels	
				PRG Soil Residential ^a	Spokane Tribe Human Health Value ^b	CCT Human Health Value ^c	TEC ^d	PEC ^e
CLP TAL TotMetals	Aluminum	7429905	mg/Kg	76142	40000	-	--	--
CLP TAL TotMetals	Antimony	7440360	mg/Kg	31	16	-	--	--
CLP TAL TotMetals	Arsenic	7440382	mg/Kg	0.39	0.117	-	9.79	33
CLP TAL TotMetals	Barium	7440393	mg/Kg	5375	2800	-	--	--
CLP TAL TotMetals	Beryllium	7440417	mg/Kg	154	80	-	--	--
CLP TAL TotMetals	Cadmium	7440439	mg/Kg	37	20	-	0.99	4.98
CLP TAL TotMetals	Calcium	7440702	mg/Kg	--	--	-	--	--
CLP TAL TotMetals	Chromium	7440473	mg/Kg	210 ^f	200	-	43.4	111
CLP TAL TotMetals	Cobalt	7440484	mg/Kg	903	2400	-	--	--
CLP TAL TotMetals	Copper	7440508	mg/Kg	3129	1490	-	31.6	149
CLP TAL TotMetals	Iron	7439896	mg/Kg	23463	--	-	--	--
CLP TAL TotMetals	Lead	7439921	mg/Kg	400	--	-	35.8	128
CLP TAL TotMetals	Magnesium	7439954	mg/Kg	--	--	-	--	--
CLP TAL TotMetals	Manganese	7439965	mg/Kg	1762	1870	-	--	--
CLP TAL TotMetals	Mercury	7439976	mg/Kg	23	12	-	0.18	1.06
CLP TAL TotMetals	Nickel	7440020	mg/Kg	1564	800	-	22.7	48.6
CLP TAL TotMetals	Potassium	7440097	mg/Kg	--	--	-	--	--
CLP TAL TotMetals	Selenium	7782492	mg/Kg	391	200	-	--	--
CLP TAL TotMetals	Silver	7440224	mg/Kg	391	200	-	--	--
CLP TAL TotMetals	Sodium	7440235	mg/Kg	--	--	-	--	--
CLP TAL TotMetals	Thallium	7440280	mg/Kg	5.2	--	-	--	--
CLP TAL TotMetals	Uranium	7440611	mg/Kg	16	8	-	--	--
CLP TAL TotMetals	Vanadium	7440622	mg/Kg	78	280	-	--	--
CLP TAL TotMetals	Zinc	7440666	mg/Kg	23463	12000	-	121	459
CLP TCL PAH	2-Methylnaphthalene	91576	µg/Kg	--	--	-	--	--
CLP TCL PAH	Acenaphthene	83329	µg/Kg	3680000	2400000	-	--	--
CLP TCL PAH	Acenaphthylene	208968	µg/Kg	--	--	-	--	--
CLP TCL PAH	Anthracene	120127	µg/Kg	21900000	12000000	-	57.2	845
CLP TCL PAH	Benzo(a)anthracene	56553	µg/Kg	621	240	21.6	108	1050
CLP TCL PAH	Benzo(a)pyrene	50328	µg/Kg	62	24	21.6	150	1450
CLP TCL PAH	Benzo(b)fluoranthene	205992	µg/Kg	621	240	21.6	--	--
CLP TCL PAH	Benzo(ghi)perylene	191242	µg/Kg	--	--	-	--	--
CLP TCL PAH	Benzo(k)fluoranthene	207089	µg/Kg	6215	2400	21.6	--	--
CLP TCL PAH	Chrysene	218019	µg/Kg	62146	24000	13.8	166	1290
CLP TCL PAH	Dibenzo(a,h)anthracene	53703	µg/Kg	62	24	21.6	33	--
CLP TCL PAH	Dibenzofuran	132649	µg/Kg	145263	160000	-	--	--
CLP TCL PAH	Fluoranthene	206440	µg/Kg	2290000	1600000	-	423	2230
CLP TCL PAH	Fluorene	86737	µg/Kg	2750000	1600000	-	77.4	536
CLP TCL PAH	Indeno[1,2,3-cd]pyrene	193395	µg/Kg	621	240	21.6	--	--
CLP TCL PAH	Naphthalene	91203	µg/Kg	55916	800000	-	176	561
CLP TCL PAH	Phenanthrene	85018	µg/Kg	--	--	-	204	1170
CLP TCL PAH	Pyrene	129000	µg/Kg	2320000	1200000	-	195	1520
CLP TCL PCBs	PCB-1016	12674112	µg/Kg	3933	2800	1.54	59.8	676

TABLE 3-1

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Upper Columbia River R/IFS

Method Type				Human Health Screening Levels			Ecological Screening Levels	
				PRG Soil Residential ^a	Spokane Tribe Human Health Value ^b	CCT Human Health Value ^c	TEC ^d	PEC ^e
Method Type	Analyte	CAS Number	Units					
CLP TCL PCBs	PCB-1221	11104282	µg/Kg	222	--	-	--	--
CLP TCL PCBs	PCB-1232	11141165	µg/Kg	222	--	-	--	--
CLP TCL PCBs	PCB-1242	53469219	µg/Kg	222	--	0.533	--	--
CLP TCL PCBs	PCB-1248	12672296	µg/Kg	222	--	0.533	--	--
CLP TCL PCBs	PCB-1254	11097691	µg/Kg	222	800	0.533	--	--
CLP TCL PCBs	PCB-1260	11096825	µg/Kg	222	--	0.533	59.8	676
CLP TCL PCBs	Total PCBs	Total PCB	µg/Kg			0.533		
CLP TCL Pesticides	2,4'-DDD	53190	µg/Kg	2437	--	-	--	--
CLP TCL Pesticides	2,4'-DDE	3424826	µg/Kg	1720	--	-	3.16	31.3
CLP TCL Pesticides	2,4'-DDT	789026	µg/Kg	1720	--	-	4.16	62.9
CLP TCL Pesticides	4,4'-DDD	72548	µg/Kg	2437	729	2.85	4.88	28
CLP TCL Pesticides	4,4'-DDE	72559	µg/Kg	1720	515	1.72	3.16	31.3
CLP TCL Pesticides	4,4'-DDT	50293	µg/Kg	1720	515	2.04	4.16	62.9
CLP TCL Pesticides	Aldrin	309002	µg/Kg	29	10.3	0.0408	--	--
CLP TCL Pesticides	alpha-BHC	319846	µg/Kg	90	27.8	-	--	--
CLP TCL Pesticides	alpha-Chlordane	5103719	µg/Kg	1624	--	-	3.24	17.6
CLP TCL Pesticides	beta-BHC	319857	µg/Kg	316	97.2	1	--	--
CLP TCL Pesticides	cis-Nonachlor	5103731	µg/Kg	--	--	-	--	--
CLP TCL Pesticides	delta-BHC	319868	µg/Kg	--	--	-	--	--
CLP TCL Pesticides	Dieldrin	60571	µg/Kg	30	10.9	0.0439	1.9	61.8
CLP TCL Pesticides	Endosulfan I	959988	µg/Kg	--	--	-	--	--
CLP TCL Pesticides	Endosulfan II	33213659	µg/Kg	--	--	-	--	--
CLP TCL Pesticides	Endosulfan sulfate	1031078	µg/Kg	--	--	-	--	--
CLP TCL Pesticides	Endrin	72208	µg/Kg	18331	12000	172	2.22	207
CLP TCL Pesticides	Endrin aldehyde	7421934	µg/Kg	--	--	-	--	--
CLP TCL Pesticides	Endrin ketone	53494705	µg/Kg	--	--	-	--	--
CLP TCL Pesticides	gamma-BHC (Lindane)	58899	µg/Kg	437	135	1.44	2.37	4.99
CLP TCL Pesticides	gamma-Chlordane	5566347	µg/Kg	1624	--	-	3.24	17.6
CLP TCL Pesticides	Heptachlor	76448	µg/Kg	108	38.9	0.408	--	--
CLP TCL Pesticides	Heptachlor epoxide	1024573	µg/Kg	53	19.2	0.204	--	--
CLP TCL Pesticides	Hexachlorobenzene	118741	µg/Kg	304	109	-	--	--
CLP TCL Pesticides	Hexachlorobutadiene	87683	µg/Kg	6236	2240	-	--	--
CLP TCL Pesticides	Methoxychlor	72435	µg/Kg	305515	200000	-	--	--
CLP TCL Pesticides	Oxychlordane	27304138	µg/Kg	1624	--	-	3.24	17.6
CLP TCL Pesticides	Toxaphene	8001352	µg/Kg	442	159	5.08	--	--
CLP TCL Pesticides	trans-Nonachlor	39765805	µg/Kg	--	--	-	--	--
CLP TCL SVOC	1,1'-Biphenyl	92524	µg/Kg	3010000	2000000	-	--	--
CLP TCL SVOC	1,2,4-Trichlorobenzene	120821	µg/Kg	62160	400000	-	--	--
CLP TCL SVOC	1,2-Dichlorobenzene	95501	µg/Kg	600000	3600000	-	--	--
CLP TCL SVOC	1,3-Dichlorobenzene	541731	µg/Kg	531349	1200000	-	--	--
CLP TCL SVOC	1,4-Dichlorobenzene	106467	µg/Kg	3447	7290	-	--	--
CLP TCL SVOC	2,2'-oxybis(1-chloropropane)	108601	µg/Kg	2884	2500	-	--	--
CLP TCL SVOC	2,4,5-Trichlorophenol	95954	µg/Kg	6110000	4000000	-	--	--

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Method Type	Analyte	CAS Number	Units	Human Health Screening Levels			Ecological Screening Levels	
				PRG Soil Residential ^a	Spokane Tribe Human Health Value ^b	CCT Human Health Value ^c	TEC ^d	PEC ^e
CLP TCL SVOC	2,4,6-Trichlorophenol	88062	µg/Kg	6110	15900	-	--	--
CLP TCL SVOC	2,4-Dichlorophenol	120832	µg/Kg	183309	120000	-	--	--
CLP TCL SVOC	2,4-Dimethylphenol	105679	µg/Kg	1220000	800000	-	--	--
CLP TCL SVOC	2,4-Dinitrophenol	51285	µg/Kg	122206	80000	-	--	--
CLP TCL SVOC	2,4-Dinitrotoluene	121142	µg/Kg	122206	80000	-	--	--
CLP TCL SVOC	2,6-Dinitrotoluene	606202	µg/Kg	61103	40000	-	--	--
CLP TCL SVOC	2-Chloronaphthalene	91587	µg/Kg	4940000	3200000	-	--	--
CLP TCL SVOC	2-Chlorophenol	95578	µg/Kg	63398	200000	-	--	--
CLP TCL SVOC	2-Methylphenol	95487	µg/Kg	3060000	2000000	-	--	--
CLP TCL SVOC	2-Nitroaniline	88744	µg/Kg	182772	2400	-	--	--
CLP TCL SVOC	2-Nitrophenol	88755	µg/Kg	--	--	-	--	--
CLP TCL SVOC	3,3'-Dichlorobenzidine	91941	µg/Kg	1081	389	-	--	--
CLP TCL SVOC	3-Nitroaniline	99092	µg/Kg	18331	--	-	--	--
CLP TCL SVOC	4,6-Dinitro-2-methylphenol	534521	µg/Kg	6110	--	-	--	--
CLP TCL SVOC	4-Bromophenyl-phenylether	101553	µg/Kg	--	--	-	--	--
CLP TCL SVOC	4-Chloro-3-methylphenol	59507	µg/Kg	--	--	-	--	--
CLP TCL SVOC	4-Chloroaniline	106478	µg/Kg	244412	160000	-	--	--
CLP TCL SVOC	4-Chlorophenyl-phenyl ether	7005723	µg/Kg	--	--	-	--	--
CLP TCL SVOC	4-Methylphenol	106445	µg/Kg	305515	200000	-	--	--
CLP TCL SVOC	4-Nitroaniline	100016	µg/Kg	23161	--	-	--	--
CLP TCL SVOC	4-Nitrophenol	100027	µg/Kg	--	2480000	-	--	--
CLP TCL SVOC	Acetophenone	98862	µg/Kg	--	4000000	-	--	--
CLP TCL SVOC	Atrazine	1912249	µg/Kg	2191	788	-	--	--
CLP TCL SVOC	Benzaldehyde	100527	µg/Kg	6110000	4000000	-	--	--
CLP TCL SVOC	Benzoic acid	65850	µg/Kg	100000000	160000000	-	--	--
CLP TCL SVOC	Benzyl alcohol	100516	µg/Kg	18300000	12000000	-	--	--
CLP TCL SVOC	bis(2-Chloroethoxy)methane	111911	µg/Kg	--	--	-	--	--
CLP TCL SVOC	Bis(2-chloroethyl)ether	111444	µg/Kg	218	159	-	--	--
CLP TCL SVOC	Bis(2-ethylhexyl)phthalate	117817	µg/Kg	34741	12500	-	--	--
CLP TCL SVOC	Butyl benzyl phthalate	85687	µg/Kg	12200000	8000000	-	--	--
CLP TCL SVOC	Caprolactam	105602	µg/Kg	30600000	20000000	-	--	--
CLP TCL SVOC	Carbazole	86748	µg/Kg	24319	8750	-	--	--
CLP TCL SVOC	Diethyl phthalate	84662	µg/Kg	48900000	32000000	-	--	--
CLP TCL SVOC	Dimethyl phthalate	131113	µg/Kg	100000000	400000000	-	--	--
CLP TCL SVOC	Di-n-butyl phthalate	84742	µg/Kg	6110000	4000000	-	--	--
CLP TCL SVOC	Di-n-octylphthalate	117840	µg/Kg	2440000	800000	-	--	--
CLP TCL SVOC	Hexachloroethane	67721	µg/Kg	34741	12500	-	--	--
CLP TCL SVOC	Isophorone	78591	µg/Kg	511979	184000	-	--	--
CLP TCL SVOC	Nitrobenzene	98953	µg/Kg	19641	20000	-	--	--
CLP TCL SVOC	N-Nitrosodi-n-propylamine	621647	µg/Kg	69	25	-	--	--
CLP TCL SVOC	N-Nitrosodiphenylamine	86306	µg/Kg	99261	35700	-	--	--
CLP TCL SVOC	Pentachlorophenol	87865	µg/Kg	2979	1460	-	--	--
CLP TCL SVOC	Perchlorocyclopentadiene	77474	µg/Kg	365487	280000	-	--	--

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Upper Columbia River RI/FS

Method Type				Human Health Screening Levels			Ecological Screening Levels	
				PRG Soil Residential ^a	Spokane Tribe Human Health Value ^b	CCT Human Health Value ^c	TEC ^d	PEC ^e
CLP TCL SVOC	Phenol	108952	µg/Kg	18300000	24000000	-	--	--
CLP TCL SVOC	Pyrene	129000	µg/Kg	2320000	1200000	-	195	1520
Dioxins and Furans	1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822469	PG/G	--	--	3760	--	--
Dioxins and Furans	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	PG/G	--	--	3760	--	--
Dioxins and Furans	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	PG/G	--	--	3760	--	--
Dioxins and Furans	1,2,3,4,7,8-Hexachlorodibenzodioxin	39227286	PG/G	--	--	14.4	--	--
Dioxins and Furans	1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	PG/G	--	--	14.4	--	--
Dioxins and Furans	1,2,3,6,7,8-Hexachlorodibenzodioxin	57653857	PG/G	--	--	14.4	--	--
Dioxins and Furans	1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	PG/G	--	--	14.4	--	--
Dioxins and Furans	1,2,3,7,8,9-Hexachlorodibenzodioxin	19408743	PG/G	--	28.2	14.4	--	--
Dioxins and Furans	1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	PG/G	--	--	14.4	--	--
Dioxins and Furans	1,2,3,7,8-Pentachlorodibenzofuran	57117416	PG/G	--	--	8.15	--	--
Dioxins and Furans	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	PG/G	--	--	2.88	--	--
Dioxins and Furans	2,3,4,6,7,8-Hexachlorodibenzofuran	60851345	PG/G	--	--	14.4	--	--
Dioxins and Furans	2,3,4,7,8-Pentachlorodibenzofuran	57117314	PG/G	--	--	0.972	--	--
Dioxins and Furans	2,3,7,8-Tetrachlorodibenzodioxin	1746016	PG/G	--	1.17	0.047	--	--
Dioxins and Furans	2,3,7,8-Tetrachlorodibenzofuran	51207319	PG/G	--	--	4.08	--	--
Dioxins and Furans	Heptachlorodibenzodioxin (Total)	37871004	PG/G	--	--	-	--	--
Dioxins and Furans	Heptachlorodibenzofuran (Total)	38998753	PG/G	--	--	-	--	--
Dioxins and Furans	Hexachlorodibenzodioxin (Total)	34465468	PG/G	--	--	-	--	--
Dioxins and Furans	Hexachlorodibenzofuran (Total)	55684941	PG/G	--	--	-	--	--
Dioxins and Furans	Octachlorodibenzodioxin	3268879	PG/G	--	--	3760	--	--
Dioxins and Furans	Octachlorodibenzofuran	39001020	PG/G	--	--	3760	--	--
Dioxins and Furans	Pentachlorodibenzodioxin (Total)	36088229	PG/G	--	--	-	--	--
Dioxins and Furans	Pentachlorodibenzofuran (Total)	30402154	PG/G	--	--	-	--	--
Dioxins and Furans	TEQ WHO-98	TEQ	PG/G	3.9	--	-	--	--
Dioxins and Furans	Tetrachlorodibenzodioxin (Total)	41903575	PG/G	--	--	-	--	--
Dioxins and Furans	Tetrachlorodibenzofuran (Total)	55722275	PG/G	--	--	-	--	--

^aUSEPA, 2004a.^bSLOC Resolution 2004-85, Appendix B. It should be noted that application of these values to assessment of risk is limited where multiple contaminants are present, multiple media are contaminated, or multiple pathways are affected. In addition, application of the values requires consideration of background concentrations and sediment particle size fractionated data.^cValues must be carbon-normalized for use as screening levels (see Section 4). Source: CTLOC Chapter 4-16, Appendix C.^dThreshold effects concentration (MacDonald et al., 2000), adopted by Colville Confederated Tribes and Spokane Tribe.^eProbable effects concentration (MacDonald et al., 2000).^fPRG value presented is for total chromium, based on assumption of 1:6 ratio of chromium (VI):chromium (III). Phase I sediment samples were not analyzed for chromium species; therefore, Phase I sediment results are compared only to the PRG value for total chromium.

CAS = Chemical Abstracts Service

CCT = Confederated Tribes of the Colville Reservation

PRG = Preliminary Remediation Goal

Figure 3-1

Consistency of 2005 Phase I Sediment Results with Previous Investigations Results - Detected Concentrations of Zinc by River Mile
Upper Columbia River RI/FS

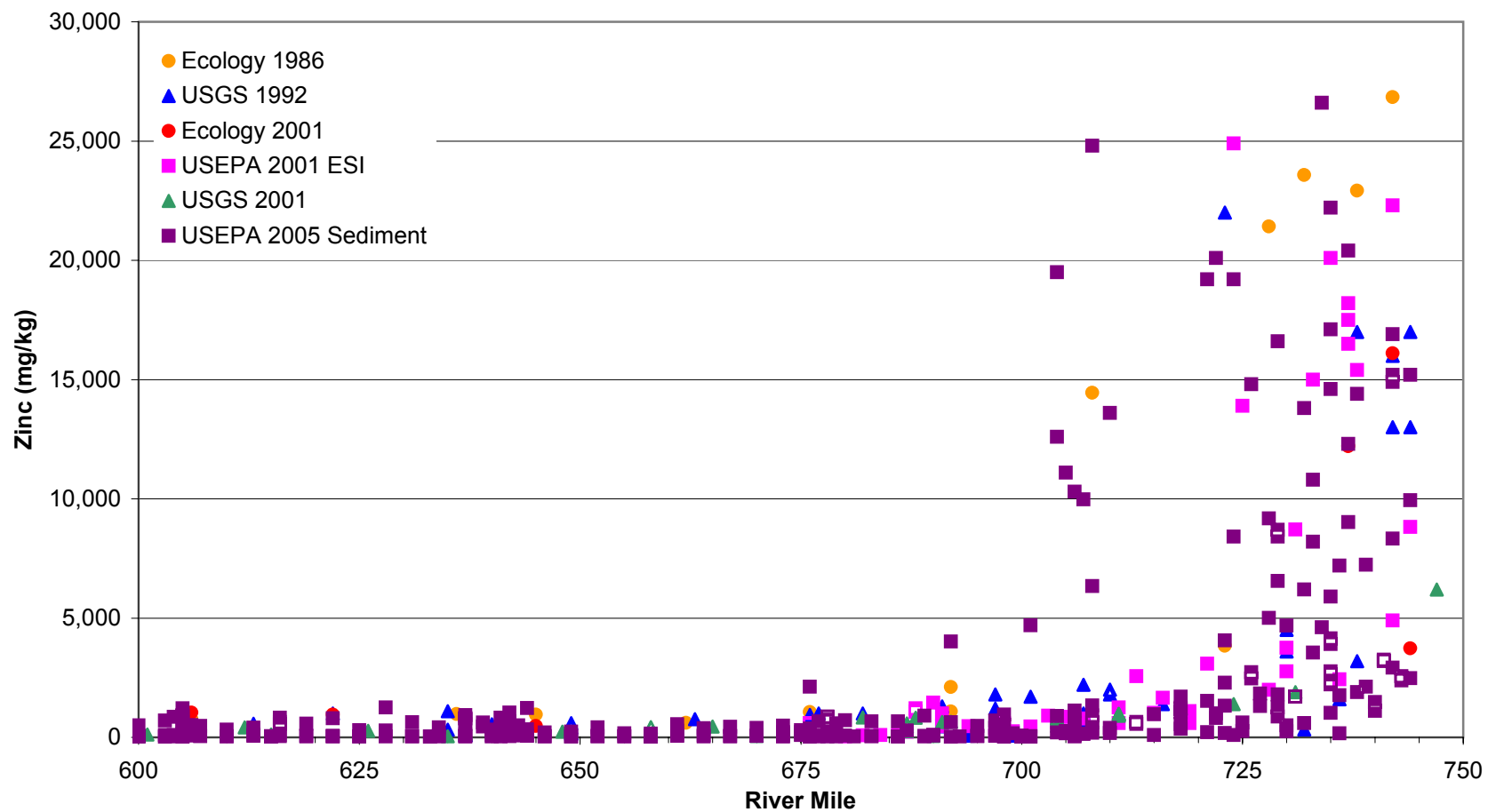


Figure 3-2

Consistency of 2005 Phase I Sediment Results with Previous Investigations Results - Detected Concentrations of Mercury by River Mile
Upper Columbia River RI/FS

