Table 2.0-1. List of LWG Field Sampling Events.

Study/Task Description	Task Round	Year	Reference: FSR or Equivalent	Reference: Data Report or SCSR	Data Use: RI	Data Use: BERA	Data Use: BHHRA
Physical Systems Investigations							
Sediment trend analysis (STA) survey	Pre-RI	2001	GeoSea Consulting 2001; SEA 2002a	NA	x		
Sediment profile imaging (SPI) survey	Pre-RI	2001	SEA 2002b	NA	x		
Multibeam bathymetric survey - Winter 2002	Pre-RI	2001-2002	DEA 2002a	NA	x		
Multibeam bathymetric survey - Summer 2002	1	2002	DEA 2003a	NA	x		
Multibeam bathymetric survey - May 2003	1	2003	SEA and DEA 2003; DEA 2003b	NA	x		
Multibeam bathymetric survey - February 2004	1	2004	Integral and DEA 2004; DEA 2004a	NA	x		
Multibeam bathymetric survey -February 2007	3A	2007	NA	Integral 2007h	x		
Multibeam bathymetric survey - January 2009	3	2009	DEA 2009	NA	x		
Nearshore deposition/erosion monitoring using sediment stakes	1	2002-2004	Anchor 2004a	NA			
Acoustic doppler current profiler (ADCP) survey - April 2002	Pre-RI	2002	DEA 2002b	Integral 2004a	x		
ADCP survey - May 2003	1	2003	DEA 2003c	Integral 2004a	x		
ADCP survey - January 2004	1	2004	DEA 2004b	Integral 2004a	x		
Hydrodynamic/sediment transport modeling	2	2005-2006	Integral 2006e	Integral et al. 2007	x		
Cultural resources analysis	2	2005	AINW 2005	NA	x		
Side-scan sonar	3	2008	NA	Anchor QEA 2009	x		
Sediment Investigations							
Composite beach sediment and collocated surface sediment	1	2002	SEA et al. 2003	Integral 2004a	x	x	x
Shorebird foraging area and beach sediment chemistry	2A	2004	Integral 2005a	Integral 2005s, 2006a, 2008a	x	x	x
Surface sediment chemistry	2A	2004	Integral 2005a	Integral 2005s, 2006a, 2008a	x	x	x
Subsurface sediment chemistry	2A	2004	Integral and Anchor 2005	Integral 2005s, 2006b, 2008a	x	x	x
Benthic sediment toxicity (bioassays)	2A	2004	Integral 2005a	Windward 2005a		x	x
Natural attenuation (radioisotope cores)	2A	2004	Anchor 2005a; Integral and Anchor 2005	Anchor 2005b	x		
Sediment cores	2B	2005	Integral 2005b	Integral 2006c, 2008a	x	x	x
Groundwater pathway collocated sediment grabs	2B	2005	Integral 2006f	Integral 2006g	x	x	x
Benthic invertebrate collocated sediment chemistry and bioaccumulation	2B	2005	Windward and Integral 2006	Integral and Windward 2006b	x	x	x
Upstream/downstream surface and subsurface sediment samples	3	2007	Integral 2007f	Integral 2007g	x	x	x
Natural attenuation (radioisotope subsurface sediment cores)	3A	2007	Integral 2007f	Integral 2007h	x		
Sediment (Willamette Cove)	3B	2007	NA	Integral 2008d	x	x	x
Biota - collocated sediments	3B	2007	Integral and Windward 2008	Integral 2008b,c	x	x	x
Sediment and sediment toxicity bioassay testing	3B	2007-2008	Integral 2008f	Integral 2008e, Windward 2008b	x	x	
Sediment chemical mobility testing	3B	2008	Anchor and Integral 2008c	Integral 2009	x		
Tissue Investigations							
Juvenile salmonid residence time survey	Pre-RI	2001	Ellis Ecological Services 2002	NA	x		
Juvenile salmonid mark/recapture pilot study	1	2002	SEA et al. 2003	Integral 2004b	x		
Aquatic plant and amphibian/reptile reconnaissance survey	1	2002	NA	Windward 2003a	x		

Table 2.0-1. List of LWG Field Sampling Events.

			Reference		Data Use		
Study/Task Description	**Task Round**	**Year**	**FSR or Equivalent**	**Data Report or SCSR**	**RI**	**BERA**	**BHHRA**
Adult lamprey harvest reconnaissance survey	1	2002	Kennedy/Jenks 2003	NA	x		
Juvenile lamprey and benthic infaunal biomass reconnaissance survey	1	2002	SEA and Windward 2003	NA	x		
Epibenthic invertebrate sampling using multiplates	1A	2002	Windward 2003b	Integral 2004a	x		
Collection of fish tissue for chemical analysis	1A	2002	SEA et al. 2003	Integral 2004a	x	x	x
Benthic infauna and clam sampling	1	2002	SEA et al. 2003	Integral 2004a	x	x	x
Sub-yearling Chinook tissue	2A	2005	Integral and Windward 2005a	Integral and Windward 2006a	x	x	
Multiplate epibenthic invertebrate tissue	2A	2005	Windward 2005b	Integral 2006h	x		
Benthic invertebrates and clam tissue	2	2005	Windward and Integral 2005a, Windward and Integral 2006	Integral and Windward 2006b	x	x	
Mussel and lamprey ammocoete tissue	2B	2005	Windward and Integral 2006	Windward and Integral 2007	x	x	
Lamprey ammocoete tissue	3	2006	Windward 2006a	Integral and Windward 2007a, Windward 2007a, 2008a	x	x	
Sturgeon tissue	3A	2007	Windward 2007b	Windward and Integral 2008	x	x	x
Fish and invertebrate tissue with collocated sediment	3B	2007	Integral and Windward 2008	Integral 2008b,c	x	x	x
Surface Water Investigations							
Surface water reconnaissance survey	2A	2004	Integral 2005c	NA	x		
Surface water event 1 - Fall 2004	2A	2004	Integral 2005c	Integral 2006d	x	x	x
Surface water event 1 - Fall 2004 (XAD column)	2A	2004	Integral 2005c	Integral 2006d	x	x	x
Surface water event 1 - Fall 2004 (XAD filter)	2A	2004	Integral 2005c	Integral 2006d	x	x	x
Surface water event 2 - Winter 2005	2A	2005	Integral 2005d	Integral 2006d	x	x	x
Surface water event 2 - Winter 2005 (XAD column)	2A	2005	Integral 2005d	Integral 2006d	x	x	x
Surface water event 2 - Winter 2005 (XAD filter)	2A	2005	Integral 2005d	Integral 2006d	x	x	x
Surface water event 3 - Summer 2005	2A	2005	Integral 2005e	Integral 2006d	x	x	x
Surface water event 3 - Summer 2005 (XAD column)	2A	2005	Integral 2005e	Integral 2006d	x	x	x
Surface water event 3 - Summer 2005 (XAD filter)	2A	2005	Integral 2005e	Integral 2006d	x	x	x
Surface water January 2006 - high flow event	3	2006	Integral 200k	Integral 2006l	x	x	x
Surface water January 2006 - high flow event (XAD column)	3	2006	Integral 200k	Integral 2006l	x	x	x
Surface water January 2006 - high flow event (XAD filter)	3	2006	Integral 200k	Integral 2006l	x	x	x
Surface water September 2006 - low flow event	3	2006	Integral 2006m	Integral 2007a	x	x	x
Surface water September 2006 - low flow event (XAD column)	3	2006	Integral 2006m	Integral 2007a	x	x	x
Surface water September 2006 - low flow event (XAD filter)	3	2006	Integral 2006m	Integral 2007a	x	x	x
Surface water November 2006 - stormwater event	3	2006	Integral 2007b	Integral 2007a	x	x	x
Surface water November 2006 - stormwater event (XAD column)	3	2006	Integral 2007b	Integral 2007a	x	x	x
Surface water November 2006 - stormwater event (XAD filter)	3	2006	Integral 2007b	Integral 2007a	x	x	x
Surface water Winter 2007 - high flow event	3	2007	Integral 2007c	Integral 2007d	x	x	x
Surface water Winter 2007 - high flow event (XAD column)	3	2007	Integral 2007c	Integral 2007d	x	x	x
Surface water Winter 2007 - high flow event (XAD filter)	3	2007	Integral 2007c	Integral 2007d	x	x	x
Groundwater Investigations							
Seep reconnaissance survey	1	2002	GSI 2003a	NA	x		
Groundwater pilot study – mapping tools and sampling methods	2A	2004-2005	NA	Integral 2005f (Appendix B)	x	x	x
Groundwater pathway assessment transition zone water	2A	2005	Integral 2006f	Integral 2006g	x	x	x
Groundwater - Gunderson site	3	2007	Integral 2007e	NA	x		
Stormwater Investigations							
Stormwater outfalls (March 2007 storm event)	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		

Table 2.0-1. List of LWG Field Sampling Events.

			Reference		Data Use		
Study/Task Description	**Task Round**	**Year**	**FSR or Equivalent**	**Data Report or SCSR**	**RI**	**BERA**	**BHHRA**
Stormwater outfalls (April 2007 storm event I)	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
Stormwater outfalls (April 2007 storm event II)	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
Stormwater outfalls (April 2007 storm event III)	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
Stormwater outfalls (May 2007 storm event I)	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
Stormwater outfalls (May 2007 storm event II) - grab samples	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
Stormwater outfalls (June 2007 storm event I) - grab samples	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
Stormwater outfalls (June 2007 storm event II)	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
Stormwater outfalls (November 2007 storm event)	3B	2007	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Stormwater outfalls (November 2007 storm event)	3B	2007	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Stormwater outfalls (November 2007 storm event)	3B	2007	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Stormwater outfalls (January 09, 2008 storm event)	3B	2008	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Stormwater outfalls (January 11, 2008 storm event)	3B	2008	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Stormwater outfalls (January 15, 2008 storm event)	3B	2008	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Stormwater outfalls (January 28, 2008 storm event)	3B	2008	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Stormwater outfalls (January 30, 2008 storm event)	3B	2008	Anchor and Integral 2008b; Ash Creek Associates/ Newfields 2008	Anchor and Integral 2008a	x		
Sediment Trap Investigations							
Stormwater outfalls - sediment traps	3A	2007	Anchor and Integral 2007a	Anchor and Integral 2008a	x		
In-river sediment trap event 1	3	2007	Anchor 2007a	Anchor and Integral 2008c	x		
In-river sediment trap event 2	3	2007	Anchor 2007b	Anchor and Integral 2008c	x		
In-river sediment trap event 3	3	2007	Anchor 2007c	Anchor and Integral 2008c	x		
In-river sediment trap event 4	3	2007	Anchor 2008a	Anchor and Integral 2008c	x		
Stormwater outfalls - sediment traps	3B	2007-2008	Anchor and Integral 2008b	Anchor and Integral 2008a	x		

Notes:

BERA - baseline ecological risk assessment
BHHRA - baseline human health risk assessment
FSR - field sampling report
LWG - Lower Willamette Group
NA - not applicable
RI - remedial investigation
SCSR - site characterization summary report

Table 2.0-2. Summary of Investigations Performed
by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
Sediments													
PGE Willamette River Sediment Investigation (RM 13.1-13.5) (URS 2010)	WLLGEC10	X			13-13.5	2010	38	0	182.9	Y (some)	N	N	Category 1 QA2
2009 Conoco Philips Pre-dredge Characterization (AMEC 2010a)	WLCPWL09	X			7.7	2009	14	0	350.5	Y (some)	N	N	Category 1 QA1
Sediment Characterization Report: Portland Ship Repair Yard (ERM-West 2009)	WLCPSK09	X			8-8.2	2009	14	0	382.2	Y	N	N	Category 1 QA2
RM 11E Focused Sediment Characterization – Bank Soil and Debris (GSI 2010a)	RM11E_BD	X			11.1-11.5	2009	22	0	25	N	N	N	Category 1 QA2
Arkema Draft Removal Action Area Characterization Report (Integral and Arcadis 2010)	C167-1103	X			7-7.4	2009	352	0	49.2	N	N	N	Category 1 QA2
Sediment Investigation Report Portland Gas Manufacturing Site (Anchor QEA 2009b)	WLLPGH09	X			12-12.3	2009	70	0	450	Y (some)	N	N	Category 1 QA2
RM11E sediment data (GSI 2009a)	RM11E	X	X		11-12	2009	199	0	436	N	N	N	Category 1 QA2
Willamette River FNC Post Office Bar Reach (RM2.2) Sediment Quality Evaluation (USACE 2009)	WLCPOB02	X			2.2-2.4	2009	12	0	182.9	N	Y (some)	Y (some)	Category 1 QA1; grainsize Category 2
T4 Abatement Phase 1 - Construction Phase 1 - Dredging and Capping (Anchor QEA 2009c)	WLCT4L08	X	X	X	4.6	2008	18	0	18.29	N	N	N	Category 1 QA2
2009 Interim Construction Report, Revetment SCM at BP Terminal 22T (URS 2009)	WLCARI08	X			4.8-4.9	2008	14	60.96	243.4	Y (some)	N	N	Category 1 QA1
Chevron Willbridge Terminal 2008/2009 Pre-Dredge Sed. Investigations (Arcadis 2009)	WLCCWI08	X			7.6-7.7	2008-2009	33	0	213.4	N	N	Y	Category 1 QA1
Northwest Pipe & Casing, International Terminals Slip Sed Data 2009 (CH2M Hill 2009)	WLCITG08	X			3.7	2008	24	0	259.1	Y (some)	N	N	Category 1 QA2
Downtown Portland Sediment Characterization Phase II Report (GSI and Hart Crowser 2010)	WLLASB10	X			12.1-15.1	2008-2010	59	0	370	N	N	N	Category 1 QA2
Downtown Portland Sediment Characterization Field and Data Report (GSI 2009b)	WLLASE08	X			12 - 16	2008	81 surface sediment, 36 subsurface	0	378	Y (some)	Y	N	Category 1 QA2
US Moorings, Portland, OR: RI 2008 Sediment Sampling (KTA/TEC 2010)	WLCMRD08	X			5.8-6.1	2008	56	0	609.6	N	N	N	Category 1 QA2
Memo: Zidell Sediment Data Qualifiers. Maul Foster Alongi, 5/2009 (MFA 2009)	WLCZDI07	X			13.5-14	2007	39	0	15	N	N	N	Category 1 QA1, grainsize Category 2
Sediment Data Report, Ash Grove Cement Company, Portland, OR (Parson Brinckerhoff 2005)	WLCACF05	X			2.8	2005	2	0	165	N	N	N	Category 1 QA1

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Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
Post-Dredge Char., Glacier Northwest Cement Term., Portland, OR (Anchor 2004b)	WLCGWI04	X			11.1-11.3	2004	4	0	10	Y	Y (some)	N	Category 1 QA1
USEPA's PBDE data in LWG Sediment Grab Samples	B01-01-48B_SG, B01-01-59B_UD, B01-01-67B_ColocSed, B01-01-68B_SG	X	X	X	1.2-23.2	2004-2007	100	0	30	N	N	N	Category 1 QA2
Dredge Characterization, Glacier Northwest Cement Term., Portland, OR (Anchor 2003)	WLCGWF03	X			11.2-11.3	2003	6	0	88.39	N	Y (some)	N	Category 1 QA1
Post-dredge sampling of Willamette River bottom at CLD Pacific Grain[a] (CLD 2002)	WLCPGH02	X			11.5	2002	1	0	30.48	Y (some)	Y (some)	N	Category 1 QA1
Pre-Dredge Sediment Sampling Goldendale Aluminum Company, Portland, OR (CH2M Hill 1999)	WLCGAB99	X			10.1	1999	2	0	10	N	Y	Y	Category 1 QA1
Gasco EE/CA (Anchor 2006d)	WLCGSG04	X	X		6.5	2005	16 subsurface sediment	0	610	N	N	Y - RAA-02-20	Category 1 QA2
2005 Portland District O&M Sediment Characterization (Tetra Tech 2006)	WLCDRD05	X	X	X	2 - 11.7	2005	82 surface, 72 subsurface	0	421	N	N	Y - WR-PG-50, WR-VC-50	Category 1 QA2
ExxonMobil Beach Sediment Sheen Samples (Kleinfelder 2004a)	WLCEMH04	X			5.16	2003-2004	4 surface sediment	0	15	N	N	N	Category 1 QA1
Terminal 4 Early Action EE/CA Report (BB&L 2005)	WLCT4C04	X	X	X	4.5	2003-2004	5 sediment trap, 43 subsurface sediment	0	671	Y	N	N	Category 1 QA2
Corps Dredged Material O&M Characterization (Hart Crowser 2004)	WLCDRI03	X	X		3, 8-10, 15, 23	2003	19 subsurface composites, 2 surface reference	0	305	Y	N	N	Category 1 QA2
Gunderson Area 2 Sandy Beach (Kleinfelder 2004b)	WLCGNG03	X			9	2003	4 surface sediment	0	15	N	N	N	Category 1 QA1
International Terminal Sediment Data Report (Floyd Snider McCarthy 2003)	WLCITC03	X			4, 5	2003	20 subsurface sediment	0	518	N	Y	N	Category 1 QA1
ATOFINA Phase 2 Stage 1/2 In-River Investigation (Integral 2003)	WLCEAF02	X	X		8	2002-2003	211 subsurface sediment	0	1,305	N	N	N	Category 1 QA2
City Outfall Source Control Investigation (CH2M Hill 2004)	WLCOFJ02	X	X	X	5-10	2002	84 surface sediment	0	15	N	N	Y - Station 4	Category 1 QA2

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
Surface Water, Sediment, and Groundwater Sampling Report (Ecology & Environment 2003)	WLCMBI02	X			7, 8	2002	41 water grabs, 19 water SPMD, 11 subsurface sediment	30	35	N	N	Y - 14 samples	Category 1 QA2, petroleum Category 2
US Moorings RI Sediment Investigation (URS 2003)	WLCMRI02	X	X	X	6, 7	2002	2 surface, 3 subsurface sediment	0	90	Y	N	N	Category 1 QA2
City Outfall Pilot Project (CH2M Hill 2002)	WLCOFH02	X	X	X	9	2002	18 surface sediment	0	15	N	N	N	Category 1 QA2
MarCom Expanded Preliminary Assessment (Parametrix 2002)	WLCMCB02	X			6	2002	3 surface sediment	0	15	N	N	N	Category 1 QA1
GATX Linnton Terminal RI (KHM 2002a)	WLCGXB02	X			5	2002	2 surface sediment	0	15	N	N	N	Category 1 QA1
T4 Slip 3, Berth 410 Dredge Material (Hart Crowser 2002a)	WLCT4L01	X			5	2001	9 subsurface sediment	43	213	Y	Y	N	Category 1 QA1
Willamette Reference Area Phase 2 (Hart Crowser 2002b)	WLLRSI01	X			16, 19, 23, 24	2001	8 surface sediment	0	30	N	N	N	Category 1 QA1
Willamette Reference Area Phase 1 (Hart Crowser 2001a)	WLLRSH01	X			16, 17, 18, 19, 24	2001	9 surface sediment	0	10	N	N	N	Category 1 QA1, grain size Category 2
Cargill Irving Elevator Permit Applications (Harding ESE 2001)	WLCCIF01	X			12	2001	5 subsurface, 1 subsurface pore water	0	109	Y - 1 sample	Y	N	Category 1 QA1
T2/T5 2001 Dredge Characterization Study (Hart Crowser 2001b)	WLCT0F01	X			2, 10	2001	4 subsurface pore water, 7 subsurface sediment	0	240	Y	Y	N	Category 1 QA1
Chevron Dredging Permit Application (PNG 2001)	WLCCPF01	X			8	2001	15 subsurface sediment	30	244	N	Y	N	Category 1 QA1
Gasco Source Control Evaluation (Anchor 2001)	WLCGSD01	X	X	X	7	2001	18 subsurface sediment, 9 surface sediment	0	40	N	Y	Y - AN-2-1 to 2-4	Category 1 QA2

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
McCormick & Baxter RI Phase 4 (Ecology & Environment 2001)	WLCMBA01	X			8	2001	32 subsurface sediment, 1 upriver reference surface sediment	0	38	N	N	Y - 13 samples	Category 1 QA1
Goldendale Aluminum Phase 2 (CH2M Hill 2001a)	WLCGAL00	X			11	2000	4 surface sediment	0	30	N	N	N	Category 1 QA1
Oregon Steel Mills Pre-Remedial Investigation Field Activities Data Report (Exponent 2001)	WLCOSJ00	X			2, 3	2000	1 subsurface sediment, 15 surface sediment	0	60	N	N	N	Category 1 QA1
Willbridge 60-in Outfall (KHM 2002b)	WLCWTI00	X			8	2000	13 subsurface sediment	61	229	N	N	N	Category 1 QA1
UPRR Albina Yard Expanded Preliminary Assessment Data Report (Jacobs Engineering 2000a)	WLCAYH00	X			11, 12	2000	3 subsurface sediment, 6 surface sediment	0	69	N	N	N	Category 1 QA1
Marine Finance Expanded Preliminary Assessment Data Report (Jacobs Engineering 2000b)	WLCMFH00	X			6	2000	3 subsurface sediment, 6 surface sediment	0	66	N	N	N	Category 1 QA1
T1 South Sediment Study (SEA 2000)	WLCT1F00	X			11, 12	2000	9 surface pore water, 9 surface sediment	0	10	N	N	N	Category 1 QA1
Goldendale Aluminum Phase 1 (CH2M Hill 2001b)	WLCGAF00	X			11	2000	5 surface sediment, 1 reference surface sediment	0	30	N	Y	N	Category 1 QA1
Ross Island Phase I (Port) (Hart Crowser 2000a)	WLCRIL99	X			15, 16	1999-2000	6 subsurface pore water, 20 subsurface sediment, 38 surface pore water, 41 surface sediment, 4 surface reference sediment	0	1,798	Y - 1 sample	N	N	Category 1 QA1

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
Willamette November Sediment Quality Evaluation (USACE 2000)	WLR1199	X			9, 10, 12	1999	9 subsurface sediment, 7 subsurface pore water, 1 surface sediment	0	386	N	N	N	Category 1 QA1, metals & conventionals Category 2
T5 1999 Berths 501-503 Sediment Characterization Study (Hart Crowser 1999a)	WLCT5K99	X			1, 2	1999	5 subsurface sediment, 5 subsurface pore water	0	182	Y - 2 samples	Y	N	Category 1 QA1, grain size Category 2
Ross Island Lagoon Baseline (Landau 2000a)	WLCRIJ99	X			16	1999	4 surface pore water, 12 surface sediment	0	10	Y - 1 sample	N	N	Category 1 QA1
Ross Island Phase 1 (Ross Island Sand & Gravel) (Landau 2000b)	WLCRIV99	X			15, 16	1999	4 surface sediment, 41 subsurface sediment	0	79	N	N	N	Category 1 QA2
GATX Linnton Terminal ESA (KHM 1999)	WLCGXV99	X			5	1999	4 surface sediment, 4 subsurface sediment	0	40	N	N	N	Category 1 QA1
McCormick & Baxter RI Phase 3 (Ecology & Environment 2001)	WLCMBJ99	X	X	X	8	1999	44 site and 4 upriver reference surface sediment	0	15	N	N	Y - 30 samples	Category 1 QA2
Willamette April Sediment Quality Evaluation (USACE 1999a)	WLR0499	X			3, 9, 10	1999	11 subsurface sediment, 3 pore water	0	366	N	N	N	Category 1 QA1, metals & conventionals Category 2

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Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
Portland Harbor Sediment Investigation (Weston 1998)	WR-WSI98	X	X	X	4 - 10	1997-1999	158 surface sediment, 28 surface pore water, 39 subsurface sediment	0	90	Y - 12 samples	Y - SD029, SD032	Y - SD76, 79, 82, 64, 65	Category 1 QA2
TOSCO 1999 Sediment Sampling Results (Exponent 1999a)	TOSCO99	X	X		8	1999	4 subsurface sediment, 1 surface reference	0	304	Y	N	N	Category 1 QA2
Elf Atochem 1999 Willamette River (Exponent 1999b)	WLRELF99	X			8	1998-1999	15 subsurface sediment, 13 surface sediment	0	90	N	N	N	Category 1 QA1
Willbridge Terminal Facility RI (KHM 2000)	WLRWTF98	X			8	1998	15 surface sediment	0	12.7	N	N	N	Category 1 QA1
T2/T4 Sediment Study (Hart Crowser 1999b)	PPTLDT24	X			6, 10	1998	3 subsurface pore water, 3 subsurface sediment	0	91	Y	Y	N	Category 1 QA1, grain size Category 2
Port of Portland T4 RI (Hart Crowser 2000b)	WLCT4J98	X			5	1998	18 subsurface sediment, 44 surface sediment, 2 surface reference sediment	0	128	N	N	N	Category 1 QA1
Sediment Characterization Local Sponsors' Berths (conducted with Corps) (Hart Crowser 1999c)	WLCT0I98	X			2, 5-8, 10-12	1998	7 subsurface pore water, 7 subsurface sediment, 12 surface pore water, 12 surface sediment	0	152	Y - 6 subsurface	N	N	Category 1 QA1
International Terminals Sediment Sampling Event (Schnitzer Steel Industries 1998)	WLCITH98	X			4	1998	5 surface sediment	0	15	N	N	N	Category 1 QA1

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
Portland Shipyard Sediment Investigation (SEA 1998)	PSYSEA98	X	X	X	8, 9, 10, 11	1998	65 subsurface sediment, 60 surface sediment, 61 surface pore water, 3 surface reference	0	490	N	N	N	Category 1 QA2, conventionals QA1
Portland Shipyard Environmental Audit (Dames & Moore 1998)	PSYD&M97	X	X	X	9	1997-1998	4 subsurface sediment, 8 surface	0	304	N	N	N	Category 1 QA2
Willamette River 1998 Data (Dames & Moore 1998)	WRD&M98	X	X	X	7, 8, 9, 10, 11	1998	12 surface sediment	0	10	N	N	N	Category 1 QA2
T4 Berth 416 1997 Sediment Characterization Study (Hart Crowser 1998)	WLCT4J97	X			5, 6	1997	4 subsurface sediment, 4 subsurface pore water	0	182	Y - 1 sample	Y	N	Category 1 QA1
Baseline Sediment Riedel (MFA 1997)	RIEDEL97	X			8	1997	19 subsurface sediment, 8 surface sediment	0	460	N	N	N	Category 1 QA1
CRCD - Willamette River Channel Deepening (USACE 1999b)	WLR0797	X			1-9, 11, 12	1997	18 surface sediment, 17 surface pore water, 50 subsurface sediment, 1 subsurface pore water	0	690	Y- 3 samples	Y - WRGC30, WRGC31	N	Category 1 QA1, grain size & conventionals Category 2
PAH in surface sediments (Battelle 2002)	WLCASF97	X	X	X	5, 6, 7, 8, 9	1997	37 surface sediment	0	10	N	N	Y - Sta 1	Category 1 QA2
T4 Berths 410,411 Maintenance Dredging (Hart Crowser 1997)	WLCT4E97	X			5	1997	3 subsurface sediment	0	152	N	Y	N	Category 1 QA1

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
BP Bulk Terminal 22T Supplemental Sediment and Revetment Investigation (URS 2007)	WLCBPE06	X			4.8 - 4.9	2003-2006	48 surface sediment, 66 subsuface sediment	0	1,036	N	Y	N	Mixture of Category 1 QA1 and Category 2
Gasco Phase 2 Offshore Investigation (Anchor 2008d)	WLCGSG07	X			6.1 - 6.4	2007	24 suburface sediment	0	457	N	N	N	Category 1 QA1
Gasco Phase 1 Offshore Investigation (Anchor 2007d)	WLCGSJ06	X			6.1 - 6.5	2006-2007	186 suburface sediment	0	582	N	N	N	Category 1 QA1
Sulzer Pump, 16 riparian samples (GeoDesign 2004)	WLCSPL03	X			10.2 - 10.3	2003	16 surface sediment	0	15	N	N	N	Category 1 NA
T4 Anchor Appendix G sediment data (Anchor 2008e)	WLCT4G06	X			4.4 - 4.7	2006-2007	76 surface sediment, 68 subsurface sediment	0	305	N	Y - 17 samples	N	Category 1 QA1
Willbridge Terminal 2002 Post-Dredging Sediment Characterization (PNG and Anchor 2002)	WLCWTG02	X			7.6 - 7.7	2002	17 surface sediment	0	15	N	N	N	Category 1 QA1
Zidell Waterfront Property RI: Riverbank Characterization (MFA 2004)	WLCZDH04	X			13.5 - 14	2004	50 surface sediment	0	15	N	N	N	Category 1 QA1
Zidell Waterfront Property RI (MFA 2003)	WLCZDI00	X			13.4 - 14.1	1997-2003	46 surface sediment, 46 suburface sediment, 19 surface pore water	0	320	N	N	N	Category 1 QA1
Blue Heron & West Linn (Ecology & Environment 2007)	WLFLH07	X			21.5 - 28.5	2007	19 surface sediment	0	10	N	N	N	Category 1 QA2
Biota													
USEPAs PBDEs in Osprey Eggs (USGS 2009)	WLRASE08	X	X		3-77.3	2008	15	--	--	Y	N	N	Category 1 QA2, PBDEs Category 2
USEPA PBDE in LWG R3 Fish Tissue	LWG03	X	X		1-12.1	2007	121	--	--	Y	N	N	Category 1 QA2

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
ATSDR/EPA/ODHS Fish Contaminant Study (ODHS, USEPA and ASTDR 2003)	WLTASE03	X	X		lamprey - RM26, sturgeon - RM3.5-9.2, chinook - Clackamas Hatchery	2003	4 lamprey, up to 6 chinook fillet - skin on, up to 5 chinook whole body, up to 6 sturgeon fillet - skin off	--	--	Y - lamprey	--	--	Category 1 QA2
Surface Water													
Gasco Phase 2 Offshore Investigation (Anchor 2008d)	WLCGSG07	X			5.9-6.7	2007	360 (180 unfiltered; 180 filtered) surface water samples	Near-surface, mid-depth, near-bottom	--	N	--	--	Category 1 QA1
Siltronic Supplemental In-River (SIR) transition zone water (MFA 2005b)	WLCSLH01	X			6.4-6.5	2005	22 surface water samples	1 ft above mudline	--	N	--	--	Category 1 QA2
City of Portland TSS Data (City of Portland 2006a)	WLC1200Z	X			1.1 - 20	1996-2006	2,520 composited surface water grabs	10 ft from surface	--	Y	--	--	None
Groundwater													
Siltronic Supplemental In-River Transition Zone Water (MFA 2005b)	WLCSLH01	X	X	X	6.4 - 6.8	2001-2005	76 TZW samples	up to 87 ft below mudline	--	N	--	--	Category 1 QA2
Gasco Phase 2 Offshore Investigation (Anchor 2008d)	WLCGSG07	X			6.4	2007	18 TZW samples	Unknown	--	N	--	--	Category 1 QA1
Stormwater/Seeps													
Rhone-Poulenc Outfalls 22B and 22C Stormwater (AMEC 2003, 2004a, 2005)	WLCRPI04	X		X	6.8, 6.9	1993-2004	9 samples on 7 dates	--	--	N	N	N	Category 1 QA2

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Survey ID	Data Use			River Mile(s)	Year	Number of Samples	Sample Interval Top (cm)	Sample Interval Bottom (cm)	Composite (Y/N)	Dredged (Y/N)	Capped (Y/N)	QA Category
		RI	BERA	BHHRA									
GE Spring/Summer 2007 Stormwater Outfall Monitoring (AMEC 2007)	WLCGED07	X			9.6	2007	4 outfall water	--	--	N	--	--	Category 1 QA2, Conventionals Category 2
T4 Spring 2007 Stormwater Outfall Monitoring (Ash Creek Associates/Newfields 2008)	WLCT4C07	X			4.2 - 5.1	2007	24 outfall water	--	--	N	--	--	Category 1 QA1, PCB Congeners QA2
Joint Source Control Strategy	See Table 4.4-5	X			2-10.8	2004-2008	See Table 4.4-5	--	--	See Table 4.4-5	--	--	Category 1 QA1 and QA2 (see Table 4.4-5)
Sediment Traps													
RM 11E Focused Sediment Characterization – In-River Sed Traps (GSI 2010b)	RM11E_ST	X			11-12	2009-2010	13	--	--	--	N	N	Category 1 QA2

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
Sediments											
PGE Willamette River Sediment Investigation (RM 13.1-13.5) (URS 2010)	X	X		X	X	X		X		X	Petroleum
2009 Conoco Philips Pre-dredge Characterization (AMEC 2010a)	X	X	X	X	X	X				X	Petroleum
Sediment Characterization Report: Portland Ship Repair Yard (ERM-West 2009)	X	X	X	X	X	X					
RM 11E Focused Sediment Characterization – Bank Soil and Debris (GSI 2010a)	X	X	X	X	X	X		X		X	Petroleum
Arkema Draft Removal Action Area Characterization Report (Integral and Arcadis 2010)	X		X	X	X	X		X	X	X	Asbestos
Sediment Investigation Report Portland Gas Manufacturing Site (Anchor QEA 2009b)	X	X		X			X		X	X	Petroleum
RM11E sediment data (GSI 2009a)	X	X	X	X	X	X		X		X	Atterberg
Willamette River FNC Post Office Bar Reach (RM2.2) Sediment Quality Evaluation (USACE 2009)	X	X	X	X	X	X			X	X	Petroleum
T4 Abatement Phase 1 - Construction Phase 1 - Dredging and Capping (Anchor QEA 2009c)	X	X		X	X	X				X	Petroleum
2009 Interim Construction Report, Revetment SCM at BP Terminal 22T (URS 2009)	X	X		X						X	Petroleum
Chevron Willbridge Terminal 2008/2009 Pre-Dredge Sed. Investigations (Arcadis 2009)	X	X	X	X	X	X			X	X	Petroleum
Northwest Pipe & Casing, International Terminals Slip Sed Data 2009 (CH2M Hill 2009)	X	X		X	X						
Downtown Portland Sediment Characterization Phase II Report (GSI and Hart Crowser 2010)	X	X	X	X	X	X		X		X	Petroleum
Downtown Portland Sediment Characterization Field and Data Report (GSI 2009b)	X	X	X	X	X	X		X	X	X	Petroleum analyzed
US Moorings, Portland, OR: RI 2008 Sediment Sampling (KTA/TEC 2010)	X	X	X	X	X	X			X	X	Petroleum
Memo: Zidell Sediment Data Qualifiers. Maul Foster Alongi, 5/2009 (MFA 2009)	X	X	X	X	X						
Sediment Data Report, Ash Grove Cement Company, Portland, OR (Parson Brinckerhoff 2005)	X	X		X	X	X					

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
Post-Dredge Char., Glacier Northwest Cement Term., Portland, OR (Anchor 2004b)	X				X						
USEPA's PBDE data in LWG Sediment Grab Samples										X	PBDE congeners
Dredge Characterization, Glacier Northwest Cement Term., Portland, OR (Anchor 2003)	X	X		X	X	X				X	Petroleum
Post-dredge sampling of Willamette River bottom at CLD Pacific Grain[a] (CLD 2002)	X			X	X						
Pre-Dredge Sediment Sampling Goldendale Aluminum Company, Portland, OR (CH2M Hill 1999)	X	X		X	X	X					
Gasco EE/CA (Anchor 2006d)	X	X		X		X			X	X	TPH - diesel, residual range; cyanide
2005 Portland District O&M Sediment Characterization (Tetra Tech 2006)	X	X	X	X	X	X				X	TPH - gasoline, #2 diesel, motor oil
ExxonMobil Beach Sediment Sheen Samples (Kleinfelder 2004a)										X	Petroleum analyzed
Terminal 4 Early Action EE/CA Report (BB&L 2005)	X	X		X	X	X				X	TPH - gasoline, diesel, residual range
Corps Dredged Material O&M Characterization (Hart Crowser 2004)	X	X	X	X	X	X					
Gunderson Area 2 Sandy Beach (Kleinfelder 2004b)	X	X	X	X	X				X	X	Petroleum analyzed
International Terminal Sediment Data Report (Floyd Snider McCarthy 2003)	X	X	X	X	X	X					
ATOFINA Phase 2 Stage 1/2 In-River Investigation (Integral 2003)	X					X					174 samples field screened for 4,4'-DDT, 40 samples lab tested for pesticides
City Outfall Source Control Investigation (CH2M Hill 2004)	X	X		X		X	X			X	Diesel, lube oil

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
Surface Water, Sediment, and Groundwater Sampling Report (Ecology & Environment 2003)		X		X							
US Moorings RI Sediment Investigation (URS 2003)	X	X	X	X	X	X					TPH - diesel, motor oil
City Outfall Pilot Project (CH2M Hill 2002)	X	X		X	X	X				X	Herbicides and petroleum also analyzed
MarCom Expanded Preliminary Assessment (Parametrix 2002)		X	X	X							SVOCs limited to PAHs
GATX Linnton Terminal RI (KHM 2002a)	X			X					X	X	Petroleum analyzed
T4 Slip 3, Berth 410 Dredge Material (Hart Crowser 2002a)	X	X		X	X	X					
Willamette Reference Area Phase 2 (Hart Crowser 2002b)	X	X	X	X	X	X					5 samples analyzed for conventionals only; pore water analyzed for butyltins
Willamette Reference Area Phase 1 (Hart Crowser 2001a)	X				X	X				X	Petroleum also analyzed
Cargill Irving Elevator Permit Applications (Harding ESE 2001)	X	X	X	X	X	X					Pore water analyzed for butyltins
T2/T5 2001 Dredge Characterization Study (Hart Crowser 2001b)	X	X	X	X	X	X					Pore water analyzed for butyltins
Chevron Dredging Permit Application (PNG 2001)	X	X	X	X	X	X			X	X	Petroleum analyzed
Gasco Source Control Evaluation (Anchor 2001)	X	X		X					X		SVOCs limited to PAHs

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
McCormick & Baxter RI Phase 4 (Ecology & Environment 2001)	X			X							SVOCs limited to PAHs and phenols
Goldendale Aluminum Phase 2 (CH2M Hill 2001a)	X			X							
Oregon Steel Mills Pre-Remedial Investigation Field Activities Data Report (Exponent 2001)	X	X		X	X					X	Petroleum analyzed
Willbridge 60-in Outfall (KHM 2002b)	X	X		X					X	X	Only one sample analyzed for metals; SVOCs, VOCs, and petroleum analyzed
UPRR Albina Yard Expanded Preliminary Assessment Data Report (Jacobs Engineering 2000a)	X	X	X	X	X					X	Petroleum analyzed
Marine Finance Expanded Preliminary Assessment Data Report (Jacobs Engineering 2000b)	X	X	X	X	X					X	Petroleum analyzed
T1 South Sediment Study (SEA 2000)	X	X	X	X	X	X			X		Pore water analyzed for butyltins
Goldendale Aluminum Phase 1 (CH2M Hill 2001b)	X	X	X	X	X	X			X		
Ross Island Phase I (Port) (Hart Crowser 2000a)	X	X	X	X	X	X			X	X	Pore water analyzed for butyltins, petroleum analyzed

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
Willamette November Sediment Quality Evaluation (USACE 2000)	X	X	X	X	X	X					Pore water analyzed for butyltins
T5 1999 Berths 501-503 Sediment Characterization Study (Hart Crowser 1999a)	X	X	X	X	X	X					Pore water analyzed for butyltins
Ross Island Lagoon Baseline (Landau 2000a)	X	X	X	X	X	X					Pore water analyzed for butyltins
Ross Island Phase 1 (Ross Island Sand & Gravel) (Landau 2000b)	X	X	X	X	X	X			X	X	Petroleum analyzed in subsurface only
GATX Linnton Terminal ESA (KHM 1999)	X	X		X	X	X			X		VOCs not analyzed in all samples
McCormick & Baxter RI Phase 3 (Ecology & Environment 2001)	X	X		X				X			SVOCs limited to PAHs and phenols; PCDD/Fs not analyzed in all samples
Willamette April Sediment Quality Evaluation (USACE 1999a)	X	X	X	X	X	X		X		X	All samples also analyzed for herbicides; 2 samples analyzed for PCDD/Fs; porewater analyzed for butyltins

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
Portland Harbor Sediment Investigation (Weston 1998)	X	X	X	X	X	X	X	X		X	Some samples analyzed for herbicides, PCDD/Fs, PCB congeners, and butyltins; pore water analyzed for butyltins and metals
TOSCO 1999 Sediment Sampling Results (Exponent 1999a)	X	X		X	X	X					
Elf Atochem 1999 Willamette River (Exponent 1999b)	X			X		X			X		
Willbridge Terminal Facility RI (KHM 2000)	X	X		X		X			X		SVOCs sometimes limited to PAHs
T2/T4 Sediment Study (Hart Crowser 1999b)	X	X	X	X	X	X					
Port of Portland T4 RI (Hart Crowser 2000b)	X	X		X		X			X	X	Not all samples analyzed for metals or VOCs; petroleum analyzed
Sediment Characterization Local Sponsors' Berths (conducted with Corps) (Hart Crowser 1999c)	X	X	X	X	X	X					Pore water analyzed for butyltins
International Terminals Sediment Sampling Event (Schnitzer Steel Industries 1998)	X	X	X	X		X					

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
Portland Shipyard Sediment Investigation (SEA 1998)	X	X	X	X	X	X			X		Butyltins, pesticides, and VOCs not analyzed in all samples; pore water analyzed for butyltins
Portland Shipyard Environmental Audit (Dames & Moore 1998)	X	X	X	X	X				X		Butyltins and VOCs not analyzed in all samples; SVOCs sometimes limited to PAHs and phthalates
Willamette River 1998 Data (Dames & Moore 1998)	X	X	X	X	X						SVOCs limited to PAHs and phthalates; butyltins analyzed in 7 samples
T4 Berth 416 1997 Sediment Characterization Study (Hart Crowser 1998)	X	X	X	X	X	X					Porewater analyzed for butyltins
Baseline Sediment Riedel (MFA 1997)	X	X	X	X							Limited SVOCs analyses
CRCD - Willamette River Channel Deepening (USACE 1999b)	X	X	X	X	X	X					Pore water analyzed for butyltins
PAH in surface sediments (Battelle 2002)	X			X							
T4 Berths 410,411 Maintenance Dredging (Hart Crowser 1997)	X	X	X	X	X	X					Pore water analyzed for butyltins

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
BP Bulk Terminal 22T Supplemental Sediment and Revetment Investigation (URS 2007)	X	X		X	X	X				X	Herbicides
Gasco Phase 2 Offshore Investigation (Anchor 2008d)	X	X		X				X	X	X	Herbicides
Gasco Phase 1 Offshore Investigation (Anchor 2007d)	X	X		X					X		Grain size, atterburg limits
Sulzer Pump, 16 riparian samples (GeoDesign 2004)	X	X		X						X	TPH - diesel, heavy oil; SVOCs limited to PAH
T4 Anchor Appendix G sediment data (Anchor 2008e)	X	X		X	X	X				X	TPH - diesel, heavy oil
Willbridge Terminal 2002 Post-Dredging Sediment Characterization (PNG and Anchor 2002)	X	X	X	X	X	X			X		
Zidell Waterfront Property RI: Riverbank Characterization (MFA 2004)		X	X	X	X						SVOCs limited to PAH
Zidell Waterfront Property RI (MFA 2003)	X	X	X	X	X				X	X	TPH - diesel, heavy oil, lube oil, mineral spirits, Jet A, JP-4, kerosene, total petroleum hydrocarbons, and non-petroleum hydrocarbons
Blue Heron & West Linn (Ecology & Environment 2007)	X	X		X	X	X	X	X	X		
Biota											
USEPAs PBDEs in Osprey Eggs (USGS 2009)	X	X		X	X	X	X	X	X	X	PBDE congeners
USEPA PBDE in LWG R3 Fish Tissue										X	PBDE congeners

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
ATSDR/EPA/ODHS Fish Contaminant Study (ODHS, USEPA and ASTDR 2003)		X		X	X	X	X	X		X	PBDEs
Surface Water											
Gasco Phase 2 Offshore Investigation (Anchor 2008d)	X	X									Field parameters; free, amenable, and total cyanide; TSS; TOC; iron; and sulfides
Siltronic Supplemental In-River (SIR) transition zone water (MFA 2005b)	X			X					X		Field parameters and VOCs (including napthalene and five SVOCs)
City of Portland TSS Data (City of Portland 2006a)	X										TSS
Groundwater											
Siltronic Supplemental In-River Transition Zone Water (MFA 2005b)	X	X		X					X	X	Herbicides, field measurements, lube oil, and diesel range hydrocarbons
Gasco Phase 2 Offshore Investigation (Anchor 2008d)	X	X		X					X		
Stormwater/Seeps											
Rhone-Poulenc Outfalls 22B and 22C Stormwater (AMEC 2003, 2004a, 2005)	X	X		X	X	X		X	X	X	Herbicides, TPH - gas, diesel, and motor oil

Table 2.0-2. Summary of Investigations Performed by Other Parties Included in the RI Data Set.

Survey Name	Conven-tionals	Metals	Butyltins	SVOCs	PCBs	Pesticides	PCB Congeners	PCDD/Fs	VOCs	Other	Other Parameters Analyzed
GE Spring/Summer 2007 Stormwater Outfall Monitoring (AMEC 2007)	X	X		X	X		X			X	TPH - diesel; SVOCs limited to PAH and phthalates
T4 Spring 2007 Stormwater Outfall Monitoring (Ash Creek Associates/Newfields 2008)	X	X		X	X	X	X			X	Total petroleum hydrocarbons
Joint Source Control Strategy	X	X		X	X	X	X			X	Analytes specific to each survey are listed in Table 4.4-5.
Sediment Traps											
RM 11E Focused Sediment Characterization – In-River Sed Traps (GSI 2010b)	X	X	X	X	X	X	X	X		X	Petroleum

Notes:

[a]Two subsurface sediment samples collected from the CLD Pacific facility in 2009 were Category 2 data and were not used in the RI.

Risk evaluations database lockdown date: June 2, 2008 (in general) and RI database lockdown date: July 19, 2010.
For risk evaluation and nature and extent discussions, only data collected since May 1997 are used. Sediment samples collected from dredged or capped areas are removed for risk evaluations.
Risk evaluations use data with a Category 1 QA2 level of validation, and sediment samples must be collected from within the top 30.5 cm of the sediment horizon.
Nature and extent discussions use data with a Category 1 QA1 or QA2 level of validation. Surface sediments represent those collected from the top 40 cm.

Table 2.1-1. Summary of Sediment Types from 2000 STA Survey of Lower Willamette River from Willamette Falls to the Columbia River (RM 0 to 26).

Sediment Type	# of Samples	Percentage
Sandy gravel	2	0.20%
Gravelly sand	16	1.70%
Sand	305	32.60%
Muddy sand	180	19.30%
Sandy mud	296	31.60%
Mud	37	4.00%
Hard ground	99	10.60%
Total	935	100%

Table 2.2-1. Summary of RAOs, Data Gaps, and Sampling Locations.

Preliminary RAO	Data Gap	Sampling Locations [a]
Reduce risks associated with direct contact with and incidental ingestion of contaminated sediments to acceptable levels (or ambient levels) for human health.	Areal extent of contamination in surface sediment. Sediment characteristics including grainsize and total organic content. River locations with potential for sediment contact (i.e., use areas).	Composite sediment samples will be collected along beaches in human use areas.
Reduce risks associated with eating contaminated fish to acceptable levels (or ambient levels) for human health.	Contaminant concentrations and lipids in tissues of species consumed by people. Rate of contaminant transfer between sediment and tissue. Location of fishing/collection areas.	Four fish species that have documented human consumption will be collected and analyzed. Samples will be collected from three areas: between RM 3 and 6; between RM 6 and 9; and below Willamette Falls. Each sample will be a composite of at least 5 fish.
Reduce risks associated with ingestion of contaminated sediments to acceptable levels (or ambient levels) for fish, benthos, birds and mammals.	Areal extent of contamination in surface sediment. Species-specific rates of sediment ingestion. Occurrence/home ranges of target receptors. Sediment characteristics including grainsize and total organic content.	Sediment samples will be placed in nearshore areas where tissue samples will be collected to support the BERA. Also, the composite sediment data collected for input into the BHHRA will be used to evaluate potential risks to ecological receptors in those areas. Lastly, the nature and extent sediment samples will be used to evaluate potential risks to subtidal fish species and benthic infaunal communities.
Reduce risks associated with ingestion of contaminated prey to acceptable levels (or ambient levels) for fish, benthic organisms, birds and mammals.	Contaminant concentrations in tissues of prey. Tissue contaminant concentrations in target receptors. Rate of prey consumption for various receptors. Home ranges of prey and target receptors. Rate of contaminant transfer between sediment and receptor, sediment and prey, and/or prey and receptor. Site-specific no- and low-effect levels in tissue.	Tissue samples for six fish species will be collected from locations in the ISA as well as from below Willamette Falls.

Table 2.2-1. Summary of RAOs, Data Gaps, and Sampling Locations.

Preliminary RAO	Data Gap	Sampling Locations [a]
Promote remedial actions that do not limit current or planned waterway, municipal, commercial, industrial, recreational, or tribal ceremonial uses.	Location of areas requiring remediation. Volume of sediments requiring remediation Current and future uses of the river. Remedial technologies and associated constraints when applied on a site-specific basis.	All sampling contemplated for the RI/FS (i.e., subtidal sediments, intertidal sediments, fish tissues, benthic tissues) will be used to identify potential remediation areas
Promote remedial actions that are feasible for the physical system of this river.	Location of depositional, erosional, and variable areas of the river. Rate of accumulation of clean sediment in depositional areas and rate of sediment loss in erosional areas of the river. Physical characteristics of sediment (grainsize, organic carbon, water content, specific gravity). Potential for recontamination from ongoing upstream or permitted activities Hydrodynamics and sediment transport in river Seasonal changes in bathymetry	Sampling will include additional precision bathymetry surveys throughout the ISA and extending somewhat beyond the ISA, monitoring of sediment stake elevations in nearshore areas of the lower Willamette River (see Round 1A SAP), conventional sediment parameters at all sediment sampling locations, and current measurements along multiple transects within the ISA.
Promote remedial actions that are consistent and integrated with natural resource damage assessment findings and restoration plans.	Habitats available in the river Species occurrence and use. Resource agency habitat restoration goals/priorities.	

Notes:

[a] Sampling locations are mapped in the Portland Harbor Round 1 Field Sampling Plan.

BERA - baseline ecological risk assessment
BHHRA - baseline human health risk assessment
ISA - initial study area
RAO - remedial action objective
RM - river mile
SAP - sampling and analysis plan

Table 2.3-1. Elements of Summary and Full Data Validations for Environmental Chemistry Data.

Element	Applicable Analytes	Summary Data Validation (QA1)	Full Data Validation (QA2)
Quality control analysis frequencies	all	X	X
Analysis holding times	all	X	X
Instrument performance check	organic compounds, ICP-MS metals		X
Initial instrument calibration	all		X
Continuing instrument calibration	all		X
Laboratory blanks	all	X	X
ICP interference check sample	metals		X
System monitoring compounds (surrogates)	organic compounds	X	X
Matrix spikes/matrix spike duplicates	all	X	X
Laboratory control samples	all	X	X
ICP serial dilution	metals		X
Field QA/QC (field blanks, field duplicates)	all	X	X
Internal standards	VOCs, SVOCs, ICP-MS metals		X
Pesticide cleanup checks	pesticides/PCBs		X
Target compound identification and quantitation (requires verification of reported results with raw data)	organic compounds		X
RLs	all	X	X

Notes:

ICP-MS - inductively coupled plasma-mass spectrometry
PCB - polychlorinated biphenyl
QA/QC - quality assurance/quality control
RL - reporting limit
SVOC - semivolatile organic compound
VOC - volatile organic compound

Table 2.3-2. Summary of All Category 1 and Category 2 Results in the RI Data Set.

Analyte Group	Category 1	Category 2[a]	Grand Total
Grain Size	47,513	9	47,522
Atterberg Limits	475		475
Asbestos	22		
Conventionals	24,566	2,515	27,081
Metals	80,285	153	80,438
Butyltins	7,230	8	7,238
PCB Aroclors	41,053	80	41,133
PCB Congeners	241,033		241,033
PBDE Congeners	2,028	225	2,253
PCB Homologs	12,046		12,046
PCDD/Fs	24,659	17	24,676
PCDD/F Homologs	15,182	11	15,193
Pesticides	139,180	72	139,252
Herbicides	7,816	10	7,826
PAHs	159,975	396	160,371
Phthalates	28,492	6	28,498
SVOCs	120,641	87	120,728
Phenols	58,934	22	58,956
VOCs	91,343	480	91,823
Petroleum	13,770	57	13,827
Radioisotopes	444		444
Grand Total	1,116,687	4,148	1,120,813

Notes:

[a] Conventionals include surface water total suspended solids data reported in the 1200Z permitting process.

PAH - polycyclic aromatic hydrocarbon
PBDE - polybrominated diphenyl
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
VOC - volatile organic compound

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Subsurface Sediment							
Grain Size							
< 0.075 mm		2		232			234
> 0.075 mm				63			63
>10 Phi clay		2		76			78
>9 Phi clay	17	61	11	977		3	1,069
8-9 Phi clay	17	63	11	1,053		3	1,147
9-10 Phi clay		2		76			78
Clay	2	62		551	14		629
Coarse sand	17	118	11	1,241	14	3	1,404
Coarse silt	17	63	11	1,053		3	1,147
Fine gravel	17	116	11	1,049	14	3	1,210
Fine sand	17	118	11	1,241	14	3	1,404
Fine silt	17	63	11	1,053		3	1,147
Fines	19	128	11	1,627	14	3	1,802
Granule				24			24
Gravel	2	12		257			271
Mean grain size	2			19			21
Median grain size	2			19			21
Medium gravel	17	116	11	1,070	14	3	1,231
Medium sand	17	118	11	1,241	14	3	1,404
Medium silt	17	63	11	1,053		3	1,147
Medium-fine gravel				24			24
Sand	2	10		165			177
Sieve 1 inch				233			
Sieve 1.5 inch				233			
Sieve 10		2		407			409
Sieve 100				15			15
Sieve 140		2		392			394
Sieve 2 inch				233			
Sieve 20		2		407			409
Sieve 200		2		407			409
Sieve 230				238			238
Sieve 3 inch				233			
Sieve 3/4 inch				233			
Sieve 3/8 inch				233			
Sieve 4		2		407			409
Sieve 40		2		407			409
Sieve 60		2		407			409
Silt	2	62		551	14		629
Very coarse sand	17	118	11	1,238	14	3	1,401
Very fine sand	17	118	11	1,238	14	3	1,401
Very fine silt	17	63	11	1,053		3	1,147
Atterberg Limits							
Liquid Limit				63			63
Plastic Limit				71			71
Plasticity Index				63			63
Conventionals							
Acid Volatile Sulfides	9			25			34
Ammonia	7	14		220	14		255
Chloride				10			
Cyanide		57		145			202
Moisture				110			110
Nitrate				12			12
Nitrite				10			
pH				24			24
Phosphorus		15					15
Specific Gravity	17	25	11	1,002			1,055
Sulfate				36			36
Sulfide	7	62		219	5		293
Total organic carbon	33	142	14	2,060	68	3	2,320
Total solids	36	146	14	2,238	74	3	2,511
Total volatile solids	7			158	14		179
Asbestos							
Amosite				4			
Asbestos				14			
Chrysotile				4			

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Metals							
Aluminum	17	85	14	1,098		3	1,217
Antimony	24	117	14	1,300	71	3	1,529
Arsenic	33	173	14	1,636	73	3	1,932
Arsenic pentavalent				8			8
Arsenic trivalent				8			8
Barium		15		145			160
Beryllium		15		116			131
Cadmium	33	173	14	1,641	73	3	1,937
Calcium				89			89
Chromium	33	173	14	1,572	54	3	1,849
Chromium hexavalent				45			45
Cobalt				48			48
Copper	33	173	14	1,636	73	3	1,932
Iron		56		92			148
Lead	33	173	14	1,738	73	3	2,034
Magnesium				99			99
Manganese				162			162
Mercury	33	173	14	1,514	73	3	1,810
Nickel	33	109	14	1,616	73	3	1,848
Potassium				99			99
Selenium	17	94		1,131		3	1,245
Silver	33	158	14	1,568	73	3	1,849
Sodium				99			99
Thallium		15		116			131
Tin				3			3
Titanium				27			27
Vanadium				48			48
Zinc	33	173	14	1,734	73	3	2,030
Butylins							
Butyltin ion		49		367	35	3	454
Dibutyltin ion		49		367	36	3	455
Tetrabutyltin		49		368	36	3	456
Tributyltin				6			6
Tributyltin ion		64		418	50	3	535
PCB Aroclors							
Aroclor 1016	33	99	14	1,515	66	3	1,730
Aroclor 1221	33	99	14	1,515	66	3	1,730
Aroclor 1232	33	99	14	1,515	66	3	1,730
Aroclor 1242	33	99	14	1,515	66	3	1,730
Aroclor 1248	33	99	14	1,515	66	3	1,730
Aroclor 1254	33	99	14	1,515	66	3	1,730
Aroclor 1260	33	99	14	1,515	66	3	1,730
Aroclor 1262	17	95	14	1,264		3	1,393
Aroclor 1268	17	95	14	1,264		3	1,393
Total PCB Aroclors	33	99	14	1,515	66	3	1,730
PCB Congeners							
Total PCB TEQ (ND = 0)				151			151
PCB001				151			151
PCB002				151			151
PCB003				151			151
PCB004 & 010				151			151
PCB005 & 008				151			151
PCB006				151			151
PCB007 & 009				151			151
PCB011				151			151
PCB012 & 013				151			151
PCB014				151			151
PCB015				151			151
PCB016 & 032				151			151
PCB017				151			151
PCB018				151			151
PCB019				151			151
PCB020 & 021 & 033				151			151
PCB022				151			151
PCB023				151			151

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PCB024 & 027				151			151
PCB025				151			151
PCB026				151			151
PCB028				151			151
PCB029				151			151
PCB030				151			151
PCB031				151			151
PCB034				151			151
PCB035				151			151
PCB036				151			151
PCB037				151			151
PCB038				151			151
PCB039				151			151
PCB040				151			151
PCB041 & 064 & 071 & 072				151			151
PCB042 & 059				151			151
PCB043 & 049				151			151
PCB044				151			151
PCB045				151			151
PCB046				151			151
PCB047				151			151
PCB048 & 075				151			151
PCB050				151			151
PCB051				151			151
PCB052 & 069				151			151
PCB053				151			151
PCB054				151			151
PCB055				151			151
PCB056 & 060				151			151
PCB057				151			151
PCB058				151			151
PCB061 & 070				151			151
PCB062				151			151
PCB063				151			151
PCB065				151			151
PCB066 & 076				151			151
PCB067				151			151
PCB068				151			151
PCB073				151			151
PCB074				151			151
PCB077				151			151
PCB078				151			151
PCB079				151			151
PCB080				151			151
PCB081				151			151
PCB082				151			151
PCB083				151			151
PCB084 & 092				151			151
PCB085 & 116				151			151
PCB086				151			151
PCB087 & 117 & 125				151			151
PCB088 & 091				151			151
PCB089				151			151
PCB090 & 101				151			151
PCB093				151			151
PCB094				151			151
PCB095 & 098 & 102				151			151
PCB096				151			151
PCB097				151			151
PCB099				151			151
PCB100				151			151
PCB103				151			151
PCB104				151			151
PCB105				151			151
PCB106 & 118				151			151
PCB107 & 109				151			151
PCB108 & 112				151			151
PCB110				151			151

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PCB111 & 115				151			151
PCB113				151			151
PCB114				151			151
PCB119				151			151
PCB120				151			151
PCB121				151			151
PCB122				151			151
PCB123				151			151
PCB124				151			151
PCB126				151			151
PCB127				151			151
PCB128 & 162				151			151
PCB129				151			151
PCB130				151			151
PCB131				151			151
PCB132 & 161				151			151
PCB133 & 142				151			151
PCB134 & 143				151			151
PCB135				151			151
PCB136				151			151
PCB137				151			151
PCB138 & 163 & 164				151			151
PCB139 & 149				151			151
PCB140				151			151
PCB141				151			151
PCB144				151			151
PCB145				151			151
PCB146 & 165				151			151
PCB147				151			151
PCB148				151			151
PCB150				151			151
PCB151				151			151
PCB152				151			151
PCB153				151			151
PCB154				151			151
PCB155				151			151
PCB156				151			151
PCB157				151			151
PCB158 & 160				151			151
PCB159				151			151
PCB166				151			151
PCB167				151			151
PCB168				151			151
PCB169				151			151
PCB170				151			151
PCB171				151			151
PCB172				151			151
PCB173				151			151
PCB174				151			151
PCB175				151			151
PCB176				151			151
PCB177				151			151
PCB178				151			151
PCB179				151			151
PCB180				151			151
PCB181				151			151
PCB182 & 187				151			151
PCB183				151			151
PCB184				151			151
PCB185				151			151
PCB186				151			151
PCB188				151			151
PCB189				151			151
PCB190				151			151
PCB191				151			151
PCB192				151			151
PCB193				151			151
PCB194				151			151

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PCB195				151			151
PCB196 & 203				151			151
PCB197				151			151
PCB198				151			151
PCB199				151			151
PCB200				151			151
PCB201				151			151
PCB202				151			151
PCB204				151			151
PCB205				151			151
PCB206				151			151
PCB207				151			151
PCB208				151			151
PCB209				151			151
Total PCB Congeners				151			151
PCB Homologs							
Dichlorobiphenyl homologs				151			151
Heptachlorobiphenyl homologs				151			151
Hexachlorobiphenyl homologs				151			151
Monochlorobiphenyl homologs				151			151
Nonachlorobiphenyl homologs				151			151
Octachlorobiphenyl homologs				151			151
Pentachlorobiphenyl homologs				151			151
Tetrachlorobiphenyl homologs				151			151
Trichlorobiphenyl homologs				151			151
PCDD/F Homologs							
Heptachlorodibenzofuran homologs	17	29		305		3	354
Heptachlorodibenzo-p-dioxin homologs	17	29		305		3	354
Hexachlorodibenzofuran homologs	17	29		306		3	355
Hexachlorodibenzo-p-dioxin homologs	17	29		305		3	354
Octachlorodibenzofuran	17	38		310		3	368
Octachlorodibenzo-p-dioxin	17	38		310		3	368
Pentachlorodibenzofuran homologs	17	29		306		3	355
Pentachlorodibenzo-p-dioxin homologs	17	29		306		3	355
Tetrachlorodibenzofuran homologs	17	29		305		3	354
Tetrachlorodibenzo-p-dioxin homologs	17	29		305		3	354
Total PCDD/F	17	38		306		3	364
PCDD/Fs							
1,2,3,4,6,7,8-Heptachlorodibenzofuran	17	38		310		3	368
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	17	38		310		3	368
1,2,3,4,7,8,9-Heptachlorodibenzofuran	17	38		310		3	368
1,2,3,4,7,8-Hexachlorodibenzofuran	17	38		309		3	367
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	17	38		310		3	368
1,2,3,6,7,8-Hexachlorodibenzofuran	17	38		310		3	368
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	17	38		309		3	367
1,2,3,7,8,9-Hexachlorodibenzofuran	17	38		310		3	368
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	17	38		310		3	368
1,2,3,7,8-Pentachlorodibenzofuran	17	38		310		3	368
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	17	38		310		3	368
2,3,4,6,7,8-Hexachlorodibenzofuran	17	38		310		3	368
2,3,4,7,8-Pentachlorodibenzofuran	17	38		310		3	368
2,3,7,8-Tetrachlorodibenzofuran	17	38		309		3	367
2,3,7,8-Tetrachlorodibenzo-p-dioxin	17	38		310		3	368
TCDD TEQ (ND = 0)	17	38		310		3	368
Total TCDD TEQ (ND = 0)	17	38		405		3	463
Pesticides							
2,4'-DDD	17	87	14	1,551		3	1,672
2,4'-DDE	17	87	14	1,551		3	1,672
2,4'-DDT	17	87	14	1,551		3	1,672
4,4'-DDD	33	87	14	1,781	66	3	1,984
4,4'-DDE	33	87	14	1,781	66	3	1,984
4,4'-DDT	33	87	14	1,780	66	3	1,983
Aldrin	33	87	14	1,244	47	3	1,428
alpha-Endosulfan	28	87	14	1,175	33	3	1,340
alpha-Hexachlorocyclohexane	28	87	14	1,166	33	3	1,331
Atrazine				20			

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Azinphosmethyl				2			2
beta-Endosulfan	28	87	14	1,175	33	3	1,340
beta-Hexachlorocyclohexane	28	87	14	1,175	33	3	1,340
Chlordane (cis & trans)				72			72
Chlordane (technical)		16		42			58
Chlorpyrifos				2			2
cis-Chlordane	24	87	14	1,200	47	3	1,375
cis-Nonachlor	17	87	14	991		3	1,112
Coumaphos				2			2
delta-Hexachlorocyclohexane	28	87	14	1,172	33	3	1,337
Demeton				2			2
Diazinon				2			2
Dichlorvos				2			2
Dieldrin	33	87	14	1,244	47	3	1,428
Dimethoate				2			2
Disulfoton				2			2
Endosulfan sulfate	28	87	14	1,175	33	3	1,340
Endrin	28	87	14	1,190	33	3	1,355
Endrin aldehyde	28	87	14	1,175	33	3	1,340
Endrin ketone	19	87	14	1,150	33	3	1,306
EPN				2			2
Ethoprop				2			2
Fensulfothion				2			2
Fenthion				2			2
gamma-Hexachlorocyclohexane (Lindane)	33	87	14	1,244	47	3	1,428
Heptachlor	33	87	14	1,244	47	3	1,428
Heptachlor epoxide	28	87	14	1,181	33	3	1,346
Hexachlorocyclohexanes				9			9
Malathion				2			2
Methoxychlor	28	87	14	1,181	33	3	1,346
Methyl parathion				2			2
Mevinphos				2			2
Mirex	17	87	14	983		3	1,104
Oxychlordane	17	87	14	991		3	1,112
Parathion				2			2
Phorate				2			2
Prothiophos				2			2
Ronnel				2			2
Sulprofos				2			2
Tetrachlorvinphos				2			2
Total Chlordanes	33	87	14	1,224	47	3	1,408
Total Endosulfan	28	87	14	1,181	33	3	1,346
Total DDD	33	87	14	1,781	66	3	1,984
DDx	33	87	14	1,780	66	3	1,983
Total DDE	33	87	14	1,781	66	3	1,984
Total DDT	33	87	14	1,780	66	3	1,983
Total 4,4'-DDx	33	19		1,125	52		1,229
Toxaphene	28	87	14	1,181	33	3	1,346
Toxaphene Peak 1				14			
Toxaphene Peak 2				14			
Toxaphene Peak 3				14			
Toxaphene Peak 4				14			
Toxaphene Peak 5				14			
trans-Chlordane	24	87	14	1,180	33	3	1,341
trans-Nonachlor	17	87	14	991		3	1,112
Trichloronate				2			2
Herbicides							
2,4,5-T				186			186
2,4-D				186			186
2,4-DB				186			186
Dalapon				186			186
Dicamba				186			186
Dichloroprop				186			186
Dinoseb				186			186
MCPA				186			186
MCPP				186			186
Silvex				186			186

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PAHs							
1,6,7-Trimethylnaphthalene				242			242
1-Methylnaphthalene		90	14	567		3	674
1-Methylphenanthrene				242			242
2,6-Dimethylnaphthalene				242			242
2-Methylnaphthalene	31	157	14	1,753	70	3	2,028
Acenaphthene	33	157	14	1,824	70	3	2,101
Acenaphthylene	33	157	14	1,821	70	3	2,098
Anthracene	33	157	14	1,821	70	3	2,098
Benzo(a)anthracene	33	157	14	1,824	70	3	2,101
Benzo(a)pyrene	33	157	14	1,824	70	3	2,101
Benzo(b)fluoranthene	33	157	14	1,824	70	3	2,101
Benzo(b+k)fluoranthene	16			510	56		582
Benzo(e)pyrene		114		393		3	510
Benzo(g,h,i)perylene	33	157	14	1,824	70	3	2,101
Benzo(k)fluoranthene	33	157	14	1,824	70	3	2,101
C1-Chrysene		90		184		3	277
C1-Dibenzothiophene		32		184		3	219
C1-Fluoranthene/pyrene		90		184		3	277
C1-Fluorene		90		184		3	277
C1-Naphthalene				33			33
C1-Phenanthrene/anthracene		90		184		3	277
C2-Chrysene		90		184		3	277
C2-Dibenzothiophene		32		184		3	219
C2-Fluoranthene/pyrene		32		151		3	186
C2-Fluorene		90		184		3	277
C2-Naphthalene		90		184		3	277
C2-Phenanthrene/anthracene		90		184		3	277
C3-Chrysene		90		184		3	277
C3-Dibenzothiophene		32		184		3	219
C3-Fluoranthene/pyrene		32		151		3	186
C3-Fluorene		90		184		3	277
C3-Naphthalene		90		184		3	277
C3-Phenanthrene/anthracene		90		184		3	277
C4-Chrysene		90		184		3	277
C4-Dibenzothiophene				11			
C4-Naphthalene		90		184		3	277
C4-Phenanthrene/anthracene		90		184		3	277
Chrysene	33	157	14	1,824	70	3	2,101
Dibenzo(a,h)anthracene	33	157	14	1,823	70	3	2,100
Dibenzothiophene		90	14	263		3	370
Fluoranthene	33	157	14	1,824	70	3	2,101
Fluorene	33	157	14	1,821	70	3	2,098
High Molecular Weight PAH	33	157	14	1,824	70	3	2,101
Indeno(1,2,3-cd)pyrene	33	157	14	1,824	70	3	2,101
Low Molecular Weight PAH	33	157	14	1,824	70	3	2,101
Naphthalene	34	158	14	1,864	70	3	2,143
Perylene		114		393		3	510
Phenanthrene	33	157	14	1,824	70	3	2,101
Pyrene	33	157	14	1,824	70	3	2,101
Total cPAHs	33	157	14	1,824	70	3	2,101
Total PAHs	33	157	14	1,824	70	3	2,101
Phthalates							
Bis(2-ethylhexyl) phthalate	24	63	14	1,635	70	3	1,809
Butylbenzyl phthalate	24	63	14	1,635	70	3	1,809
Dibutyl phthalate	24	63	14	1,635	70	3	1,809
Diethyl phthalate	24	63	14	1,629	70	3	1,803
Dimethyl phthalate	24	63	14	1,635	70	3	1,809
Di-n-octyl phthalate	24	63	14	1,629	70	3	1,803
SVOCs							
1,2,4-Trichlorobenzene	22	63	14	1,350	70	3	1,522
1,2-Dichlorobenzene	24	63	14	1,376	66	3	1,546
1,2-Diphenylhydrazine				20			
1,3-Dichlorobenzene	24	63	14	1,353	52	3	1,509
1,4-Dichlorobenzene	25	64	14	1,424	66	3	1,596
2,4-Dinitrotoluene	19	63	14	1,177	37	3	1,313
2,6-Dinitrotoluene	19	63	14	1,177	37	3	1,313

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
2-Chloronaphthalene	19	63	14	1,188	37	3	1,324
2-Nitroaniline	19	63	14	1,177	37	3	1,313
3,3'-Dichlorobenzidine	19	63	14	1,177	37	3	1,313
3-Nitroaniline	19	63	14	1,177	37	3	1,313
4-Bromophenyl phenyl ether	19	63	14	1,177	37	3	1,313
4-Chloroaniline	19	63	14	1,177	37	3	1,313
4-Chlorophenyl phenyl ether	19	63	14	1,177	37	3	1,313
4-Nitroaniline	19	63	14	1,177	37	3	1,313
Acetophenone				20			
Aniline	17	55	14	1,075	37	3	1,201
Azobenzene	17	63	14	1,018		3	1,115
Benzaldehyde				20			
Benzoic acid	24	54	14	1,304	70	3	1,469
Benzyl alcohol	24	63	14	1,308	70	3	1,482
Bis(2-chloro-1-methylethyl) ether				91			91
Bis(2-chloroethoxy) methane	19	63	14	1,177	37	3	1,313
Bis(2-chloroethyl) ether	19	63	14	1,177	37	3	1,313
Bis(2-chloroisopropyl) ether	19	63	14	1,086	37	3	1,222
Caprolactam				20			
Carbazole	17	63	14	1,127		3	1,224
Dibenzofuran	33	63	14	1,486	70	3	1,669
Diphenyl				262			262
Hexachlorobenzene	24	87	14	1,336	70	3	1,534
Hexachlorobutadiene	24	87	14	1,408	70	3	1,606
Hexachlorocyclopentadiene	19	63	14	1,172	37	3	1,308
Hexachloroethane	22	71	14	1,296	56	3	1,462
Isophorone	19	63	14	1,177	37	3	1,313
Nitrobenzene	19	63	14	1,177	37	3	1,313
N-Nitrosodimethylamine	17	63	14	1,075	37	3	1,209
N-Nitrosodiphenylamine	24	63	14	1,311	70	3	1,485
N-Nitrosodipropylamine	19	63	14	1,177	37	3	1,313
Retene				11			11
Phenols							
2,3,4,5-Tetrachlorophenol	17	51	14	1,037		3	1,122
2,3,4,6-Tetrachlorophenol				34			
2,3,4,6;2,3,5,6-Tetrachlorophenol coelution				520			520
2,3,5,6-Tetrachlorophenol	17	51	14	551		3	636
2,4,5-Trichlorophenol	19	51	14	1,218	37	3	1,342
2,4,6-Trichlorophenol	19	51	14	1,218	37	3	1,342
2,4-Dichlorophenol	19	63	14	1,219	37	3	1,355
2,4-Dimethylphenol	24	119	14	1,353	70	3	1,583
2,4-Dinitrophenol	19	63	14	1,214	37	3	1,350
2-Chlorophenol	19	63	14	1,219	37	3	1,355
2-Methylphenol	24	121	14	1,353	70	3	1,585
2-Nitrophenol	19	63	14	1,210	37	3	1,346
3- and 4-Methylphenol Coelution	2			71	56		129
3-Methylphenol				20			
4,6-Dinitro-2-methylphenol	19	63	14	1,219	37	3	1,355
4-Chloro-3-methylphenol	19	63	14	1,219	37	3	1,355
4-Methylphenol	22	121	14	1,265	14	3	1,439
4-Nitrophenol	19	63	14	1,217	37	3	1,353
m,p-Cresol				14			
Pentachlorophenol	24	109	14	1,357	69	3	1,576
Phenol	24	121	14	1,353	70	3	1,585
VOCs							
1,1,1,2-Tetrachloroethane	18	20		564	26		628
1,1,1-Trichloroethane	18	20		596	26		660
1,1,2,2-Tetrachloroethane	18	20		595	26		659
1,1,2-Trichloro-1,2,2-trifluoroethane				32			32
1,1,2-Trichloroethane	18	20		596	26		660
1,1-Dichloroethane	18	20		595	26		659
1,1-Dichloroethene	18	20		595	26		659
1,1-Dichloropropene				29	26		55
1,2,3-Trichlorobenzene				55	26		81
1,2,3-Trichloropropane	18	20		564	26		628
1,2,4,5-Tetrachlorobenzene				20			
1,2,4-Trimethylbenzene				33	26		59

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
1,2-Dibromo-3-chloropropane				60	26		86
1,2-Dichloroethane	18	20		595	26		659
1,2-Dichloropropane	18	20		595	26		659
1,3,5-Trimethylbenzene				33	26		59
1,3-Dichloropropane				29	26		55
1,4-Dichloro-trans-2-butene	18	20		534			572
1,4-Dioxane				4			
1-Methyl-4-isopropylbenzene				21	26		47
2,2-Dichloropropane				29	26		55
2-Chloroethyl vinyl ether	18	20		534			572
2-Chlorotoluene				29	26		55
4-Chlorotoluene				29	26		55
Acetone	18	20		586	26		650
Acrolein	18	20		534			572
Acrylonitrile	18	20		534			572
Benzene	18	80		641	41		780
Bromobenzene				29	26		55
Bromochloromethane	18	20		588	26		652
Bromodichloromethane	18	20		595	26		659
Bromoform	18	20		595	26		659
Bromomethane	18	20		595	26		659
BTEX	18	80		655	41		794
Carbon disulfide	18	20		595	26		659
Carbon tetrachloride	18	20		595	26		659
Chlorobenzene	18	20		595	26		659
Chlorodibromomethane	18	20		595	26		659
Chloroethane	18	20		595	26		659
Chloroform	18	20		595	26		659
Chloromethane	18	20		595	26		659
cis-1,2-Dichloroethene	18	20		175	26		239
cis-1,3-Dichloropropene	18	20		596	26		660
Dichlorodifluoromethane	18	20		595	26		659
Ethylbenzene	18	80		655	41		794
Ethylene dibromide	18	20		569	26		633
Hexahydrobenzene				32			32
Isopropylbenzene	18	20		599	26		663
m,p-Xylene	18	80		642	41		781
Methyl acetate				32			32
Methyl iodide	18	20		534			572
Methyl isobutyl ketone	18	20		587	26		651
Methyl n-butyl ketone	18	20		596	26		660
Methyl tert-butyl ether	18	22		590			630
Methylcyclohexane				32			32
Methylene bromide	18	20		563	26		627
Methylene chloride	18	20		596	26		660
Methylethyl ketone	18	20		586	26		650
Methylisopropylbenzene				9			9
n-Butylbenzene				29	26		55
n-Propylbenzene				33	26		59
o-Xylene	18	80		642	41		781
Sec-butylbenzene				29	26		55
Styrene	18	20		596	26		660
tert-Butylbenzene				29	26		55
Tetrachloroethene	18	20		627	26		691
Toluene	18	80		642	41		781
trans-1,2-Dichloroethene	18	20		595	26		659
trans-1,3-Dichloropropene	18	20		596	26		660
Trichloroethene	18	20		627	41		706
Trichlorofluoromethane	18	20		596	26		660
Vinyl acetate	18	20		541			579
Vinyl chloride	18	20		596	26		660
Xylene	18	80		655	41		794
Petroleum							
C10-C12 Aliphatics		12		16			28
C10-C12 Aromatics		12		16			28
C12-C13 Aromatics		2					
C12-C16 Aliphatics		12		16			28
C12-C16 Aromatics		12		16			28

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
C16-C21 Aliphatics		12		16			28
C16-C21 Aromatics		12		16			28
C21-C34 Aliphatics		12		16			28
C21-C34 Aromatics		12		16			28
C5-C6 Aliphatics		2					
C6-C8 Aliphatics		2					
C8-C10 Aliphatics		12		16			28
C8-C10 Aromatics		12		16			28
Decane		2					
Total Petroleum Hydrocarbons (Diesel)	17	107	14	1,232	52		1,422
Total Petroleum Hydrocarbons (Diesel, silica gel treated)		56	14	270		3	343
Dodecane		2					
Total Petroleum Hydrocarbons (Gasoline)	18	93		883	19		1,013
Total Petroleum Hydrocarbons (Heavy-Oil)				31	52		83
Jet fuel A		15		1	52		68
JP-4 jet fuel				1	19		20
Kerosene		15		1	52		68
Lube oil				17	52		69
Mineral spirits		15		1	52		68
Motor oil		9		105			114
Naphtha distillate				1	19		20
Non-petroleum hydrocarbons				1	52		53
n-Hexane		2					
Octane		2					
Pencil pitch				16			16
Pentane		2					
Phytane				3			3
Pristane				3			3
Total Petroleum Hydrocarbons (Residual)	17	83	14	1,080			1,194
Total Petroleum Hydrocarbons (Residual, silica gel treated)		56	14	270		3	343
Total Petroleum Hydrocarbons	17	107	14	1,232	52		1,422
Total Petroleum Hydrocarbons (silica gel treated)		56	14	270		3	343
Radioisotopes							
Beryllium-7				108			108
Cesium-137				108			108
Lead-210				108			108
Radium-226				108			108
Surface Sediment							
Grain Size							
< 0.075 mm				55		2	57
> 0.075 mm				10		2	12
>10 Phi clay		7		150		3	160
>9 Phi clay	21	90	17	890		50	1,068
8-9 Phi clay	21	97	17	1,041		53	1,229
9-10 Phi clay		7		150		3	160
Clay		28		382	38	7	455
Coarse sand	21	110	17	1,159	14	71	1,392
Coarse silt	21	97	17	1,041		53	1,229
Fine gravel	21	101	17	973		53	1,165
Fine sand	21	110	17	1,159	14	71	1,392
Fine silt	21	97	17	1,041		53	1,229
Fines	21	134	17	1,496	38	80	1,786
Gravel		31		450	14	20	515
Mean grain size				1			1
Median grain size				1			1
Medium gravel	21	101	17	973		53	1,165
Medium sand	21	110	17	1,159	14	71	1,392
Medium silt	21	97	17	1,041		53	1,229
Sand		24		336	24	9	393
Sieve 10				49			49
Sieve 100				2			2
Sieve 140				47			47
Sieve 20				49			49
Sieve 200				49			49
Sieve 230				4			4
Sieve 4				49			49
Sieve 40				49			49

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Sieve 60				49			49
Silt		28		387	38	7	460
Very coarse sand	21	110	17	1,157	14	71	1,390
Very fine sand	21	110	17	1,157	14	71	1,390
Very fine silt	21	97	17	1,041		53	1,229
Atterberg Limits							
Liquid Limit				26			26
Plastic Limit				55			55
Plasticity Index				26			26
Conventionals							
Acid Volatile Sulfides	4			76			80
Ammonia		14	1	525		40	580
Cyanide		12		43			55
Moisture				2		2	4
Oxidation-Reduction Potential				2			2
Perchlorate				13			13
pH				2			2
Phosphorus		4					4
Specific Gravity	17	10	15	807		27	876
Sulfide		25	1	528		40	594
Total organic carbon	25	201	17	1,715	40	77	2,075
Total solids	25	200	17	1,499	40	74	1,855
Total volatile solids				191		22	213
Metals							
Aluminum	21	139	17	1,278		63	1,518
Antimony	21	247	17	1,453	40	72	1,850
Arsenic	25	231	17	1,629	40	77	2,019
Arsenic pentavalent				11			11
Arsenic trivalent				11			11
Barium		36		259		10	305
Beryllium		44		260		10	314
Cadmium	25	267	17	1,593	40	72	2,014
Calcium				155		1	156
Chromium	25	263	17	1,580	14	66	1,965
Chromium hexavalent			1	67			68
Cobalt				155		10	165
Copper	25	267	17	1,601	40	72	2,022
Iron		12		174			186
Lead	25	267	17	1,624	40	72	2,045
Magnesium				155			155
Manganese	4	5		307		10	326
Mercury	25	261	17	1,571	40	72	1,986
Methylmercury				5			5
Nickel	25	242	17	1,559	40	72	1,955
Potassium				155			155
Selenium	21	147	7	1,236		36	1,447
Silver	25	201	17	1,555	40	72	1,910
Sodium				155			155
Thallium	4	17		278		10	309
Tin				16			16
Titanium				75			75
Vanadium				155		10	165
Zinc	25	267	17	1,630	40	72	2,051
Butyltins							
Butyltin ion	4	161	1	313	14	8	501
Dibutyltin dichloride				5			5
Dibutyltin ion	4	161	1	313	14	8	501
Monobutyltin trichloride				5			5
Tetrabutyltin	4	182	1	318	14	8	527
Tributyltin		17		8			25
Tributyltin chloride				5			5
Tributyltin ion	4	173	1	354	14	8	554
PBDE Congeners							
PBDE028	5	3	1	78	10	3	100
PBDE047	5	3	1	78	10	3	100
PBDE099	5	3	1	78	10	3	100

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PBDE100	5	3	1	78	10	3	100
PBDE153	5	3	1	78	10	3	100
PBDE154	5	3	1	78	10	3	100
PBDE183	5	3	1	78	10	3	100
PBDE209	5	3	1	78	10	3	100
PCB Aroclors							
Aroclor 1016	25	256	17	1,286	40	81	1,705
Aroclor 1221	25	256	17	1,285	40	81	1,704
Aroclor 1232	25	256	17	1,285	40	81	1,704
Aroclor 1242	25	256	17	1,286	40	81	1,705
Aroclor 1248	25	256	17	1,286	40	81	1,705
Aroclor 1254	25	256	17	1,286	40	81	1,705
Aroclor 1260	25	256	17	1,286	40	81	1,705
Aroclor 1262	21	154	17	990		63	1,245
Aroclor 1268	21	154	17	990		63	1,245
Aroclors	25	256	17	1,287	40	81	1,706
PCB Congeners							
Total PCB TEQ (ND = 0)	4	8	2	269		26	309
PCB001	4	8	1	257		26	296
PCB002	4	8	1	257		26	296
PCB003	4	8	1	257		26	296
PCB004		3		11		10	24
PCB004 & 010	4	5	1	246		16	272
PCB005		3		11		10	24
PCB005 & 008	4	5	1	246		16	272
PCB006	4	8	1	257		26	296
PCB007		3		11		10	24
PCB007 & 009	4	5	1	246		16	272
PCB008		3		90		10	103
PCB009		3		11		10	24
PCB010		3		11		10	24
PCB011	4	8	1	257		26	296
PCB012						10	10
PCB012 & 013	4	8	1	257		16	286
PCB013						10	10
PCB014	4	8	1	257		26	296
PCB015	4	8	1	257		26	296
PCB016		3		11		10	24
PCB016 & 032	4	5	1	246		16	272
PCB017	4	8	1	257		26	296
PCB018	4	5	1	325		26	361
PCB018 & 030		3		11			14
PCB019	4	8	1	257		26	296
PCB020		3				10	13
PCB020 & 021 & 033	4	5	1	246		16	272
PCB020 & 028		3		11			14
PCB021						10	10
PCB021 & 033		3		11			14
PCB022	4	8	1	257		26	296
PCB023	4	8	1	257		26	296
PCB024		3		11		10	24
PCB024 & 027	4	5	1	246		16	272
PCB025	4	8	1	257		26	296
PCB026	4	5	1	246		26	282
PCB026 & 029		3		11			14
PCB027		3		11		10	24
PCB028	4	5	1	325		26	361
PCB029	4	5	1	246		26	282
PCB030	4	5	1	246		26	282
PCB031	4	8	1	257		26	296
PCB032		3		11		10	24
PCB033						10	10
PCB034	4	8	1	257		26	296
PCB035	4	8	1	257		26	296
PCB036	4	8	1	257		26	296
PCB037	4	8	1	257		26	296
PCB038	4	8	1	257		26	296

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PCB039	4	8	1	257		26	296
PCB040	4	5	1	246		26	282
PCB040 & 041 & 071		3		11			14
PCB041						10	10
PCB041 & 064 & 071 & 072	4	5	1	246		16	272
PCB042		3		11		10	24
PCB042 & 059	4	5	1	246		16	272
PCB043				11		10	21
PCB043 & 049	4	5	1	246		16	272
PCB043 & 073		3					
PCB044	4	5	1	325		26	361
PCB044 & 047 & 065		3		11			14
PCB045	4	5	1	246		26	282
PCB045 & 051		3		11			14
PCB046	4	8	1	257		26	296
PCB047	4	5	1	246		26	282
PCB048		3		11		10	24
PCB048 & 075	4	5	1	246		16	272
PCB049						10	10
PCB049 & 069		3		11			14
PCB050	4	5	1	246		26	282
PCB050 & 053		3		11			14
PCB051	4	5	1	246		26	282
PCB052		3		90		10	103
PCB052 & 069	4	5	1	246		16	272
PCB053	4	5	1	246		26	282
PCB054	4	8	1	257		26	296
PCB055	4	8	1	257		26	296
PCB056		3		11		10	24
PCB056 & 060	4	5	1	246		16	272
PCB057	4	8	1	257		26	296
PCB058	4	8	1	257		26	296
PCB059						10	10
PCB059 & 062 & 075		3		11			14
PCB060		3		11		10	24
PCB061						10	10
PCB061 & 070	4	5	1	246		16	272
PCB061 & 070 & 074 & 076		3		11			14
PCB062	4	5	1	246		26	282
PCB063	4	8	1	257		26	296
PCB064		3		11		10	24
PCB065	4	5	1	246		26	282
PCB066		3		90		10	103
PCB066 & 076	4	5	1	246		16	272
PCB067	4	8	1	257		26	296
PCB068	4	8	1	257		26	296
PCB069						10	10
PCB070						10	10
PCB071						10	10
PCB072		3		11		10	24
PCB073	4	5	1	257		26	293
PCB074	4	5	1	246		26	282
PCB075						10	10
PCB076						10	10
PCB077	4	8	2	269		26	309
PCB078	4	8	1	257		26	296
PCB079	4	8	1	257		26	296
PCB080	4	8	1	257		26	296
PCB081	4	8	2	269		26	309
PCB082	4	8	1	257		26	296
PCB083	4	5	1	246		26	282
PCB083 & 099		3		11			14
PCB084		3		11		10	24
PCB084 & 092	4	5	1	246		16	272
PCB085						10	10
PCB085 & 116	4	8	1	246		16	275
PCB085 & 116 & 117				11			11
PCB086	4	5	1	246		26	282

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PCB086 & 087 & 097 & 108 & 119 & 125		3		11			14
PCB087						10	10
PCB087 & 117 & 125	4	5	1	246		16	272
PCB088						10	10
PCB088 & 091	4	8	1	257		16	286
PCB089	4	8	1	257		26	296
PCB090						10	10
PCB090 & 101	4	5	1	246		16	272
PCB090 & 101 & 113		3		11			14
PCB091						10	10
PCB092		3		11		10	24
PCB093	4	5	1	246		26	282
PCB093 & 100		3					
PCB093 & 095 & 098 & 100 & 102				11			11
PCB094	4	8	1	257		26	296
PCB095		3				10	13
PCB095 & 098 & 102	4	5	1	246		16	272
PCB096	4	8	1	257		26	296
PCB097	4	5	1	246		26	282
PCB098						10	10
PCB098 & 102		3					
PCB099	4	5	1	246		26	282
PCB100	4	5	1	246		26	282
PCB101				79		10	89
PCB102						10	10
PCB103	4	8	1	257		26	296
PCB104	4	8	1	257		26	296
PCB105	4	8	2	348		26	388
PCB106		3		11		10	24
PCB106 & 118	4	5	2	258		16	285
PCB107		3				10	13
PCB107 & 109	4	5	1	246		16	272
PCB107 & 124				11			11
PCB108						10	10
PCB108 & 112	4	5	1	246		16	272
PCB108 & 124		3					
PCB109				11		10	21
PCB110	4	5	1	246		26	282
PCB110 & 115		3		11			14
PCB111		3		11		10	24
PCB111 & 115	4	5	1	246		16	272
PCB112		3		11		10	24
PCB113	4	5	1	246		26	282
PCB114	4	8	2	269		26	309
PCB115						10	10
PCB116						10	10
PCB117		3				10	13
PCB118		3		90		10	103
PCB119	4	5	1	246		26	282
PCB120	4	8	1	257		26	296
PCB121	4	8	1	257		26	296
PCB122	4	8	1	257		26	296
PCB123	4	8	2	269		26	309
PCB124	4	5	1	246		26	282
PCB125						10	10
PCB126	4	8	2	269		26	309
PCB127	4	8	1	257		26	296
PCB128				79			79
PCB128 & 162	4	5	1	246		16	272
PCB128 & 166		3		11			14
PCB129	4	5	1	246		26	282
PCB129 & 138 & 160 & 163				11			11
PCB129 & 138 & 163		3					
PCB130	4	8	1	257		26	296
PCB131	4	8	1	257		26	296
PCB132		3		11		10	24
PCB132 & 161	4	5	1	246		16	272
PCB133		3		11		10	24

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PCB133 & 142	4	5	1	246		16	272
PCB134		3				10	13
PCB134 & 143	4	5	1	257		16	283
PCB135	4	5	1	246		26	282
PCB135 & 151		3					
PCB135 & 151 & 154				11			11
PCB136	4	8	1	257		26	296
PCB137	4	8	1	257		26	296
PCB138				79		10	89
PCB138 & 163 & 164	4	5	1	246		16	272
PCB139						10	10
PCB139 & 140		3		11			14
PCB139 & 149	4	5	1	246		16	272
PCB140	4	5	1	246		26	282
PCB141	4	8	1	257		26	296
PCB142		3		11		10	24
PCB143		3				10	13
PCB144	4	8	1	257		26	296
PCB145	4	8	1	257		26	296
PCB146		3		11		10	24
PCB146 & 165	4	5	1	246		16	272
PCB147	4	5	1	246		26	282
PCB147 & 149		3		11			14
PCB148	4	8	1	257		26	296
PCB149						10	10
PCB150	4	8	1	257		26	296
PCB151	4	5	1	246		26	282
PCB152	4	8	1	257		26	296
PCB153	4	5	1	325		26	361
PCB153 & 168		3		11			14
PCB154	4	8	1	246		26	285
PCB155	4	8	1	256		26	295
PCB156	4	5	2	269		26	306
PCB156 & 157		3					
PCB157	4	5	2	269		26	306
PCB158		3		11		10	24
PCB158 & 160	4	5	1	246		16	272
PCB159	4	8	1	257		26	296
PCB160		3				10	13
PCB161		3		11		10	24
PCB162		3		11		10	24
PCB163						10	10
PCB164		3		11		10	24
PCB165		3		11		10	24
PCB166	4	5	1	246		26	282
PCB167	4	8	2	269		26	309
PCB168	4	5	1	246		26	282
PCB169	4	8	2	269		26	309
PCB170	4	8	1	336		26	375
PCB171	4	5	1	246		26	282
PCB171 & 173		3		11			14
PCB172	4	8	1	257		26	296
PCB173	4	5	1	246		26	282
PCB174	4	8	1	257		26	296
PCB175	4	8	1	257		26	296
PCB176	4	8	1	257		26	296
PCB177	4	8	1	257		26	296
PCB178	4	8	1	257		26	296
PCB179	4	8	1	257		26	296
PCB180	4	5	1	325		26	361
PCB180 & 193		3		11			14
PCB181	4	8	1	257		26	296
PCB182		3		11		10	24
PCB182 & 187	4	5	1	246		16	272
PCB183	4	8	1	246		26	285
PCB183 & 185				11			11
PCB184	4	8	1	257		26	296
PCB185	4	8	1	246		26	285

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
PCB186	4	8	1	257		26	296
PCB187		3		90		10	103
PCB188	4	8	1	257		26	296
PCB189	4	8	2	269		26	309
PCB190	4	8	1	257		26	296
PCB191	4	8	1	257		26	296
PCB192	4	8	1	257		26	296
PCB193	4	5	1	246		26	282
PCB194	4	8	1	257		26	296
PCB195	4	8	1	257		26	296
PCB196		3		11		10	24
PCB196 & 203	4	5	1	246		16	272
PCB197	4	8	1	246		26	285
PCB197 & 200				11			11
PCB198	4	5	1	246		26	282
PCB198 & 199		3		11			14
PCB199	4	5	1	246		26	282
PCB200	4	5	1	246		26	282
PCB201	4	8	1	257		26	296
PCB202	4	8	1	257		26	296
PCB203		3		11		10	24
PCB204	4	8	1	257		26	296
PCB205	4	8	1	257		26	296
PCB206	4	8	1	257		26	296
PCB207	4	8	1	257		26	296
PCB208	4	8	1	257		26	296
PCB209	4	8	1	257		26	296
Total PCB Congeners	4	8	1	257		26	296
PCB Homologs							
Dichlorobiphenyl homologs	4	8	1	257		26	296
Heptachlorobiphenyl homologs	4	8	1	257		26	296
Hexachlorobiphenyl homologs	4	8	1	257		26	296
Monochlorobiphenyl homologs	4	8	1	257		26	296
Nonachlorobiphenyl homologs	4	8	1	257		26	296
Octachlorobiphenyl homologs	4	8	1	257		26	296
Pentachlorobiphenyl homologs	4	8	1	257		26	296
Tetrachlorobiphenyl homologs	4	8	1	257		26	296
Trichlorobiphenyl homologs	4	8	1	257		26	296
PCDD/F Homologs							
Heptachlorodibenzofuran homologs	21	52	2	232		39	346
Heptachlorodibenzo-p-dioxin homologs	21	52	2	232		39	346
Hexachlorodibenzofuran homologs	21	52	2	232		39	346
Hexachlorodibenzo-p-dioxin homologs	21	52	2	232		39	346
Octachlorodibenzofuran	21	62	2	235		48	368
Octachlorodibenzo-p-dioxin	21	62	2	235		49	369
Pentachlorodibenzofuran homologs	21	52	2	232		39	346
Pentachlorodibenzo-p-dioxin homologs	21	52	2	232		39	346
Tetrachlorodibenzofuran homologs	21	52	2	232		39	346
Tetrachlorodibenzo-p-dioxin homologs	21	52	2	231		39	345
Total PCDD/F	21	62	2	232		39	356
PCDD/Fs							
1,2,3,4,6,7,8-Heptachlorodibenzofuran	21	62	2	235		49	369
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	21	62	2	235		49	369
1,2,3,4,7,8,9-Heptachlorodibenzofuran	21	62	2	235		49	369
1,2,3,4,7,8-Hexachlorodibenzofuran	21	62	2	235		49	369
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	21	62	2	235		49	369
1,2,3,6,7,8-Hexachlorodibenzofuran	21	62	2	235		49	369
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	21	62	2	235		49	369
1,2,3,7,8,9-Hexachlorodibenzofuran	21	62	2	235		49	369
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	21	62	2	235		49	369
1,2,3,7,8-Pentachlorodibenzofuran	21	62	2	235		49	369
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	21	62	2	235		49	369
2,3,4,6,7,8-Hexachlorodibenzofuran	21	62	2	235		49	369
2,3,4,7,8-Pentachlorodibenzofuran	21	62	2	235		49	369
2,3,7,8-Tetrachlorodibenzofuran	21	62	2	235		49	369
2,3,7,8-Tetrachlorodibenzo-p-dioxin	21	62	2	235		49	369
TCDD TEQ (ND = 0)	21	62	2	235		49	369

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Total TCDD TEQ (ND = 0)	21	65	2	383		54	525
Pesticides							
2,4'-DDD	21	139	17	1,122		63	1,362
2,4'-DDE	21	139	17	1,121		63	1,361
2,4'-DDT	21	139	17	1,122		63	1,362
4,4'-DDD	25	145	17	1,269	40	81	1,577
4,4'-DDE	25	145	17	1,267	40	81	1,575
4,4'-DDT	25	145	17	1,269	40	81	1,577
Aldrin	25	141	17	1,205	14	77	1,479
alpha-Endosulfan	25	141	17	1,194	14	75	1,466
alpha-Hexachlorocyclohexane	25	141	17	1,185	14	75	1,457
beta-Endosulfan	25	141	17	1,194	14	75	1,466
beta-Hexachlorocyclohexane	25	141	17	1,194	14	75	1,466
Chlordane (cis & trans)				191		3	194
Chlordane (technical)		22		10			32
cis-Chlordane	21	141	17	1,180	14	77	1,450
cis-Nonachlor	21	139	17	1,059		63	1,299
delta-Hexachlorocyclohexane	25	141	17	1,192	14	75	1,464
Dieldrin	25	141	17	1,205	14	77	1,479
Endosulfan sulfate	25	141	17	1,193	14	75	1,465
Endrin	25	141	17	1,197	14	75	1,469
Endrin aldehyde	25	141	17	1,194	14	75	1,466
Endrin ketone	21	141	17	1,180	14	75	1,448
gamma-Hexachlorocyclohexane (Lindane)	25	141	17	1,205	14	77	1,479
Heptachlor	25	141	17	1,205	14	77	1,479
Heptachlor epoxide	25	141	17	1,194	14	75	1,466
Hexachlorocyclohexanes				9			9
Methoxychlor	25	141	17	1,194	14	75	1,466
Mirex	21	139	17	965		63	1,205
Oxychlordane	21	139	17	1,060		63	1,300
Total Chlordanes	25	141	17	1,203	14	77	1,477
Total Endosulfan	25	141	17	1,193	14	75	1,465
Total DDD	25	145	17	1,269	40	81	1,577
DDx	25	145	17	1,269	40	81	1,577
Total DDE	25	145	17	1,267	40	81	1,575
Total DDT	25	145	17	1,269	40	81	1,577
Total 4,4'-DDx	21	12	7	1,026	40	39	1,145
Toxaphene	25	141	17	1,193	14	75	1,465
trans-Chlordane	21	141	17	1,182	14	77	1,452
trans-Nonachlor	21	139	17	1,059		63	1,299
Herbicides							
2,4,5-T			1	221		3	225
2,4-D			1	221		3	225
2,4-DB			1	221		3	225
Dalapon			1	221		3	225
Dicamba			1	221		3	225
Dichloroprop			1	221		3	225
Dinoseb			1	221		3	225
MCPA			1	221		3	225
MCPP			1	221		3	225
Silvex			1	221		3	225
PAHs							
1,6,7-Trimethylnaphthalene				56			56
1-Methylnaphthalene	4	111	10	277		32	434
1-Methylphenanthrene				56			56
2,6-Dimethylnaphthalene				56			56
2-Methylnaphthalene	25	192	17	1,536	40	71	1,881
Acenaphthene	25	268	17	1,756	40	78	2,184
Acenaphthylene	25	268	17	1,756	40	77	2,183
Anthracene	25	268	17	1,756	40	78	2,184
Benzo(a)anthracene	25	268	17	1,756	40	78	2,184
Benzo(a)pyrene	25	268	17	1,756	40	78	2,184
Benzo(b)fluoranthene	25	268	17	1,660	40	78	2,088
Benzo(b+k)fluoranthene	4	6		669	40	18	737
Benzo(e)pyrene	4	144	10	297		32	487
Benzo(g,h,i)perylene	25	268	17	1,756	40	77	2,183
Benzo(j+k)fluoranthene				35			35

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Benzo(k)fluoranthene	25	268	17	1,625	40	78	2,053
Benzofluoranthenes				35			35
C1-Chrysene	4	111	10	268		32	425
C1-Dibenzothiophene	4	99	10	268		32	413
C1-Fluoranthene/pyrene	4	111	10	268		32	425
C1-Fluorene	4	111	10	268		32	425
C1-Naphthalene				62			62
C1-Phenanthrene/anthracene	4	111	10	268		32	425
C2-Chrysene	4	111	10	268		32	425
C2-Dibenzothiophene	4	99	10	268		32	413
C2-Fluoranthene/pyrene	4	99	10	241		32	386
C2-Fluorene	4	111	10	268		32	425
C2-Naphthalene	4	111	10	268		32	425
C2-Phenanthrene/anthracene	4	111	10	268		32	425
C3-Chrysene	4	111	10	268		32	425
C3-Dibenzothiophene	4	99	10	268		32	413
C3-Fluoranthene/pyrene	4	99	10	241		32	386
C3-Fluorene	4	111	10	268		32	425
C3-Naphthalene	4	111	10	268		32	425
C3-Phenanthrene/anthracene	4	111	10	268		32	425
C4-Chrysene	4	111	10	268		32	425
C4-Dibenzothiophene				35			35
C4-Naphthalene	4	111	10	268		32	425
C4-Phenanthrene/anthracene	4	111	10	268		32	425
Chrysene	25	268	17	1,756	40	78	2,184
Dibenzo(a,h)anthracene	25	268	17	1,756	40	78	2,184
Dibenzothiophene	4	111	10	268		32	425
Fluoranthene	25	268	17	1,767	40	78	2,195
Fluorene	25	268	17	1,756	40	78	2,184
High Molecular Weight PAH	25	268	17	1,756	40	78	2,184
Indeno(1,2,3-cd)pyrene	25	268	17	1,756	40	78	2,184
Low Molecular Weight PAH	25	268	17	1,756	40	78	2,184
Naphthalene	25	268	17	1,761	40	78	2,189
Perylene	4	144	10	297		32	487
Phenanthrene	25	268	17	1,756	40	77	2,183
Pyrene	25	268	17	1,756	40	78	2,184
Total cPAHs	25	268	17	1,756	40	78	2,184
Total PAHs	25	268	17	1,756	40	78	2,184
Phthalates							
Bis(2-ethylhexyl) phthalate	21	95	17	1,552	40	72	1,797
Butylbenzyl phthalate	21	95	17	1,543	40	72	1,788
Dibutyl phthalate	21	95	17	1,542	40	72	1,787
Diethyl phthalate	21	95	17	1,538	40	72	1,783
Dimethyl phthalate	21	95	17	1,543	40	72	1,788
Di-n-octyl phthalate	21	95	17	1,538	40	72	1,783
SVOCs							
1,2,4-Trichlorobenzene	21	95	17	1,366	40	72	1,611
1,2-Dichlorobenzene	21	95	17	1,427	40	72	1,672
1,2-Diphenylhydrazine						10	10
1,3-Dichlorobenzene	21	95	17	1,424	40	72	1,669
1,4-Dichlorobenzene	21	95	17	1,432	40	72	1,677
2,4-Dinitrotoluene	21	91	17	1,325	14	63	1,531
2,6-Dinitrotoluene	21	91	17	1,325	14	63	1,531
2-Chloronaphthalene	21	106	17	1,325	14	63	1,546
2-Nitroaniline	21	91	17	1,325	14	63	1,531
3,3'-Dichlorobenzidine	21	91	17	1,325	14	63	1,531
3-Nitroaniline	21	91	17	1,325	14	63	1,531
4-Bromophenyl phenyl ether	21	91	17	1,325	14	63	1,531
4-Chloroaniline	21	91	17	1,325	14	63	1,531
4-Chlorophenyl phenyl ether	21	91	17	1,325	14	63	1,531
4-Nitroaniline	21	91	17	1,325	14	63	1,531
Aniline	21	91	17	1,120	14	63	1,326
Azobenzene	21	89	17	1,002		53	1,182
Benzoic acid	21	93	17	1,394	38	72	1,635
Benzyl alcohol	21	95	17	1,397	40	72	1,642
Bis(2-chloro-1-methylethyl) ether		2		233	2	10	247
Bis(2-chloroethoxy) methane	21	91	17	1,325	14	63	1,531

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Bis(2-chloroethyl) ether	21	91	17	1,325	14	63	1,531
Bis(2-chloroisopropyl) ether	21	89	17	1,092	12	53	1,284
Carbazole	21	89	17	1,306		63	1,496
Dibenzofuran	25	109	17	1,534	40	72	1,797
Diphenyl				91			91
Hexachlorobenzene	21	145	17	1,420	40	72	1,715
Hexachlorobutadiene	21	145	17	1,451	40	72	1,746
Hexachlorocyclopentadiene	21	91	17	1,319	14	63	1,525
Hexachloroethane	21	123	17	1,374	40	72	1,647
Isophorone	21	91	17	1,325	14	63	1,531
Nitrobenzene	21	91	17	1,325	14	63	1,531
N-Nitrosodimethylamine	21	91	17	1,137	14	63	1,343
N-Nitrosodiphenylamine	21	95	17	1,399	40	72	1,644
N-Nitrosodipropylamine	21	91	17	1,325	14	63	1,531
Pyridine				1			1
Phenols							
2,3,4,5-Tetrachlorophenol	21	89	17	1,024		63	1,214
2,3,4,6;2,3,5,6-Tetrachlorophenol coelution			6	568		18	592
2,3,4,6-Tetrachlorophenol				149		10	159
2,3,5,6-Tetrachlorophenol	21	89	11	535		35	691
2,4,5-Trichlorophenol	21	91	17	1,381	14	63	1,587
2,4,6-Trichlorophenol	21	91	17	1,381	14	63	1,587
2,4-Dichlorophenol	21	89	17	1,398	14	63	1,602
2,4-Dimethylphenol	21	37	17	1,464	38	67	1,644
2,4-Dinitrophenol	21	89	17	1,360	14	63	1,564
2-Chlorophenol	21	89	17	1,381	14	63	1,585
2-Methylphenol	21	105	17	1,455	38	72	1,708
2-Nitrophenol	21	89	17	1,372	14	63	1,576
3- and 4-Methylphenol Coelution		4		42	24	7	77
3,4-Dichlorophenol	1	5		7			13
3,5-Dichlorophenol	1	5		7			13
4,6-Dinitro-2-methylphenol	21	89	17	1,380	14	63	1,584
4-Chloro-3-methylphenol	21	89	17	1,381	14	63	1,585
4-Methylphenol	21	101	17	1,418	14	65	1,636
4-Nitrophenol	21	89	17	1,378	14	63	1,582
Cresol				1			1
Pentachlorophenol	21	107	17	1,531	38	78	1,792
Phenol	21	105	17	1,455	40	72	1,710
Tetrachlorophenol				17			17
VOCs							
1,1,1,2-Tetrachloroethane	6	8	1	332	2	3	352
1,1,1-Trichloroethane	6	8	1	332	2	13	362
1,1,2,2-Tetrachloroethane	6	8	1	332	2	13	362
1,1,2-Trichloro-1,2,2-trifluoroethane				1		10	11
1,1,2-Trichloroethane	6	8	1	332	2	13	362
1,1-Dichloroethane	6	8	1	327	2	13	357
1,1-Dichloroethene	6	8	1	332	2	10	359
1,1-Dichloropropene		2		54	2		58
1,2,3-Trichlorobenzene		2		54	2	10	68
1,2,3-Trichloropropane	6	8	1	332	2	3	352
1,2,4-Trimethylbenzene		2		57	2		61
1,2-Dibromo-3-chloropropane		2		54	2	10	68
1,2-Dichloroethane	6	8	1	332	2	13	362
1,2-Dichloroethene				8			8
1,2-Dichloropropane	6	8	1	332	2	13	362
1,3,5-Trimethylbenzene		2		57	2		61
1,3-Dichloropropane		2		54	2		58
1,3-Dichloropropene				8			8
1,4-Dichloro-trans-2-butene	6	6	1	279		3	295
1,4-Dioxane						10	10
1-Methyl-4-isopropylbenzene		2		37	2		41
2,2-Dichloropropane		2		54	2		58
2-Chloroethyl vinyl ether	6	6	1	279		3	295
2-Chlorotoluene		2		54	2		58
4-Chlorotoluene		2		54	2		58
Acetone	6	8	1	332	2	13	362
Acrolein	6	6	1	279		3	295

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Acrylonitrile	6	6	1	279		3	295
Benzene	6	24	1	405	28	17	481
Bromobenzene		2		54	2		58
Bromochloromethane	6	8	1	332	2	13	362
Bromodichloromethane	6	8	1	332	2	13	362
Bromoethane				1			1
Bromoform	6	8	1	332	2	13	362
Bromomethane	6	8	1	332	2	13	362
BTEX	6	24	1	424	28	17	500
Butylbenzene				8			8
Carbon disulfide	6	8	1	329	2	13	359
Carbon tetrachloride	6	8	1	332	2	13	362
Chlorobenzene	6	8	1	341	2	13	371
Chlorodibromomethane	6	8	1	332	2	13	362
Chloroethane	6	8	1	335	2	13	365
Chloroform	6	8	1	332	2	13	362
Chloromethane	6	8	1	332	2	13	362
cis-1,2-Dichloroethene	6	8	1	138	2	10	165
cis-1,3-Dichloropropene	6	8	1	324	2	13	354
Dichlorodifluoromethane	6	8	1	332	2	13	362
Ethylbenzene	6	24	1	424	28	17	500
Ethylene dibromide	6	8	1	332	2	13	362
Hexahydrobenzene						10	10
Isopropylbenzene	6	8	1	335	2	13	365
m,p-Xylene	6	24	1	395	28	17	471
Methyl acetate						10	10
Methyl iodide	6	6	1	279		3	295
Methyl isobutyl ketone	6	8	1	323	2	13	353
Methyl n-butyl ketone	6	8	1	332	2	13	362
Methyl tert-butyl ether	6	6	1	306		13	332
Methylcyclohexane						10	10
Methylene bromide	6	8	1	332	2	3	352
Methylene chloride	6	8	1	332	2	13	362
Methylethyl ketone	6	8	1	323	2	13	353
Methylisopropylbenzene				17			17
n-Butylbenzene		2		46	2		50
n-Propylbenzene		2		57	2		61
o-Xylene	6	24	1	395	28	17	471
Sec-butylbenzene		2		54	2		58
Styrene	6	8	1	332	2	13	362
tert-Butylbenzene		2		51	2		55
Tetrachloroethene	6	8	1	392	2	13	422
Toluene	6	24	1	396	28	17	472
trans-1,2-Dichloroethene	6	8	1	329	2	13	359
trans-1,3-Dichloropropene	6	8	1	329	2	13	359
Trichloroethene	6	12	1	392	28	17	456
Trichlorofluoromethane	6	8	1	332	2	13	362
Vinyl acetate	6	6	1	279		3	295
Vinyl chloride	6	8	1	332	2	13	362
Xylene	6	24	1	424	28	17	500
Petroleum							
C10-C12 Aliphatics				5			5
C10-C12 Aromatics				5			5
C12-C16 Aliphatics				5			5
C12-C16 Aromatics				5			5
C16-C21 Aliphatics				5			5
C16-C21 Aromatics				5			5
C21-C34 Aliphatics				5			5
C21-C34 Aromatics				5			5
C8-C10 Aliphatics				5			5
C8-C10 Aromatics				5			5
Total Petroleum Hydrocarbons (Diesel)	17	61	11	859	26	43	1,017
Total Petroleum Hydrocarbons (Diesel, silica gel treated)		127	10	216		32	385
Fuel oil no. 2				1			1
Total Petroleum Hydrocarbons (Gasoline)	17	36	1	468	26	16	564
Total Petroleum Hydrocarbons (Heavy-Oil)		14		26	26	4	70
Jet fuel A		18		1	26	4	49
JP-4 jet fuel		14		1	26	4	45

Table 2.3-3. Summary of Sediment Sample Counts in the RI Data Set.

Analyte	Downstream	Downtown Reach	Multnomah Channel	Study Area	Ross Island Lagoon[a]	Upriver	Grand Total
Kerosene		18		1	26	4	49
Lube oil		14		143	26	4	187
Mineral spirits		18		1	26	4	49
Motor oil		22		27			49
Naphtha distillate		14		1	26	4	45
Non-petroleum hydrocarbons		14			26	4	44
Pencil pitch				44			44
Phytane				44			44
Pristane				44			44
Total Petroleum Hydrocarbons (Residual)	17	21	11	663		39	751
Total Petroleum Hydrocarbons (Residual, silica gel treated)		127	10	216		32	385
Total Petroleum Hydrocarbons	17	61	11	859	26	43	1,017
Total Petroleum Hydrocarbons (silica gel treated)		127	10	216		32	385
Radioisotopes							
Beryllium-7				111			111
Cesium-137				111			111
Lead-210				111			111
Radium-226				111			111

Notes:

[a] Data collected within Ross Island Lagoon were not presented in Section 5.

BTEX - benzene, toluene, ethylbenzene, and total xylene
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
Total TCDD TEQ - sum of PCDD/F and PCB congener TCDD TEQ
VOC - volatile organic compound

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
Grain Size	
Coarse sand	44
Medium sand	44
Fine sand	44
Coarse silt	44
Medium silt	44
Fine silt	44
Very fine silt	44
>9 Phi clay	44
8-9 Phi clay	44
Fine gravel	44
Fines	44
Medium gravel	44
Very coarse sand	44
Very fine sand	44
Conventionals	
Specific Gravity	40
Sulfide	1
Total organic carbon	51
Total solids	52
Metals	
Aluminum	50
Antimony	50
Arsenic	50
Cadmium	50
Chromium	50
Chromium hexavalent	45
Copper	50
Lead	50
Mercury	50
Nickel	50
Selenium	50
Silver	50
Zinc	50
2-Methylnaphthalene	49
Acenaphthene	49
Acenaphthylene	49
Anthracene	49
Benzo(a)anthracene	49
Benzo(a)pyrene	49
Benzo(b)fluoranthene	49
Benzo(g,h,i)perylene	49
Benzo(k)fluoranthene	49
Chrysene	49
Dibenzo(a,h)anthracene	49
Fluoranthene	49
Fluorene	49
High Molecular Weight PAH	49
Indeno(1,2,3-cd)pyrene	49
Low Molecular Weight PAH	49
Naphthalene	51
Phenanthrene	49

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
Pyrene	49
Total cPAHs	49
Total PAHs	49
Butyltins	
Butyltin ion	48
Dibutyltin ion	48
Tetrabutyltin	48
Tributyltin ion	48
PCB Aroclors	
Aroclor 1016	48
Aroclor 1221	48
Aroclor 1232	48
Aroclor 1242	48
Aroclor 1248	48
Aroclor 1254	48
Aroclor 1260	48
Aroclor 1262	48
Aroclor 1268	48
Total PCB Aroclors	48
PCB Congeners	
Total PCB TEQ (ND = 0)	52
PCB001	52
PCB002	52
PCB003	52
PCB004 & 010	52
PCB005 & 008	52
PCB006	52
PCB007 & 009	52
PCB011	52
PCB012 & 013	52
PCB014	52
PCB015	52
PCB016 & 032	52
PCB017	52
PCB018	52
PCB019	52
PCB020 & 021 & 033	52
PCB022	52
PCB023	52
PCB024 & 027	52
PCB025	52
PCB026	52
PCB028	52
PCB029	52
PCB030	52
PCB031	52
PCB034	52
PCB035	52
PCB036	52
PCB037	52
PCB038	52

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
PCB039	52
PCB040	52
PCB041 & 064 & 071 & 072	52
PCB042 & 059	52
PCB043 & 049	52
PCB044	52
PCB045	52
PCB046	52
PCB047	52
PCB048 & 075	52
PCB050	52
PCB051	52
PCB052 & 069	52
PCB053	52
PCB054	52
PCB055	52
PCB056 & 060	52
PCB057	52
PCB058	52
PCB061 & 070	52
PCB062	52
PCB063	52
PCB065	52
PCB066 & 076	52
PCB067	52
PCB068	52
PCB073	52
PCB074	52
PCB077	52
PCB078	52
PCB079	52
PCB080	52
PCB081	52
PCB082	52
PCB083	52
PCB084 & 092	52
PCB085 & 116	52
PCB086	52
PCB087 & 117 & 125	52
PCB088 & 091	52
PCB089	52
PCB090 & 101	52
PCB093	52
PCB094	52
PCB095 & 098 & 102	52
PCB096	52
PCB097	52
PCB099	52
PCB100	52
PCB103	52
PCB104	52
PCB105	52
PCB106 & 118	52

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
PCB107 & 109	52
PCB108 & 112	52
PCB110	52
PCB111 & 115	52
PCB113	52
PCB114	52
PCB119	52
PCB120	52
PCB121	52
PCB122	52
PCB123	52
PCB124	52
PCB126	52
PCB127	52
PCB128 & 162	52
PCB129	52
PCB130	52
PCB131	52
PCB132 & 161	52
PCB133 & 142	52
PCB134 & 143	52
PCB135	52
PCB136	52
PCB137	52
PCB138 & 163 & 164	52
PCB139 & 149	52
PCB140	52
PCB141	52
PCB144	52
PCB145	52
PCB146 & 165	52
PCB147	52
PCB148	52
PCB150	52
PCB151	52
PCB152	52
PCB153	52
PCB154	52
PCB155	52
PCB156	52
PCB157	52
PCB158 & 160	52
PCB159	52
PCB166	52
PCB167	52
PCB168	52
PCB169	52
PCB170	52
PCB171	52
PCB172	52
PCB173	52
PCB174	52
PCB175	52

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
PCB176	52
PCB177	52
PCB178	52
PCB179	52
PCB180	52
PCB181	52
PCB182 & 187	52
PCB183	52
PCB184	52
PCB185	52
PCB186	52
PCB188	52
PCB189	52
PCB190	52
PCB191	52
PCB192	52
PCB193	52
PCB194	52
PCB195	52
PCB196 & 203	52
PCB197	52
PCB198	52
PCB199	52
PCB200	52
PCB201	52
PCB202	52
PCB204	52
PCB205	52
PCB206	52
PCB207	52
PCB208	52
PCB209	52
Total PCB Congeners	52
PCB Homologs	
Dichlorobiphenyl homologs	52
Heptachlorobiphenyl homologs	52
Hexachlorobiphenyl homologs	52
Monochlorobiphenyl homologs	52
Nonachlorobiphenyl homologs	52
Octachlorobiphenyl homologs	52
Pentachlorobiphenyl homologs	52
Tetrachlorobiphenyl homologs	52
Trichlorobiphenyl homologs	52

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
PCDD/F Homologs	
Heptachlorodibenzofuran homologs	48
Heptachlorodibenzo-p-dioxin homologs	48
Hexachlorodibenzofuran homologs	48
Hexachlorodibenzo-p-dioxin homologs	48
Octachlorodibenzofuran	48
Octachlorodibenzo-p-dioxin	48
Pentachlorodibenzofuran homologs	48
Pentachlorodibenzo-p-dioxin homologs	48
Tetrachlorodibenzofuran homologs	48
Tetrachlorodibenzo-p-dioxin homologs	48
Total PCDD/F	48
PCDD/Fs	
1,2,3,4,6,7,8-Heptachlorodibenzofuran	48
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	48
1,2,3,4,7,8,9-Heptachlorodibenzofuran	48
1,2,3,4,7,8-Hexachlorodibenzofuran	48
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	48
1,2,3,6,7,8-Hexachlorodibenzofuran	48
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	48
1,2,3,7,8,9-Hexachlorodibenzofuran	48
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	48
1,2,3,7,8-Pentachlorodibenzofuran	48
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	48
2,3,4,6,7,8-Hexachlorodibenzofuran	48
2,3,4,7,8-Pentachlorodibenzofuran	48
2,3,7,8-Tetrachlorodibenzofuran	48
2,3,7,8-Tetrachlorodibenzo-p-dioxin	48
TCDD TEQ (ND = 0)	48
Total TCDD TEQ (ND = 0)	52
Pesticides	
2,4'-DDD	50
2,4'-DDE	50
2,4'-DDT	50
4,4'-DDD	50
4,4'-DDE	50
4,4'-DDT	50
Aldrin	50
alpha-Endosulfan	50
alpha-Hexachlorocyclohexane	50
beta-Endosulfan	50
beta-Hexachlorocyclohexane	50
cis-Chlordane	50
cis-Nonachlor	50
delta-Hexachlorocyclohexane	50
Dieldrin	50
Endosulfan sulfate	50
Endrin	50
Endrin aldehyde	50
Endrin ketone	50
gamma-Hexachlorocyclohexane (Lindane)	50
Heptachlor	50

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
Heptachlor epoxide	50
Methoxychlor	50
Mirex	50
Oxychlordane	50
Total Chlordanes	50
Total Endosulfan	50
Total DDD	50
DDx	50
Total DDE	50
Total DDT	50
Toxaphene	50
trans-Chlordane	50
trans-Nonachlor	50
Herbicides	
2,4,5-T	47
2,4-D	47
2,4-DB	47
Dalapon	47
Dicamba	47
Dichloroprop	47
Dinoseb	47
MCPA	47
MCPP	47
Silvex	47
Phthalates	
Bis(2-ethylhexyl) phthalate	49
Butylbenzyl phthalate	49
Dibutyl phthalate	49
Diethyl phthalate	49
Dimethyl phthalate	49
Di-n-octyl phthalate	49
SVOCs	
1,2,4-Trichlorobenzene	49
1,2-Dichlorobenzene	49
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	51
2,4-Dinitrotoluene	49
2,6-Dinitrotoluene	49
2-Chloronaphthalene	49
2-Nitroaniline	49
3,3'-Dichlorobenzidine	49
3-Nitroaniline	49
4-Bromophenyl phenyl ether	49
4-Chloroaniline	49
4-Chlorophenyl phenyl ether	49
4-Nitroaniline	49
Aniline	49
Azobenzene	49
Benzoic acid	49
Benzyl alcohol	49
Bis(2-chloroethoxy) methane	49
Bis(2-chloroethyl) ether	49

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
Bis(2-chloroisopropyl) ether	49
Carbazole	49
Dibenzofuran	49
Hexachlorobenzene	50
Hexachlorobutadiene	50
Hexachlorocyclopentadiene	49
Hexachloroethane	50
Isophorone	49
Nitrobenzene	49
N-Nitrosodimethylamine	49
N-Nitrosodiphenylamine	49
N-Nitrosodipropylamine	49
Phenols	
2,3,4,5-Tetrachlorophenol	44
2,3,5,6-Tetrachlorophenol	44
2,4,5-Trichlorophenol	32
2,4,6-Trichlorophenol	44
2,4-Dichlorophenol	49
2,4-Dimethylphenol	49
2,4-Dinitrophenol	49
2-Chlorophenol	49
2-Methylphenol	49
2-Nitrophenol	49
4,6-Dinitro-2-methylphenol	49
4-Chloro-3-methylphenol	49
4-Methylphenol	49
4-Nitrophenol	49
Pentachlorophenol	44
Phenol	49
VOCs	
1,1,1,2-Tetrachloroethane	48
1,1,1-Trichloroethane	48
1,1,2,2-Tetrachloroethane	48
1,1,2-Trichloroethane	48
1,1-Dichloroethane	48
1,1-Dichloroethene	48
1,2,3-Trichloropropane	48
1,2-Dichloroethane	48
1,2-Dichloropropane	48
1,4-Dichloro-trans-2-butene	48
2-Chloroethyl vinyl ether	48
Acetone	48
Acrolein	48
Acrylonitrile	48
Benzene	48
Bromochloromethane	48
Bromodichloromethane	48
Bromoform	48
Bromomethane	48
BTEX	48
Carbon disulfide	48
Carbon tetrachloride	48

Table 2.3-4. Summary of LWG Sediment Trap Sample Counts.

Analyte	# of LWG Samples
Chlorobenzene	48
Chlorodibromomethane	48
Chloroethane	48
Chloroform	48
Chloromethane	48
cis-1,2-Dichloroethene	48
cis-1,3-Dichloropropene	48
Dichlorodifluoromethane	48
Ethylbenzene	48
Ethylene dibromide	48
Isopropylbenzene	48
m,p-Xylene	48
Methyl iodide	48
Methyl isobutyl ketone	48
Methyl n-butyl ketone	48
Methyl tert-butyl ether	48
Methylene bromide	48
Methylene chloride	48
Methylethyl ketone	48
o-Xylene	48
Styrene	48
Tetrachloroethene	48
Toluene	48
trans-1,2-Dichloroethene	48
trans-1,3-Dichloropropene	48
Trichloroethene	48
Trichlorofluoromethane	48
Vinyl acetate	48
Vinyl chloride	48
Xylene	48
Petroleum	
Total Petroleum Hydrocarbons (Diesel)	47
Total Petroleum Hydrocarbons (Gasoline)	49
Total Petroleum Hydrocarbons (Residual)	47
Total Petroleum Hydrocarbons	47

Notes:

BTEX - benzene, toluene, ethylbenzene, and total xylene
cPAH - carcinogenic polycyclic aromatic hydrocarbon
LWG - Lower Willamette Group
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
Total TCDD TEQ - sum of PCDD/F and PCB congener TCDD TEQ
VOC - volatile organic compound

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
Conventionals																							
Alkalinity																						12	12
Bicarbonate																						3	3
Chloride																						15	15
Conductivity	24			25			26												46			23	144
Cyanide																						180	180
Cyanide (dissolved)																						180	180
Cyanide amenable to chlorination																						180	180
Cyanide amenable to chlorination (dissolved)																						180	180
Depth	17			25			26												46				114
Dissolved organic carbon	25			25			24			4			14			40			42			186	360
Dissolved oxygen	23			25			26												46			23	143
Free cyanide																						180	180
Free cyanide (dissolved)																						180	180
Hardness as CaCO3	25			25			24			4			4						38				120
Hardness as CaCO3 (dissolved)													10			40			4				54
Nitrate																						3	3
Nitrite																						3	3
Oxidation-Reduction Potential	11			25			26												46			22	130
Perchlorate	2			2			2						2			6			6				20
pH	24			25			26												46			23	144
Salinity																						3	3
Sulfate																						15	15
Sulfide																						180	180
Temperature	24			25			26												46			23	144
Total dissolved solids	25			25			24			4			14			40			42				174
Total organic carbon	25			25			24			4			14			40			42			183	357
Total suspended solids	25			25			24			4			14			40			42			2,711	2,885
Total suspended solids w/0.45 um filter																16			38				54
Turbidity																			46				46
Metals																							
Aluminum				25			24			4			14			40			42			4	153
Aluminum (dissolved)				25			24			4			14			40			42				149
Antimony	25			25			24			4			14			40			42			7	181
Antimony (dissolved)	25			25			24			4			14			40			42			3	177
Arsenic	25			25			24			4			14			40			42			59	233
Arsenic (dissolved)	25			25			24			4			14			40			42			3	177
Barium																						4	4
Beryllium																						4	4
Cadmium	25			25			24			4			14			40			42			7	181
Cadmium (dissolved)	25			25			24			4			14			40			42			3	177
Calcium																						15	15
Calcium (dissolved)																						3	3
Chromium	25			25			24			4			14			40			42			50	224
Chromium (dissolved)	25			25			24			4			14			40			42				174
Chromium hexavalent	2			2			2						2			6			6				20
Cobalt																						4	4
Copper	25			25			24			4			14			40			42			53	227
Copper (dissolved)	25			25			24			4			14			40			42			3	177
Iron																						195	195
Iron (dissolved)																						183	183
Lead	25			25			24			4			14			40			42			7	181
Lead (dissolved)	25			25			24			4			14			40			42			3	177
Magnesium																						15	15
Magnesium (dissolved)																						3	3
Manganese																						19	19
Manganese (dissolved)																						3	3
Mercury	25			25			24			4			14			40			42			15	189
Mercury (dissolved)	25			25			24			4			14			40			42			3	177
Nickel	25			25			24			4			14			40			42			7	181
Nickel (dissolved)	25			25			24			4			14			40			42			3	177

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
Potassium																						15	15
Potassium (dissolved)																						3	3
Selenium	25			25			24			4			14			40			42			4	178
Selenium (dissolved)	25			25			24			4			14			40			42				174
Silver	25			25			24			4			14			40			42			7	181
Silver (dissolved)	25			25			24			4			14			40			42			3	177
Sodium																						15	15
Sodium (dissolved)																						3	3
Thallium	25																					4	29
Thallium (dissolved)	25																						25
Vanadium																						4	4
Zinc	25			25			24			4			14			40			42			53	227
Zinc (dissolved)	25			25			24			4			14			40			42			3	177
Butyltins																							
Butyltin ion	25			25			24			4			14			40			42			3	177
Dibutyltin ion	25			25			24			4			14			40			42			3	177
Tetrabutyltin	25			25			24			4			14			40			42			3	177
Tributyltin ion	25			25			24			4			14			40			42			3	177
PCB Aroclors																							
Aroclor 1016	21			17			16															7	61
Aroclor 1221	21			17			16															7	61
Aroclor 1232	21			17			16															7	61
Aroclor 1242	21			17			16															7	61
Aroclor 1248	21			17			16															7	61
Aroclor 1254	21			17			16															7	61
Aroclor 1260	21			17			16															7	61
Aroclor 1262	21			17			16															4	58
Aroclor 1268	21			17			16															4	58
Total PCB Aroclors	21			17			16															7	61
PCB Congeners																							
Total PCB TEQ (ND = 0)		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB001		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB002		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB003		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB004		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB005		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB006		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB007		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB008		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB009		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB010		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB011		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB012																						4	4
PCB012 & 013		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB013																						4	4
PCB014		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB015		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB016		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB017		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB018																						4	4
PCB018 & 030		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB019		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB020																						4	4
PCB020 & 028		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB021																						4	4
PCB021 & 033		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB022		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB023		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB024		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB025		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB026																						4	4

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
PCB026 & 029		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB027		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB028																						4	4
PCB029																						4	4
PCB030																						4	4
PCB031		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB032		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB033																						4	4
PCB034		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB035		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB036		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB037		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB038		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB039		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB040																						4	4
PCB040 & 041 & 071		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB041																						4	4
PCB042		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB043		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB044																						4	4
PCB044 & 047 & 065		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB045																						4	4
PCB045 & 051		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB046		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB047																						4	4
PCB048		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB049																						4	4
PCB049 & 069		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB050																						4	4
PCB050 & 053		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB051																						4	4
PCB052		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB053																						4	4
PCB054		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB055		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB056		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB057		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB058		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB059																						4	4
PCB059 & 062 & 075		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB060		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB061																						4	4
PCB061 & 070 & 074 & 076		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB062																						4	4
PCB063		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB064		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB065																						4	4
PCB066		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB067		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB068		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB069																						4	4
PCB070																						4	4
PCB071																						4	4
PCB072		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB073		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB074																						4	4
PCB075																						4	4
PCB076																						4	4
PCB077		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB078		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB079		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
PCB080		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB081		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB082		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB083																						4	4
PCB083 & 099		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB084		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB085																						4	4
PCB085 & 116 & 117		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB086																						4	4
PCB086 & 087 & 097 & 108 & 119 & 125		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB087																						4	4
PCB088																						4	4
PCB088 & 091		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB089		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB090																						4	4
PCB090 & 101 & 113		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB091																						4	4
PCB092		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB093																						4	4
PCB093 & 095 & 098 & 100 & 102		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB094		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB095																						4	4
PCB096		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB097																						4	4
PCB098																						4	4
PCB099																						4	4
PCB100																						4	4
PCB101																						4	4
PCB102																						4	4
PCB103		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB104		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB105		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB106		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB107																						4	4
PCB107 & 124		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB108																						4	4
PCB109		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB110																						4	4
PCB110 & 115		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB111		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB112		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB113																						4	4
PCB114		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB115																						4	4
PCB116																						4	4
PCB117																						4	4
PCB118		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB119																						4	4
PCB120		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB121		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB122		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB123		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB124																						4	4
PCB125																						4	4
PCB126		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB127		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB128 & 166		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB129																						4	4
PCB129 & 138 & 160 & 163		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB130		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB131		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
PCB132		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB133		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB134																						4	4
PCB134 & 143		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB135																						4	4
PCB135 & 151 & 154		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB136		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB137		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB138																						4	4
PCB139																						4	4
PCB139 & 140		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB140																						4	4
PCB141		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB142		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB143																						4	4
PCB144		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB145		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB146		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB147																						4	4
PCB147 & 149		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB148		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB149																						4	4
PCB150		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB151																						4	4
PCB152		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB153																						4	4
PCB153 & 168		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB154																						4	4
PCB155		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB156																						4	4
PCB156 & 157		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB157																						4	4
PCB158		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB159		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB160																						4	4
PCB161		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB162		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB163																						4	4
PCB164		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB165		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB166																						4	4
PCB167		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB168																						4	4
PCB169		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB170		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB171																						4	4
PCB171 & 173		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB172		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB173																						4	4
PCB174		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB175		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB176		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB177		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB178		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB179		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB180																						4	4
PCB180 & 193		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB181		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB182		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB183																						4	4
PCB183 & 185		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
PCB184		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB185																						4	4
PCB186		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB187		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB188		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB189		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB190		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB191		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB192		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB193																						4	4
PCB194		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB195		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB196		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB197																						4	4
PCB197 & 200		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB198																						4	4
PCB198 & 199		8	8		8	8		8	7		3	3		14	14		40	40		40	40		241
PCB199																						4	4
PCB200																						4	4
PCB201		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB202		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB203		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB204		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB205		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB206		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB207		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB208		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB209		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Total PCB Congeners		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCB Homologs																							
Dichlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Heptachlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Hexachlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Monochlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		29	40	4	234
Nonachlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Octachlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Pentachlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Tetrachlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
Trichlorobiphenyl homologs		8	8		8	8		8	7		3	3		14	14		40	40		40	40	4	245
PCDD/Fs																							
1,2,3,4,6,7,8-Heptachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,4,7,8,9-Heptachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,4,7,8-Hexachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,6,7,8-Hexachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,7,8,9-Hexachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,7,8-Pentachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
1,2,3,7,8-Pentachlorodibenzo-p-dioxin		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
2,3,4,6,7,8-Hexachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
2,3,4,7,8-Pentachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
2,3,7,8-Tetrachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
2,3,7,8-Tetrachlorodibenzo-p-dioxin		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
TCDD TEQ (ND = 0)		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
Total TCDD TEQ (ND = 0)		8	8		8	8		8	8		3	3		14	14		40	40		40	40	4	246

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
PCDD/F Homologs																							
Heptachlorodibenzofuran homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Heptachlorodibenzo-p-dioxin homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Hexachlorodibenzofuran homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Hexachlorodibenzo-p-dioxin homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Octachlorodibenzofuran		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
Octachlorodibenzo-p-dioxin		6	6		6	6		6	6		3	3		14	14		22	22		22	22	4	162
Pentachlorodibenzofuran homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Pentachlorodibenzo-p-dioxin homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Tetrachlorodibenzofuran homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Tetrachlorodibenzo-p-dioxin homologs		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Total PCDD/F		6	6		6	6		6	6		3	3		14	14		22	22		22	22		158
Pesticides																							
2,4'-DDD	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
2,4'-DDE	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
2,4'-DDT	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
4,4'-DDD	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	7	277
4,4'-DDD (dissolved)																						3	3
4,4'-DDE	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	7	277
4,4'-DDE (dissolved)																						3	3
4,4'-DDT	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	7	277
4,4'-DDT (dissolved)																						3	3
Aldrin	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
alpha-Endosulfan	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
alpha-Hexachlorocyclohexane	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
alpha-Hexachlorocyclohexane (dissolved)																						3	3
beta-Endosulfan	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
beta-Hexachlorocyclohexane	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
cis-Chlordane	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
cis-Chlordane (dissolved)																						3	3
cis-Nonachlor	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
delta-Hexachlorocyclohexane	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Dieldrin	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Dieldrin (dissolved)																						3	3
Endosulfan (dissolved)																						1	1
Endosulfan sulfate	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Endrin	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Endrin (dissolved)																						3	3
Endrin aldehyde	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Endrin ketone	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
gamma-Hexachlorocyclohexane (Lindane)	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Heptachlor	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Heptachlor epoxide	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Heptachlor epoxide (dissolved)																						3	3
Methoxychlor	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Methoxychlor (dissolved)																						3	3
Mirex	19			17			16															4	56
Oxychlordane	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Total Chlordanes	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Total Chlordanes (dissolved)																						3	3
Total Endosulfan	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Total DDD	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	7	277
Total DDD (dissolved)																						3	3
DDx	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	7	277
DDx (dissolved)																						3	3
Total DDE	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	7	277
Total DDE (dissolved)																						3	3
Total DDT	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	7	277
Total DDT (dissolved)																						3	3
Total 4,4'-DDx	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26				3	207
Toxaphene	19			17			16									18			14			4	88

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
trans-Chlordane	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
trans-Chlordane (dissolved)																						3	3
trans-Nonachlor	19	8	8	17	8	8	16	8	8		3	3		14	14	18	26	26	14	26	26	4	274
Herbicides																							
2,4,5-T	25			25			24			4			14			40			42				174
2,4-D	25			25			24			4			14			40			42				174
2,4-DB	25			25			24						14			40			42				170
Dalapon	25			25			24						14			40			42				170
Dicamba	25			25			24						14			40			42				170
Dichloroprop	25			25			24			4			14			40			42				174
Dinoseb	25			25			24						14			40			42				170
MCPA	25			25			24						14			40			42				170
MCPP	25			25			24						14			40			42				170
Silvex	25			25			24			4			14			40			42				174
PAHs																							
1-Methylnaphthalene																						10	10
2-Methylnaphthalene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	18	362
Acenaphthene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Acenaphthylene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Anthracene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Benzo(a)anthracene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	35	379
Benzo(a)pyrene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Benzo(b)fluoranthene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Benzo(b+k)fluoranthene																						9	9
Benzo(g,h,i)perylene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Benzo(j+k)fluoranthene		8	8		8	8		8	8		3	3		14	14		22	22		22	22		170
Benzo(k)fluoranthene	25			25			24			4			14			40			42			54	228
Chrysene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	35	379
Dibenzo(a,h)anthracene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Fluoranthene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Fluorene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
High Molecular Weight PAH	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Indeno(1,2,3-cd)pyrene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Low Molecular Weight PAH	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Naphthalene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	77	421
Phenanthrene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Pyrene	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Total cPAHs	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Total PAHs	25	8	8	25	8	8	24	8	8	4	3	3	14	14	14	40	22	22	42	22	22	54	398
Phthalates																							
Bis(2-ethylhexyl) phthalate	25	8	8	25	8	8	24	8	8	4			14			40			42			8	230
Butylbenzyl phthalate	25	8	8	25	8	8	24	8	8	4			14			40			42			8	230
Dibutyl phthalate	25	8	8	25	8	8	24	8	8	4			14			40			42			8	230
Diethyl phthalate	25	8	8	25	8	8	24	8	8	4			14			40			42			8	230
Dimethyl phthalate	25	8	8	25	8	8	24	8	8	4			14			40			42			8	230
Di-n-octyl phthalate	25	8	8	25	8	8	24	8	8	4			14			40			42			8	230
SVOCs																							
1,2,4-Trichlorobenzene	25			25			24			4			14			40			42			31	205
1,2-Dichlorobenzene	25			25			24			4			14			40			42			31	205
1,2-Diphenylhydrazine																						4	4
1,3-Dichlorobenzene	25			25			24			4			14			40			42			31	205
1,4-Dichlorobenzene	25			25			24			4			14			40			42			31	205
2,4-Dinitrotoluene	25			25			24			4			14			40			42			5	179
2,6-Dinitrotoluene	25			25			24			4			14			40			42			5	179
2-Chloronaphthalene	25			25			24			4			14			40			42			15	189
2-Nitroaniline	25			25			24			4			14			40			42			5	179
3,3'-Dichlorobenzidine	25			25			24			4			14			40			42			5	179
3-Nitroaniline	25			25			24			4			14			40			42			5	179
4-Bromophenyl phenyl ether	25			25			24			4			14			40			42			5	179
4-Chloroaniline	25			25			24			4			14			40			42			5	179
4-Chlorophenyl phenyl ether	25			25			24			4			14			40			42			5	179

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
4-Nitroaniline	25			25			24			4			14			40			42			5	179
Aniline	25			25			24			4			14			40			42			4	178
Azobenzene	25			25			24			4			14			40			42				174
Benzoic acid	25			25			24			4			14			40			42			8	182
Benzyl alcohol	25			25			24			4			14			40			42			8	182
Bis(2-chloro-1-methylethyl) ether																						4	4
Bis(2-chloroethoxy) methane	25			25			24			4			14			40			42			5	179
Bis(2-chloroethyl) ether	25			25			24			4			14			40			42			5	179
Bis(2-chloroisopropyl) ether	25			25			24			4			14			40			42			1	175
Carbazole	25			25			24			4			14			40			42			4	178
Dibenzofuran	25			25			24			4			14			40			42			18	192
Hexachlorobenzene	25	8	8	26	8	8	24	8	8	4	3	3	14	14	14	42	26	26	42	26	26	8	371
Hexachlorobenzene (dissolved)																						3	3
Hexachlorobutadiene	25	8	8	26	8	8	24	8	8	4	3	3	14	14	14	42	26	26	42	26	26	31	394
Hexachlorocyclopentadiene	25			25			24			4			14			40			42			5	179
Hexachloroethane	25			26			24			4			14			40			42			8	183
Isophorone	25			25			24			4			14			40			42			5	179
Nitrobenzene	25			25			24			4			14			40			42			5	179
N-Nitrosodimethylamine	25			25			24			4			14			40			42			4	178
N-Nitrosodiphenylamine	25			25			24			4			14			40			42			8	182
N-Nitrosodipropylamine	25			25			24			4			14			40			42			5	179
Retene																						10	10
Phenols																							
2,3,4,5-Tetrachlorophenol																						4	4
2,3,4,6-Tetrachlorophenol				25			24			4			14			40			42			4	153
2,4,5-Trichlorophenol	25			25			24			4			14			40			42			5	179
2,4,6-Trichlorophenol	25			25			24			4			14			40			42			5	179
2,4-Dichlorophenol	25			25			24			4			14			40			42			5	179
2,4-Dimethylphenol	25			25			24			4			14			40			42			8	182
2,4-Dinitrophenol	25			25			24			4			14			40			42			5	179
2-Chlorophenol	25			25			24			4			14			40			42			5	179
2-Methylphenol	25			25			24			4			14			40			42			8	182
2-Nitrophenol	25			25			24			4			14			40			42			5	179
3- and 4-Methylphenol Coelution																						4	4
4,6-Dinitro-2-methylphenol	25			25			24			4			14			40			42			5	179
4-Chloro-3-methylphenol	25			25			24			4			14			40			42			5	179
4-Methylphenol	25			25			24			4			14			40			42			4	178
4-Nitrophenol	25			25			24			4			14			40			42			5	179
Pentachlorophenol	25			25			24			4			14			40			42			35	209
Phenol	25			25			24			4			14			40			42			8	182
VOCs																							
1,1,1,2-Tetrachloroethane																						23	23
1,1,1-Trichloroethane																						27	27
1,1,2,2-Tetrachloroethane																						27	27
1,1,2-Trichloro-1,2,2-trifluoroethane																						4	4
1,1,2-Trichloroethane																						27	27
1,1-Dichloroethane																						27	27
1,1-Dichloroethene																						27	27
1,1-Dichloropropene																						23	23
1,2,3-Trichlorobenzene																						27	27
1,2,3-Trichloropropane																						23	23
1,2,4-Trimethylbenzene																						23	23
1,2-Dibromo-3-chloropropane																						27	27
1,2-Dichloroethane																						27	27
1,2-Dichloropropane																						27	27
1,3,5-Trimethylbenzene																						23	23
1,3-Dichloropropane																						23	23
1,4-Dioxane																						4	4
1-Methyl-4-isopropylbenzene																						23	23
2,2-Dichloropropane																						23	23
2-Chlorotoluene																						23	23

Table 2.3-5. Summary of Surface Water Sample Counts in the RI Data Set.[a,b]

	Sampling Date																					Other Parties	
	LWG - November 2004			LWG - March 2005			LWG - July 2005			LWG - January 2006			LWG - September 2006			LWG - November 2006			LWG - January-March 2007				
Analyte	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**surface water from XAD column**	**surface water particulates from XAD filter**	**surface water**	**Grand Total**
4-Chlorotoluene																						23	23
Acetone																						27	27
Acrylonitrile																						23	23
Benzene																						30	30
Bromobenzene																						23	23
Bromochloromethane																						27	27
Bromodichloromethane																						27	27
Bromoform																						27	27
Bromomethane																						27	27
BTEX																						30	30
Carbon disulfide																						27	27
Carbon tetrachloride																						27	27
Chlorobenzene																						27	27
Chlorodibromomethane																						27	27
Chloroethane																						27	27
Chloroform																						27	27
Chloromethane																						27	27
cis-1,2-Dichloroethene																						27	27
cis-1,3-Dichloropropene																						27	27
Dichlorodifluoromethane																						27	27
Ethylbenzene																						30	30
Ethylene dibromide																						27	27
Hexahydrobenzene																						4	4
Isopropylbenzene																						27	27
m,p-Xylene																						30	30
Methyl acetate																						4	4
Methyl isobutyl ketone																						27	27
Methyl n-butyl ketone																						27	27
Methyl tert-butyl ether																						27	27
Methylcyclohexane																						4	4
Methylene bromide																						23	23
Methylene chloride																						27	27
Methylethyl ketone																						27	27
n-Butylbenzene																						23	23
n-Propylbenzene																						23	23
o-Xylene																						30	30
Sec-butylbenzene																						23	23
Styrene																						27	27
tert-Butylbenzene																						23	23
Tetrachloroethene																						27	27
Toluene																						30	30
trans-1,2-Dichloroethene																						27	27
trans-1,3-Dichloropropene																						27	27
Trichloroethene																						30	30
Trichlorofluoromethane																						27	27
Vinyl chloride																						27	27
Xylene																						30	30
Grand Total	3,902	2,026	2,026	3,847	2,026	2,026	3,688	2,026	1,856	444	762	762	1,642	3,556	3,556	5,324	8,806	8,806	5,748	8,769	8,780	9,791	90,169

Notes:

[a] LWG surface water samples were collected by peristaltic pump. Non-LWG surface water samples were collected using either a grab sampler or pumping device.

[b] With the exception of City of Portland-generated total suspended solids data, no other non-LWG surface water data are included in Section 5.

BTEX - benzene, toluene, ethylbenzene, and total xylene
LWG - Lower Willamette Group
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
RI - remedial investigation
SVOC - semivolatile organic compound
Total TCDD TEQ - sum of PCDD/F and PCB congener TCDD TEQ
VOC - volatile organic compound
XAD - Amberlite® XAD®-2 is a hydrophobic crosslinked polystyrene copolymer resin
XAD filter - a 0.5mm glass fiber filter cartridge

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
Conventionals									
Alkalinity					2				2
Chloride					2				2
Conductivity	51				16				67
Cyanide					2				2
Dissolved organic carbon	119	6	26						151
Flow					8				8
Hardness as CaCO3					4				4
Nitrate					2				2
Nitrite					2				2
pH	56				51				107
Phosphorus					2				2
Sulfate					2				2
Temperature	56				16				72
Total dissolved solids					6				6
Total organic carbon	141	6	26	4	11	40	5		233
Total solids						44	6	1	51
Total suspended solids	146	8	26		89				269
Turbidity	56		26		8				90
Metals									
Aluminum	121		27		33	19	5		205
Aluminum (dissolved)	82		27		3				112
Antimony	121	8	27		64	19	5		244
Antimony (dissolved)	82	8	27		2				119
Arsenic	123	8	27		88	19	5		270
Arsenic (dissolved)	82	8	27		31				148
Barium					61				61
Barium (dissolved)					12				12
Beryllium		8			32				40
Beryllium (dissolved)		8							8
Cadmium	121	8	27		98	19	5		278
Cadmium (dissolved)	82	8	27		33				150
Calcium					27				27
Chromium	121	8	27		114	19	5		294
Chromium (dissolved)	82	8	27		33				150
Chromium hexavalent					19				19
Cobalt					9				9
Copper	121	8	27		140	19	5		320
Copper (dissolved)	82	8	27		41				158
Iron					28				28
Iron (dissolved)					1				1
Lead	121	8	27		141	19	5		321
Lead (dissolved)	82	8	27		41				158
Magnesium					27				27
Manganese					105				105
Manganese (dissolved)					30				30
Mercury	126	8	27		86	19	5		271
Mercury (dissolved)	84	8	27		25				144
Molybdenum					9				9
Nickel	121	8	27		103	19	5		283
Nickel (dissolved)	82	8	27		27				144
Potassium					18				18
Selenium	121	8	27		61	19	5		241
Selenium (dissolved)	82	8	27		20				137
Silver	121	7	27		76	19	5		255
Silver (dissolved)	82	8	27		23				140
Sodium					18				18
Thallium		8			44				52
Thallium (dissolved)		8			12				20
Tin					18				18
Vanadium					29				29
Vanadium (dissolved)					1				1
Zinc	121	8	27		145	19	5		325
Zinc (dissolved)	82	8	27		41				158

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
Butyltins									
Tributyltin ion					2				2
PCB Aroclors									
Aroclor 1016		6	26		50		4	1	87
Aroclor 1016 (dissolved)		5	18						23
Aroclor 1221		6	26		52		4	1	89
Aroclor 1221 (dissolved)		5	18						23
Aroclor 1232		6	26		50		4	1	87
Aroclor 1232 (dissolved)		5	18						23
Aroclor 1242		6	26		64		4	1	101
Aroclor 1242 (dissolved)		5	18						23
Aroclor 1248		6	26		64		4	1	101
Aroclor 1248 (dissolved)		5	18						23
Aroclor 1254		6	26		64		4	1	101
Aroclor 1254 (dissolved)		5	18						23
Aroclor 1260		6	26		64		4	1	101
Aroclor 1260 (dissolved)		5	18						23
Aroclor 1262			26		2		4	1	33
Aroclor 1262 (dissolved)			18						18
Aroclor 1268			26		2		4	1	33
Aroclor 1268 (dissolved)			18						18
Total PCB Aroclors		6	26		64		4	1	101
Total PCB Aroclors (dissolved)		5	18						23
PCB Congeners									
Total PCB TEQ (ND = 0)	103	8	27			35	6		179
Total PCB TEQ (ND = 0) (dissolved)	11	8	9						28
PCB001	103	8	27			35	6		179
PCB001 (dissolved)	11	8	9						28
PCB002	103	8	27			35	6		179
PCB002 (dissolved)	11	8	9						28
PCB003	103	8	27			35	6		179
PCB003 (dissolved)	11	8	9						28
PCB004		8							8
PCB004 & 010	103		27			35	6		171
PCB004 & 010 (dissolved)	11		9						20
PCB004 (dissolved)		8							8
PCB005		8							8
PCB005 & 008	103		27			35	6		171
PCB005 & 008 (dissolved)	11		9						20
PCB005 (dissolved)		8							8
PCB006	103	8	27			35	6		179
PCB006 (dissolved)	11	8	9						28
PCB007		8							8
PCB007 & 009	103		27			35	6		171
PCB007 & 009 (dissolved)	11		9						20
PCB007 (dissolved)		8							8
PCB008		8							8
PCB008 (dissolved)		8							8
PCB009		8							8
PCB009 (dissolved)		8							8
PCB010		8							8
PCB010 (dissolved)		8							8
PCB011	103	8	27			35	6		179
PCB011 (dissolved)	11	8	9						28
PCB012 & 013	103	8	27			35	6		179
PCB012 & 013 (dissolved)	11	8	9						28
PCB014	103	8	27			35	6		179
PCB014 (dissolved)	11	8	9						28
PCB015	103	8	27			35	6		179
PCB015 (dissolved)	11	8	9						28
PCB016		8							8
PCB016 & 032	103		27			35	6		171
PCB016 & 032 (dissolved)	11		9						20
PCB016 (dissolved)		8							8
PCB017	103	8	27			35	6		179

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCB017 (dissolved)	11	8	9						28
PCB018	103		27			35	6		171
PCB018 & 030		8							8
PCB018 & 030 (dissolved)		8							8
PCB018 (dissolved)	11		9						20
PCB019	103	8	27			35	6		179
PCB019 (dissolved)	11	8	9						28
PCB020 & 021 & 033	103		27			35	6		171
PCB020 & 021 & 033 (dissolved)	11		9						20
PCB020 & 028		8							8
PCB020 & 028 (dissolved)		8							8
PCB021 & 033		8							8
PCB021 & 033 (dissolved)		8							8
PCB022	103	8	27			35	6		179
PCB022 (dissolved)	11	8	9						28
PCB023	103	8	27			35	6		179
PCB023 (dissolved)	11	8	9						28
PCB024		8							8
PCB024 & 027	103		27			35	6		171
PCB024 & 027 (dissolved)	11		9						20
PCB024 (dissolved)		8							8
PCB025	103	8	27			35	6		179
PCB025 (dissolved)	11	8	9						28
PCB026	103		27			35	6		171
PCB026 & 029		8							8
PCB026 & 029 (dissolved)		8							8
PCB026 (dissolved)	11		9						20
PCB027		8							8
PCB027 (dissolved)		8							8
PCB028	103		27			35	6		171
PCB028 (dissolved)	11		9						20
PCB029	103		27			35	6		171
PCB029 (dissolved)	11		9						20
PCB030	103		27			35	6		171
PCB030 (dissolved)	11		9						20
PCB031	103	8	27			35	6		179
PCB031 (dissolved)	11	8	9						28
PCB032		8							8
PCB032 (dissolved)		8							8
PCB034	103	8	27			35	6		179
PCB034 (dissolved)	11	8	9						28
PCB035	103	8	27			35	6		179
PCB035 (dissolved)	11	8	9						28
PCB036	103	8	27			35	6		179
PCB036 (dissolved)	11	8	9						28
PCB037	103	8	27			35	6		179
PCB037 (dissolved)	11	8	9						28
PCB038	103	8	27			35	6		179
PCB038 (dissolved)	11	8	9						28
PCB039	103	8	27			35	6		179
PCB039 (dissolved)	11	8	9						28
PCB040	103		27			35	6		171
PCB040 & 041 & 071		8							8
PCB040 & 041 & 071 (dissolved)		8							8
PCB040 (dissolved)	11		9						20
PCB041 & 064 & 071 & 072	103		27			35	6		171
PCB041 & 064 & 071 & 072 (dissolved)	11		9						20
PCB042		8							8
PCB042 & 059	103		27			35	6		171
PCB042 & 059 (dissolved)	11		9						20
PCB042 (dissolved)		8							8
PCB043		8							8
PCB043 & 049	103		27			35	6		171
PCB043 & 049 (dissolved)	11		9						20
PCB043 (dissolved)		8							8
PCB044	103		27			35	6		171

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCB044 & 047 & 065		8							8
PCB044 & 047 & 065 (dissolved)		8							8
PCB044 (dissolved)	11		9						20
PCB045	103		27			35	6		171
PCB045 & 051		8							8
PCB045 & 051 (dissolved)		8							8
PCB045 (dissolved)	11		9						20
PCB046	103	8	27			35	6		179
PCB046 (dissolved)	11	8	9						28
PCB047	103		27			35	6		171
PCB047 (dissolved)	11		9						20
PCB048		8							8
PCB048 & 075	103		27			35	6		171
PCB048 & 075 (dissolved)	11		9						20
PCB048 (dissolved)		8							8
PCB049 & 069		8							8
PCB049 & 069 (dissolved)		8							8
PCB050	103		27			35	6		171
PCB050 & 053		8							8
PCB050 & 053 (dissolved)		8							8
PCB050 (dissolved)	11		9						20
PCB051	103		27			35	6		171
PCB051 (dissolved)	11		9						20
PCB052		8							8
PCB052 & 069	103		27			35	6		171
PCB052 & 069 (dissolved)	11		9						20
PCB052 (dissolved)		8							8
PCB053	103		27			35	6		171
PCB053 (dissolved)	11		9						20
PCB054	103	8	27			35	6		179
PCB054 (dissolved)	11	8	9						28
PCB055	103	8	27			35	6		179
PCB055 (dissolved)	11	8	9						28
PCB056		8							8
PCB056 & 060	103		27			35	6		171
PCB056 & 060 (dissolved)	11		9						20
PCB056 (dissolved)		8							8
PCB057	103	8	27			35	6		179
PCB057 (dissolved)	11	8	9						28
PCB058	103	8	27			35	6		179
PCB058 (dissolved)	11	8	9						28
PCB059 & 062 & 075		8							8
PCB059 & 062 & 075 (dissolved)		8							8
PCB060		8							8
PCB060 (dissolved)		8							8
PCB061 & 070	103		27			35	6		171
PCB061 & 070 & 074 & 076		8							8
PCB061 & 070 & 074 & 076 (dissolved)		8							8
PCB061 & 070 (dissolved)	11		9						20
PCB062	103		27			35	6		171
PCB062 (dissolved)	11		9						20
PCB063	103	8	27			35	6		179
PCB063 (dissolved)	11	8	9						28
PCB064		8							8
PCB064 (dissolved)		8							8
PCB065	103		27			35	6		171
PCB065 (dissolved)	11		9						20
PCB066		8							8
PCB066 & 076	103		27			35	6		171
PCB066 & 076 (dissolved)	11		9						20
PCB066 (dissolved)		8							8
PCB067	103	8	27			35	6		179
PCB067 (dissolved)	11	8	9						28
PCB068	103	8	27			35	6		179
PCB068 (dissolved)	11	8	9						28
PCB072		8							8

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCB072 (dissolved)		8							8
PCB073	103	8	27			35	6		179
PCB073 (dissolved)	11	8	9						28
PCB074	103		27			35	6		171
PCB074 (dissolved)	11		9						20
PCB077	103	8	27			35	6		179
PCB077 (dissolved)	11	8	9						28
PCB078	103	8	27			35	6		179
PCB078 (dissolved)	11	8	9						28
PCB079	103	8	27			35	6		179
PCB079 (dissolved)	11	8	9						28
PCB080	103	8	27			35	6		179
PCB080 (dissolved)	11	8	9						28
PCB081	103	8	27			35	6		179
PCB081 (dissolved)	11	8	9						28
PCB082	103	8	27			35	6		179
PCB082 (dissolved)	11	8	9						28
PCB083	103		27			35	6		171
PCB083 & 099		8							8
PCB083 & 099 (dissolved)		8							8
PCB083 (dissolved)	11		9						20
PCB084		8							8
PCB084 & 092	103		27			35	6		171
PCB084 & 092 (dissolved)	11		9						20
PCB084 (dissolved)		8							8
PCB085 & 116	103		27			35	6		171
PCB085 & 116 & 117		8							8
PCB085 & 116 & 117 (dissolved)		8							8
PCB085 & 116 (dissolved)	11		9						20
PCB086	103		27			35	6		171
PCB086 & 087 & 097 & 108 & 119 & 125		8							8
PCB086 & 087 & 097 & 108 & 119 & 125 (dissolved)		8							8
PCB086 (dissolved)	11		9						20
PCB087 & 117 & 125	103		27			35	6		171
PCB087 & 117 & 125 (dissolved)	11		9						20
PCB088 & 091	103	8	27			35	6		179
PCB088 & 091 (dissolved)	11	8	9						28
PCB089	103	8	27			35	6		179
PCB089 (dissolved)	11	8	9						28
PCB090 & 101	103		27			35	6		171
PCB090 & 101 & 113		8							8
PCB090 & 101 & 113 (dissolved)		8							8
PCB090 & 101 (dissolved)	11		9						20
PCB092		8							8
PCB092 (dissolved)		8							8
PCB093	103		27			35	6		171
PCB093 & 095 & 098 & 100 & 102		8							8
PCB093 & 095 & 098 & 100 & 102 (dissolved)		8							8
PCB093 (dissolved)	11		9						20
PCB094	103	8	27			35	6		179
PCB094 (dissolved)	11	8	9						28
PCB095 & 098 & 102	103		27			35	6		171
PCB095 & 098 & 102 (dissolved)	11		9						20
PCB096	103	8	27			35	6		179
PCB096 (dissolved)	11	8	9						28
PCB097	103		27			35	6		171
PCB097 (dissolved)	11		9						20
PCB099	103		27			35	6		171
PCB099 (dissolved)	11		9						20
PCB100	103		27			35	6		171
PCB100 (dissolved)	11		9						20
PCB103	103	8	27			35	6		179
PCB103 (dissolved)	11	8	9						28
PCB104	103	8	27			35	6		179
PCB104 (dissolved)	11	8	9						28

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCB105	103	8	27			35	6		179
PCB105 (dissolved)	11	8	9						28
PCB106		8							8
PCB106 & 118	103		27			35	6		171
PCB106 & 118 (dissolved)	11		9						20
PCB106 (dissolved)		8							8
PCB107 & 109	103		27			35	6		171
PCB107 & 109 (dissolved)	11		9						20
PCB107 & 124		8							8
PCB107 & 124 (dissolved)		8							8
PCB108 & 112	103		27			35	6		171
PCB108 & 112 (dissolved)	11		9						20
PCB109		8							8
PCB109 (dissolved)		8							8
PCB110	103		27			35	6		171
PCB110 & 115		8							8
PCB110 & 115 (dissolved)		8							8
PCB110 (dissolved)	11		9						20
PCB111		8							8
PCB111 & 115	103		27			35	6		171
PCB111 & 115 (dissolved)	11		9						20
PCB111 (dissolved)		8							8
PCB112		8							8
PCB112 (dissolved)		8							8
PCB113	103		27			35	6		171
PCB113 (dissolved)	11		9						20
PCB114	103	8	27			35	6		179
PCB114 (dissolved)	11	8	9						28
PCB118		8							8
PCB118 (dissolved)		8							8
PCB119	103		27			35	6		171
PCB119 (dissolved)	11		9						20
PCB120	103	8	27			35	6		179
PCB120 (dissolved)	11	8	9						28
PCB121	103	8	27			35	6		179
PCB121 (dissolved)	11	8	9						28
PCB122	103	8	27			35	6		179
PCB122 (dissolved)	11	8	9						28
PCB123	103	8	27			35	6		179
PCB123 (dissolved)	11	8	9						28
PCB124	103		27			35	6		171
PCB124 (dissolved)	11		9						20
PCB126	103	8	27			35	6		179
PCB126 (dissolved)	11	8	9						28
PCB127	103	8	27			35	6		179
PCB127 (dissolved)	11	8	9						28
PCB128 & 162	103		27			35	6		171
PCB128 & 162 (dissolved)	11		9						20
PCB128 & 166		8							8
PCB128 & 166 (dissolved)		8							8
PCB129	103		27			35	6		171
PCB129 & 138 & 160 & 163		8							8
PCB129 & 138 & 160 & 163 (dissolved)		8							8
PCB129 (dissolved)	11		9						20
PCB130	103	8	27			35	6		179
PCB130 (dissolved)	11	8	9						28
PCB131	103	8	27			35	6		179
PCB131 (dissolved)	11	8	9						28
PCB132		8							8
PCB132 & 161	103		27			35	6		171
PCB132 & 161 (dissolved)	11		9						20
PCB132 (dissolved)		8							8
PCB133		8							8
PCB133 & 142	103		27			35	6		171
PCB133 & 142 (dissolved)	11		9						20
PCB133 (dissolved)		8							8

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCB134 & 143	103	8	27			35	6		179
PCB134 & 143 (dissolved)	11	8	9						28
PCB135	103		27			35	6		171
PCB135 & 151 & 154		8							8
PCB135 & 151 & 154 (dissolved)		8							8
PCB135 (dissolved)	11		9						20
PCB136	103	8	27			35	6		179
PCB136 (dissolved)	11	8	9						28
PCB137	103	8	27			35	6		179
PCB137 (dissolved)	11	8	9						28
PCB138 & 163 & 164	103		27			35	6		171
PCB138 & 163 & 164 (dissolved)	11		9						20
PCB139 & 140		8							8
PCB139 & 140 (dissolved)		8							8
PCB139 & 149	103		27			35	6		171
PCB139 & 149 (dissolved)	11		9						20
PCB140	103		27			35	6		171
PCB140 (dissolved)	11		9						20
PCB141	103	8	27			35	6		179
PCB141 (dissolved)	11	8	9						28
PCB142		8							8
PCB142 (dissolved)		8							8
PCB144	103	8	27			35	6		179
PCB144 (dissolved)	11	8	9						28
PCB145	103	8	27			35	6		179
PCB145 (dissolved)	11	8	9						28
PCB146		8							8
PCB146 & 165	103		27			35	6		171
PCB146 & 165 (dissolved)	11		9						20
PCB146 (dissolved)		8							8
PCB147	103		27			35	6		171
PCB147 & 149		8							8
PCB147 & 149 (dissolved)		8							8
PCB147 (dissolved)	11		9						20
PCB148	103	8	27			35	6		179
PCB148 (dissolved)	11	8	9						28
PCB150	103	8	27			35	6		179
PCB150 (dissolved)	11	8	9						28
PCB151	103		27			35	6		171
PCB151 (dissolved)	11		9						20
PCB152	103	8	27			35	6		179
PCB152 (dissolved)	11	8	9						28
PCB153	103		27			35	6		171
PCB153 & 168		8							8
PCB153 & 168 (dissolved)		8							8
PCB153 (dissolved)	11		9						20
PCB154	103		27			35	6		171
PCB154 (dissolved)	11		9						20
PCB155	103	8	27			35	6		179
PCB155 (dissolved)	11	8	9						28
PCB156	103		27			35	6		171
PCB156 & 157		8							8
PCB156 & 157 (dissolved)		8							8
PCB156 (dissolved)	11		9						20
PCB157	103		27			35	6		171
PCB157 (dissolved)	11		9						20
PCB158		8							8
PCB158 & 160	103		27			35	6		171
PCB158 & 160 (dissolved)	11		9						20
PCB158 (dissolved)		8							8
PCB159	103	8	27			35	6		179
PCB159 (dissolved)	11	8	9						28
PCB161		8							8
PCB161 (dissolved)		8							8
PCB162		8							8
PCB162 (dissolved)		8							8

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCB164		8							8
PCB164 (dissolved)		8							8
PCB165		8							8
PCB165 (dissolved)		8							8
PCB166	103		27			35	6		171
PCB166 (dissolved)	11		9						20
PCB167	103	8	27			35	6		179
PCB167 (dissolved)	11	8	9						28
PCB168	103		27			35	6		171
PCB168 (dissolved)	11		9						20
PCB169	103	8	27			35	6		179
PCB169 (dissolved)	11	8	9						28
PCB170	103	8	27			35	6		179
PCB170 (dissolved)	11	8	9						28
PCB171	103		27			35	6		171
PCB171 & 173		8							8
PCB171 & 173 (dissolved)		8							8
PCB171 (dissolved)	11		9						20
PCB172	103	8	27			35	6		179
PCB172 (dissolved)	11	8	9						28
PCB173	103		27			35	6		171
PCB173 (dissolved)	11		9						20
PCB174	103	8	27			35	6		179
PCB174 (dissolved)	11	8	9						28
PCB175	103	8	27			35	6		179
PCB175 (dissolved)	11	8	9						28
PCB176	103	8	27			35	6		179
PCB176 (dissolved)	11	8	9						28
PCB177	103	8	27			35	6		179
PCB177 (dissolved)	11	8	9						28
PCB178	103	8	27			35	6		179
PCB178 (dissolved)	11	8	9						28
PCB179	103	8	27			35	6		179
PCB179 (dissolved)	11	8	9						28
PCB180	103		27			35	6		171
PCB180 & 193		8							8
PCB180 & 193 (dissolved)		8							8
PCB180 (dissolved)	11		9						20
PCB181	103	8	27			35	6		179
PCB181 (dissolved)	11	8	9						28
PCB182		8							8
PCB182 & 187	103		27			35	6		171
PCB182 & 187 (dissolved)	11		9						20
PCB182 (dissolved)		8							8
PCB183	103		27			35	6		171
PCB183 & 185		8							8
PCB183 & 185 (dissolved)		8							8
PCB183 (dissolved)	11		9						20
PCB184	103	8	27			35	6		179
PCB184 (dissolved)	11	8	9						28
PCB185	103		27			35	6		171
PCB185 (dissolved)	11		9						20
PCB186	103	8	27			35	6		179
PCB186 (dissolved)	11	8	9						28
PCB187		8							8
PCB187 (dissolved)		8							8
PCB188	103	8	27			35	6		179
PCB188 (dissolved)	11	8	9						28
PCB189	103	8	27			35	6		179
PCB189 (dissolved)	11	8	9						28
PCB190	103	8	27			35	6		179
PCB190 (dissolved)	11	8	9						28
PCB191	103	8	27			35	6		179
PCB191 (dissolved)	11	8	9						28
PCB192	103	8	27			35	6		179
PCB192 (dissolved)	11	8	9						28

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCB193	103		27			35	6		171
PCB193 (dissolved)	11		9						20
PCB194	103	8	27			35	6		179
PCB194 (dissolved)	11	8	9						28
PCB195	103	8	27			35	6		179
PCB195 (dissolved)	11	8	9						28
PCB196		8							8
PCB196 & 203	103		27			35	6		171
PCB196 & 203 (dissolved)	11		9						20
PCB196 (dissolved)		8							8
PCB197	103		27			35	6		171
PCB197 & 200		8							8
PCB197 & 200 (dissolved)		8							8
PCB197 (dissolved)	11		9						20
PCB198	103		27			35	6		171
PCB198 & 199		8							8
PCB198 & 199 (dissolved)		8							8
PCB198 (dissolved)	11		9						20
PCB199	103		27			35	6		171
PCB199 (dissolved)	11		9						20
PCB200	103		27			35	6		171
PCB200 (dissolved)	11		9						20
PCB201	103	8	27			35	6		179
PCB201 (dissolved)	11	8	9						28
PCB202	103	8	27			35	6		179
PCB202 (dissolved)	11	8	9						28
PCB203		8							8
PCB203 (dissolved)		8							8
PCB204	103	8	27			35	6		179
PCB204 (dissolved)	11	8	9						28
PCB205	103	8	27			35	6		179
PCB205 (dissolved)	11	8	9						28
PCB206	103	8	27			35	6		179
PCB206 (dissolved)	11	8	9						28
PCB207	103	8	27			35	6		179
PCB207 (dissolved)	11	8	9						28
PCB208	103	8	27			35	6		179
PCB208 (dissolved)	11	8	9						28
PCB209	103	8	27			35	6		179
PCB209 (dissolved)	11	8	9						28
Total PCB Congeners	103	8	27			35	6		179
Total PCB Congeners (dissolved)	11	8	9						28
PCB Homologs									
Dichlorobiphenyl homologs	103	8	27			35	6		179
Dichlorobiphenyl homologs (dissolved)	11	8	9						28
Heptachlorobiphenyl homologs	103	8	27			35	6		179
Heptachlorobiphenyl homologs (dissolved)	11	8	9						28
Hexachlorobiphenyl homologs	103	8	27			35	6		179
Hexachlorobiphenyl homologs (dissolved)	11	8	9						28
Monochlorobiphenyl homologs	103	8	27			35	6		179
Monochlorobiphenyl homologs (dissolved)	11	8	9						28
Nonachlorobiphenyl homologs	103	8	27			35	6		179
Nonachlorobiphenyl homologs (dissolved)	11	8	9						28
Octachlorobiphenyl homologs	103	8	27			35	6		179
Octachlorobiphenyl homologs (dissolved)	11	8	9						28
Pentachlorobiphenyl homologs	103	8	27			35	6		179
Pentachlorobiphenyl homologs (dissolved)	11	8	9						28
Tetrachlorobiphenyl homologs	103	8	27			35	6		179
Tetrachlorobiphenyl homologs (dissolved)	11	8	9						28
Trichlorobiphenyl homologs	103	8	27			35	6		179
Trichlorobiphenyl homologs (dissolved)	11	8	9						28

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
PCDD/Fs									
1,2,3,4,6,7,8-Heptachlorodibenzofuran					3				3
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin					3				3
1,2,3,4,7,8,9-Heptachlorodibenzofuran					3				3
1,2,3,4,7,8-Hexachlorodibenzofuran					3				3
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin					3				3
1,2,3,6,7,8-Hexachlorodibenzofuran					3				3
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin					3				3
1,2,3,7,8,9-Hexachlorodibenzofuran					3				3
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin					3				3
1,2,3,7,8-Pentachlorodibenzofuran					3				3
1,2,3,7,8-Pentachlorodibenzo-p-dioxin					3				3
2,3,4,6,7,8-Hexachlorodibenzofuran					3				3
2,3,4,7,8-Pentachlorodibenzofuran					3				3
2,3,7,8-Tetrachlorodibenzofuran					3				3
2,3,7,8-Tetrachlorodibenzo-p-dioxin					3				3
TCDD TEQ (ND = 0)					3				3
Total TCDD TEQ (ND = 0)	103	8	27		3	35	6		182
Total TCDD TEQ (ND = 0) (dissolved)	11	8	9						28
PCDD/F Homologs									
Heptachlorodibenzofuran homologs					3				3
Heptachlorodibenzo-p-dioxin homologs					3				3
Hexachlorodibenzofuran homologs					3				3
Hexachlorodibenzo-p-dioxin homologs					3				3
Octachlorodibenzofuran					3				3
Octachlorodibenzo-p-dioxin					3				3
Pentachlorodibenzofuran homologs					3				3
Pentachlorodibenzo-p-dioxin homologs					3				3
Tetrachlorodibenzofuran homologs					3				3
Tetrachlorodibenzo-p-dioxin homologs					3				3
Total PCDD/F					3				3
Pesticides									
2,4'-DDD	11		23		6	29	4		73
2,4'-DDD (dissolved)	2		16						18
2,4'-DDE	11		23		6	29	4		73
2,4'-DDE (dissolved)	2		16						18
2,4'-DDT	11		23		6	29	4		73
2,4'-DDT (dissolved)	2		16						18
4,4'-DDD	11		23		25	29	4		92
4,4'-DDD (dissolved)	2		16		15				33
4,4'-DDE	11		23		25	29	4		92
4,4'-DDE (dissolved)	2		16		15				33
4,4'-DDT	11		23		25	29	4		92
4,4'-DDT (dissolved)	2		16		15				33
Aldrin	11		23		11	29	4		78
Aldrin (dissolved)	2		16		1				19
alpha-Endosulfan	11		23		11	29	4		78
alpha-Endosulfan (dissolved)	2		16		1				19
alpha-Hexachlorocyclohexane	11		23		11	29	4		78
alpha-Hexachlorocyclohexane (dissolved)	2		16		1				19
beta-Endosulfan	11		23		11	29	4		78
beta-Endosulfan (dissolved)	2		16		1				19
beta-Hexachlorocyclohexane	11		23		11	29	4		78
beta-Hexachlorocyclohexane (dissolved)	2		16		1				19
Bromoxynil					2				2
Chlordane (technical)			12		4				16
Chlordane (technical) (dissolved)			9						9
Chlordecone					2				2
cis-Chlordane	11		23		11	29	4		78
cis-Chlordane (dissolved)	2		16		1				19
cis-Nonachlor	11		23		4	29	4		71
cis-Nonachlor (dissolved)	2		16						18
delta-Hexachlorocyclohexane	11		23		11	29	4		78
delta-Hexachlorocyclohexane (dissolved)	2		16		1				19
Dieldrin	11		23		10	29	4		77

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
Dieldrin (dissolved)	2		16						18
Endosulfan sulfate	11		23		11	29	4		78
Endosulfan sulfate (dissolved)	2		16		1				19
Endrin	11		23		11	29	4		78
Endrin (dissolved)	2		16		1				19
Endrin aldehyde	11		23		11	29	4		78
Endrin aldehyde (dissolved)	2		16						18
Endrin ketone	11		23		11	29	4		78
Endrin ketone (dissolved)	2		16		1				19
gamma-Hexachlorocyclohexane (Lindane)	11		23		11	29	4		78
gamma-Hexachlorocyclohexane (Lindane, dissolved)	2		16		1				19
Heptachlor	11		23		11	29	4		78
Heptachlor (dissolved)	2		16		1				19
Heptachlor epoxide	11		23		11	29	4		78
Heptachlor epoxide (dissolved)	2		16		1				19
Isobenzan					2				2
Methoxychlor	11		23		11	29	4		78
Methoxychlor (dissolved)	2		16		1				19
Mirex	11		23		2	29	4		69
Mirex (dissolved)	2		16						18
Oxychlordane	11		23		4	29	4		71
Oxychlordane (dissolved)	2		16						18
Total Chlordanes	11		23		11	29	4		78
Total Chlordanes (dissolved)	2		16		1				19
Total Endosulfan	11		23		11	29	4		78
Total Endosulfan (dissolved)	2		16		1				19
Total DDD	11		23		25	29	4		92
Total DDD (dissolved)	2		16		15				33
DDx	11		23		25	29	4		92
DDx (dissolved)	2		16		15				33
Total DDE	11		23		25	29	4		92
Total DDE (dissolved)	2		16		15				33
Total DDT	11		23		25	29	4		92
Total DDT (dissolved)	2		16		15				33
Total 4,4'-DDx					2				2
Toxaphene	11		23		9	29	4		76
Toxaphene (dissolved)	2		16		1				19
trans-Chlordane	11		23		11	29	4		78
trans-Chlordane (dissolved)	2		16		1				19
trans-Nonachlor	11		23		4	29	4		71
trans-Nonachlor (dissolved)	2		16						18
Herbicides									
2,4,5-T	89				3	17			109
2,4,5-T (dissolved)	10				1				11
2,4-D	89				3	17			109
2,4-D (dissolved)	10				1				11
2,4-DB	89				3	17			109
2,4-DB (dissolved)	10				1				11
Dalapon	89				3	17			109
Dalapon (dissolved)	10				1				11
Dicamba	89				3	17			109
Dicamba (dissolved)	10				1				11
Dichloroprop	89				3	17			109
Dichloroprop (dissolved)	10				1				11
Dinoseb	89				3	17			109
Dinoseb (dissolved)	10				1				11
MCPA	89				3	17			109
MCPA (dissolved)	10				1				11
MCPP	89				3	17			109
MCPP (dissolved)	10				1				11
Silvex	89				3	17			109
Silvex (dissolved)	10				1				11

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
Polycyclic Aromatic Hydrocarbons									
1-Methylnaphthalene					31				31
2-Methylnaphthalene	103	8	29	4	53	22	5		224
2-Methylnaphthalene (dissolved)	11	8	21						40
Acenaphthene	103	8	29	4	105	22	5		276
Acenaphthene (dissolved)	11	8	21						40
Acenaphthylene	103	8	29	4	105	22	5		276
Acenaphthylene (dissolved)	11	8	21						40
Anthracene	103	8	29	4	105	22	5		276
Anthracene (dissolved)	11	8	21						40
Benzo(a)anthracene	103	8	29	4	105	22	5		276
Benzo(a)anthracene (dissolved)	11	8	21						40
Benzo(a)pyrene	103	8	29	4	105	22	5		276
Benzo(a)pyrene (dissolved)	11	8	21						40
Benzo(b)fluoranthene	103	8	29	4	91	22	5		262
Benzo(b)fluoranthene (dissolved)	11	8	21						40
Benzo(b+k)fluoranthene					3				3
Benzo(g,h,i)perylene	103	8	29	4	105	22	5		276
Benzo(g,h,i)perylene (dissolved)	11	8	21						40
Benzo(k)fluoranthene	103	8	29	4	91	22	5		262
Benzo(k)fluoranthene (dissolved)	11	8	21						40
Benzofluoranthenes					15				15
Chrysene	103	8	29	4	105	22	5		276
Chrysene (dissolved)	11	8	21						40
Dibenzo(a,h)anthracene	103	8	29	4	105	22	5		276
Dibenzo(a,h)anthracene (dissolved)	11	8	21						40
Fluoranthene	103	8	29	4	105	22	5		276
Fluoranthene (dissolved)	11	8	21						40
Fluorene	103	8	29	4	105	22	5		276
Fluorene (dissolved)	11	8	21						40
High Molecular Weight PAH	103	8	29	4	105	22	5		276
High Molecular Weight PAH (dissolved)	11	8	21						40
Indeno(1,2,3-cd)pyrene	103	8	29	4	105	22	5		276
Indeno(1,2,3-cd)pyrene (dissolved)	11	8	21						40
Low Molecular Weight PAH	103	8	29	4	105	22	5		276
Low Molecular Weight PAH (dissolved)	11	8	21						40
Naphthalene	103	8	29	4	112	22	5		283
Naphthalene (dissolved)	11	8	21						40
Phenanthrene	103	8	29	4	105	22	5		276
Phenanthrene (dissolved)	11	8	21						40
Pyrene	103	8	29	4	105	22	5		276
Pyrene (dissolved)	11	8	21						40
Total cPAHs	103	8	29	4	105	22	5		276
Total cPAHs (dissolved)	11	8	21						40
Total PAHs	103	8	29	4	105	22	5		276
Total PAHs (dissolved)	11	8	21						40
Phthalates									
Bis(2-ethylhexyl) phthalate	48	7	26	4	84	22	5		196
Bis(2-ethylhexyl) phthalate (dissolved)	8	7	6						21
Butylbenzyl phthalate	48	7	26	4	84	22	5		196
Butylbenzyl phthalate (dissolved)	8	7	6						21
Dibutyl phthalate	48	7	26	4	84	22	5		196
Dibutyl phthalate (dissolved)	8	7	6						21
Diethyl phthalate	48	7	26	4	79	22	5		191
Diethyl phthalate (dissolved)	8	7	6						21
Dimethyl phthalate	48	7	26	4	80	22	5		192
Dimethyl phthalate (dissolved)	8	7	6						21
Di-n-octyl phthalate	48	7	26	4	83	22	5		195
Di-n-octyl phthalate (dissolved)	8	7	6						21

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
Semivolatile Organic Compounds									
1,2,4-Trichlorobenzene				4	34				38
1,2-Dichlorobenzene				4	34				38
1,3-Dichlorobenzene				4	34				38
1,4-Dichlorobenzene				4	34				38
2,4-Dinitrotoluene				4	17				21
2,6-Dinitrotoluene				4	17				21
2-Chloronaphthalene				4	17				21
2-Nitroaniline				4	17				21
3,3'-Dichlorobenzidine				4	16				20
3-Nitroaniline				4	17				21
4-Bromophenyl phenyl ether				4	17				21
4-Chloroaniline				4	17				21
4-Chlorophenyl phenyl ether				4	17				21
4-Nitroaniline				4	17				21
Aniline					8				8
Benzoic acid				4	17				21
Benzyl alcohol				4	17				21
Bis(2-chloroethoxy) methane				4	17				21
Bis(2-chloroethyl) ether				4	17				21
Bis(2-chloroisopropyl) ether				4	17				21
Carbazole					15				15
Dibenzofuran	68		8	4	24	22	5		131
Dibenzofuran (dissolved)	11		8						19
Hexachlorobenzene	11		23	4	19	29	4		90
Hexachlorobenzene (dissolved)	2		16						18
Hexachlorobutadiene	11		23	4	34	29	4		105
Hexachlorobutadiene (dissolved)	2		16						18
Hexachlorocyclopentadiene				4	17				21
Hexachloroethane	11		23	4	17	29	4		88
Hexachloroethane (dissolved)	2		16						18
Isophorone				4	17				21
Nitrobenzene				4	17				21
N-Nitrosodimethylamine					8				8
N-Nitrosodiphenylamine				4	17				21
N-Nitrosodipropylamine				4	17				21
Phenols									
2,3,4,6-Tetrachlorophenol					8				8
2,4,5-Trichlorophenol				4	18				22
2,4,6-Trichlorophenol				4	18				22
2,4-Dichlorophenol				4	18				22
2,4-Dimethylphenol				4	18				22
2,4-Dinitrophenol				4	18				22
2,6-Dichlorophenol					2				2
2-Chlorophenol				4	18				22
2-Methylphenol				4	18				22
2-Nitrophenol				4	18				22
3- and 4-Methylphenol Coelution				4	14				18
4,6-Dinitro-2-methylphenol				4	18				22
4-Chloro-3-methylphenol				4	18				22
4-Methylphenol					11				11
4-Nitrophenol				4	18				22
Pentachlorophenol				4	29				33
Phenol				4	18				22
Tetrachlorophenol					2				2
Volatile Organic Compounds									
1,1,1,2-Tetrachloroethane					23				23
1,1,1-Trichloroethane					23				23
1,1,2,2-Tetrachloroethane					23				23
1,1,2-Trichloroethane					23				23
1,1-Dichloroethane					23				23
1,1-Dichloroethene					23				23
1,1-Dichloropropene					23				23
1,2,3-Trichlorobenzene					23				23
1,2,3-Trichloropropane					23				23

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
1,2,4-Trimethylbenzene					28				28
1,2-Dibromo-3-chloropropane					23				23
1,2-Dichloroethane					23				23
1,2-Dichloropropane					23				23
1,3,5-Trimethylbenzene					28				28
1,3-Dichloropropane					23				23
1-Methyl-4-isopropylbenzene					23				23
2,2-Dichloropropane					23				23
2-Chlorotoluene					23				23
2-Ethyl-1-hexanol					2				2
4-Chlorotoluene					23				23
Acetone					30				30
Acrylonitrile					6				6
Benzene					29				29
Bromobenzene					23				23
Bromochloromethane					23				23
Bromodichloromethane					23				23
Bromoform					23				23
Bromomethane					23				23
BTEX					29				29
Carbon disulfide					18				18
Carbon tetrachloride					23				23
Chlorobenzene					23				23
Chlorodibromomethane					23				23
Chloroethane					29				29
Chloroform					23				23
Chloromethane					23				23
cis-1,2-Dichloroethene					23				23
cis-1,3-Dichloropropene					23				23
Dichlorodifluoromethane					23				23
Ethylbenzene					29				29
Ethylene dibromide					23				23
Isobutyl alcohol					2				2
Isopropylbenzene					29				29
m,p-Xylene					19				19
Methyl iodide					2				2
Methyl isobutyl ketone					22				22
Methyl n-butyl ketone					22				22
Methyl tert-butyl ether					16				16
Methylene bromide					23				23
Methylene chloride					23				23
Methylethyl ketone					28				28
n-Butylbenzene					23				23
n-Propylbenzene					27				27
o-Xylene					19				19
Sec-butylbenzene					28				28
Styrene					22				22
tert-Butylbenzene					23				23
Tetrachloroethene					23				23
Toluene					29				29
trans-1,2-Dichloroethene					23				23
trans-1,3-Dichloropropene					23				23
Trichloroethene					23				23
Trichlorofluoromethane					23				23
Vinyl chloride					23				23
Xylene					29				29

Table 2.3-6. Summary of Stormwater Sample Counts in the RI Data Set.

	Stormwater[a]					Stormwater Outfall Sediment Trap			
Analyte	**LWG**	**GE**	**Port of Portland Terminal 4**	**City's Basin 53**	**Additional Data from Other Parties**	**LWG**	**Port of Portland Terminal 4**	**Additional Data from Other Parties**	**Grand Total**
Petroleum									
Total Petroleum Hydrocarbons (Diesel)		8			80				88
Total Petroleum Hydrocarbons (Diesel, dissolved)		8							8
Total Petroleum Hydrocarbons (Gasoline)					46				46
Total Petroleum Hydrocarbons (Heavy Oil)					70				70
Oil And Grease					38				38
Total Petroleum Hydrocarbons (Residual)					11				11
Total Petroleum Hydrocarbons		8	30		83				121
Total Petroleum Hydrocarbons (dissolved)		8							8
Grand Total	28,098	3,535	10,515	284	8,888	8,528	1,492	12	61,352

Notes:

[a] GE and Terminal 4 stormwater data are considered part of the LWG's complete stormwater data set. Other stormwater data are available to confirm loading calculations in the fate and transport model. Sediment trap data collected by other parties are not included in Section 5.

BTEX - benzene, toluene, ethylbenzene, and total xylene
GE - General Electric
LWG - Lower Willamette Group
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RI - remedial investigation
Total TCDD TEQ - sum of PCDD/F and PCB congener TCDD TEQ

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
Conventionals									
Alkalinity	13	65	36	8	31			13	166
Calcium carbonate							76		76
Carbon dioxide						1	77		78
Chloride	13	65	36	8	31		76	13	242
Conductivity		51		7	26	41	97		222
Cyanide		11	10		3	13	11	13	61
Cyanide amenable to chlorination								13	13
Dissolved organic carbon								13	13
Dissolved oxygen						40	97		137
Ethane						1	77		78
Ethylene						1	77		78
Free cyanide								13	13
Methane						1	77		78
Nitrate							76		76
Nitrite							76		76
Oxidation-Reduction Potential		44			18	41	97		200
Perchlorate	5	17	12	1	7				42
pH	13	67	36	8	32	41	97		294
Phosphorus							74		74
Sulfate	13	65	36	8	31		76	13	242
Sulfide							76	13	89
Temperature						41	97		138
Total dissolved solids		50			19				69
Total organic carbon							76	13	89
Total suspended solids							55		55
Turbidity		51			18		36		105
Metals									
Aluminum	57	60	35	12	24				188
Antimony	57	60	35	12	24	13	11		212
Arsenic	60	64	39	19	31	13	11		237
Barium	57	60	35	12	24				188
Beryllium	57	60	35	12	24				188

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
Cadmium	57	60	35	12	24				188
Calcium	69	67	43	20	26			18	243
Chromium	62	65	39	13	25	13	11		228
Cobalt						13	11		24
Copper	50	53	39	19	25	13	11		210
Iron	57	60	35	12	24	13	15	18	234
Lead	60	64	39	19	31	13	11		237
Magnesium	69	67	43	20	26	13	11	18	267
Manganese	69	69	43	20	32	13	15	18	279
Mercury	57	60	35	12	24				188
Nickel	57	60	35	12	24	13	11		212
Potassium	69	67	43	20	26			18	243
Selenium	57	60	35	12	24	13	11		212
Silver	57	60	35	12	24	13	11		212
Sodium	69	67	43	20	26			18	243
Thallium	57	60	35	12	24				188
Titanium						13	11		24
Vanadium						13	11		24
Zinc	60	64	39	19	31	13	11		237
PCDD/Fs									
1,2,3,4,6,7,8-Heptachlorodibenzofuran	3	3							6
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	3	3							6
1,2,3,4,7,8,9-Heptachlorodibenzofuran	3	3							6
1,2,3,4,7,8-Hexachlorodibenzofuran	3	3							6
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	3	3							6
1,2,3,6,7,8-Hexachlorodibenzofuran	3	3							6
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	3	3							6
1,2,3,7,8,9-Hexachlorodibenzofuran	3	3							6
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	3	3							6
1,2,3,7,8-Pentachlorodibenzofuran	3	3							6
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3	3							6
2,3,4,6,7,8-Hexachlorodibenzofuran	3	3							6
2,3,4,7,8-Pentachlorodibenzofuran	3	3							6

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
2,3,7,8-Tetrachlorodibenzofuran	3	3							6
2,3,7,8-Tetrachlorodibenzo-p-dioxin	3	3							6
TCDD TEQ (ND = 0)	3	3							6
Total TCDD TEQ (ND = 0)	3	3							6
PCDD/F Homologs									
Heptachlorodibenzofuran homologs	3	3							6
Heptachlorodibenzo-p-dioxin homologs	3	3							6
Hexachlorodibenzofuran homologs	3	3							6
Hexachlorodibenzo-p-dioxin homologs	3	3							6
Octachlorodibenzofuran	3	3							6
Octachlorodibenzo-p-dioxin	3	3							6
Pentachlorodibenzofuran homologs	3	3							6
Pentachlorodibenzo-p-dioxin homologs	3	3							6
Tetrachlorodibenzofuran homologs	3	3							6
Tetrachlorodibenzo-p-dioxin homologs	3	3							6
Total PCDD/F	3	3							6
Pesticides									
2,4'-DDD	4	6	4	1	4				19
2,4'-DDE	4	6	4	1	4				19
2,4'-DDT	4	6	4	1	4				19
4,4'-DDD	8	10	8	1	4				31
4,4'-DDE	8	10	8	1	4				31
4,4'-DDT	8	10	8	1	4				31
Total DDD	8	10	8	1	4				31
DDx	8	10	8	1	4				31
Total DDE	8	10	8	1	4				31
Total DDT	8	10	8	1	4				31
Total 4,4'-DDx	8	10	8	1	4				31
Herbicides									
2,4,5-T	6	7	2	1	2				18
2,4-D	6	7	2	1	2				18
2,4-DB			2						2

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
Dalapon			2						2
Dicamba			2						2
Dichloroprop	6	7	2	1	2				18
Dinoseb			2						2
MCPA			2						2
MCPP			2						2
Silvex	6	7	2	1	2				18
Polycyclic Aromatic Hydrocarbons									
2-Methylnaphthalene	39	42	24	11	17		11	13	157
Acenaphthene	39	42	24	11	17	13	11	13	170
Acenaphthylene	39	42	24	11	17	13	11	13	170
Anthracene	39	42	24	11	17	13	11	13	170
Benzo(a)anthracene	39	42	24	11	17	13	11	13	170
Benzo(a)pyrene	39	42	24	11	17	13	11	13	170
Benzo(b)fluoranthene	39	42	24	11	17	13	11	13	170
Benzo(g,h,i)perylene	39	42	24	11	17	13	11	13	170
Benzo(k)fluoranthene	39	42	24	11	17	13	11	13	170
Chrysene	39	42	24	11	17	13	11	13	170
Dibenzo(a,h)anthracene	39	42	24	11	17	13	11	13	170
Fluoranthene	39	42	24	11	17	13	11	13	170
Fluorene	39	42	24	11	17	13	11	13	170
High Molecular Weight PAH	39	42	24	11	17	13	11	13	170
Indeno(1,2,3-cd)pyrene	39	42	24	11	17	13	11	13	170
Low Molecular Weight PAH	39	42	24	11	17	13	11	13	170
Naphthalene	39	70	43	11	32	41	115	18	369
Phenanthrene	39	42	24	11	17	13	11	13	170
Pyrene	39	42	24	11	17	13	11	13	170
Total cPAHs	39	42	24	11	17	13	11	13	170
Total PAHs	39	41	24	11	17	13	11	13	169

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
Phthalates									
Bis(2-ethylhexyl) phthalate							11		11
Butylbenzyl phthalate							11		11
Dibutyl phthalate							11		11
Diethyl phthalate							11		11
Dimethyl phthalate							11		11
Di-n-octyl phthalate							11		11
Semivolatile Organic Compounds									
1,2,4-Trichlorobenzene		62	39		31	41	115	18	306
1,2-Dichlorobenzene		62	39		31	41	115	18	306
1,3-Dichlorobenzene		62	39		31	41	115	18	306
1,4-Dichlorobenzene		62	39		27	41	115	18	302
2,4-Dinitrotoluene							11		11
2,6-Dinitrotoluene							11		11
2-Chloronaphthalene							11		11
2-Nitroaniline							11		11
3,3'-Dichlorobenzidine							11		11
3-Nitroaniline							11		11
4-Bromophenyl phenyl ether							11		11
4-Chloroaniline							11		11
4-Chlorophenyl phenyl ether							11		11
4-Nitroaniline							11		11
Benzoic acid							11		11
Benzyl alcohol							11		11
Bis(2-chloroethoxy) methane							11		11
Bis(2-chloroethyl) ether							11		11
Bis(2-chloroisopropyl) ether							11		11
Carbazole							11		11
Dibenzofuran	39	42	24	11	17		11	13	157
Hexachlorobenzene							11		11
Hexachlorobutadiene		62	39		31	41	115	18	306
Hexachlorocyclopentadiene							11		11
Hexachloroethane							11		11

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
Isophorone							11		11
Nitrobenzene							11		11
N-Nitrosodimethylamine							11		11
N-Nitrosodiphenylamine							11		11
N-Nitrosodipropylamine							11		11
Pyridine							11		11
Phenols									
2,4,5-Trichlorophenol							11		11
2,4,6-Trichlorophenol							11		11
2,4-Dichlorophenol							11		11
2,4-Dimethylphenol							11		11
2,4-Dinitrophenol							11		11
2-Chlorophenol							11		11
2-Methylphenol							11		11
2-Nitrophenol							11		11
3- and 4-Methylphenol Coelution							11		11
4,6-Dinitro-2-methylphenol							11		11
4-Chloro-3-methylphenol							11		11
4-Nitrophenol							11		11
Pentachlorophenol							11		11
Phenol							11		11
Volatile Organic Compounds									
1,1,1,2-Tetrachloroethane		70	39		31	41	113	18	312
1,1,1-Trichloroethane		70	39		31	41	113	18	312
1,1,2,2-Tetrachloroethane		70	39		31	41	113	18	312
1,1,2-Trichloroethane		70	39		31	41	113	18	312
1,1-Dichloroethane		70	39		31	41	113	18	312
1,1-Dichloroethene		70	39		31	41	113	18	312
1,1-Dichloropropene						41	113		154
1,2,3-Trichlorobenzene						41	113		154
1,2,3-Trichloropropane		70	39		31	41	113	18	312
1,2,4-Trimethylbenzene						41	113		154
1,2-Dibromo-3-chloropropane						41	113		154

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
1,2-Dichloroethane		70	39		31	41	113	18	312
1,2-Dichloropropane		70	39		31	41	113	18	312
1,3,5-Trimethylbenzene						41	113		154
1,3-Dichloropropane						41	113		154
1,4-Dichloro-trans-2-butene		70	39		31			18	158
1,4-Difluorobenzene		8			4				12
1-Methyl-4-isopropylbenzene						41	113		154
2,2-Dichloropropane						41	113		154
2-Chloroethyl vinyl ether		70	39		31			18	158
2-Chlorotoluene						41	113		154
4-Chlorotoluene						41	113		154
Acetone		70	39		31	41	113	18	312
Acrolein		70	39		31			18	158
Acrylonitrile		70	39		31	41	113	18	312
Benzene		70	43		31	41	113	18	316
Bromobenzene						41	113		154
Bromochloromethane		70	39		31	41	113	18	312
Bromodichloromethane		70	39		31	41	113	18	312
Bromoform		70	39		31	41	113	18	312
Bromomethane		70	39		31	41	113	18	312
BTEX		70	43		31	41	113	18	316
Carbon disulfide		70	39		31	41	113	18	312
Carbon tetrachloride		70	39		31	41	113	18	312
Chlorobenzene		70	39		31	41	113	18	312
Chlorodibromomethane		70	39		31	41	113	18	312
Chloroethane		70	39		31	41	113	18	312
Chloroform		70	39		31	41	113	18	312
Chloromethane		70	39		31	41	113	18	312
cis-1,2-Dichloroethene		62	35		24	41	113		275
cis-1,3-Dichloropropene		70	39		31	41	113	18	312
Dichlorodifluoromethane		70	39		31	41	113	18	312
Ethylbenzene		70	43		31	41	113	18	316
Ethylene dibromide		70	39		31	41	113	18	312
Isopropylbenzene		70	39		31	41	113	18	312

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**
m,p-Xylene		70	43		31	41	113	18	316
Methyl iodide		70	39		31			18	158
Methyl isobutyl ketone		70	39		31	41	113	18	312
Methyl n-butyl ketone		70	39		31	41	113	18	312
Methyl tert-butyl ether		70	39		31	41	113	18	312
Methylene bromide		70	39		31	41	113	18	312
Methylene chloride		70	39		31	41	113	18	312
Methylethyl ketone		70	39		31	41	113	18	312
n-Butylbenzene						41	113		154
n-Propylbenzene						41	113		154
o-Xylene		70	43		31	41	113	18	316
Sec-butylbenzene						41	113		154
Styrene		70	39		31	41	113	18	312
tert-Butylbenzene						41	113		154
Tetrachloroethene		70	39		31	41	113	18	312
Toluene		70	43		31	41	113	18	316
trans-1,2-Dichloroethene		70	39		31	41	113	18	312
trans-1,3-Dichloropropene		70	39		31	41	113	18	312
Trichloroethene		70	39		31	41	113	18	312
Trichlorofluoromethane		70	39		31	41	113	18	312
Vinyl acetate		70	39		31			18	158
Vinyl chloride		70	39		31	41	113	18	312
Xylene		70	43		31	41	113	18	316
Petroleum									
Total Petroleum Hydrocarbons (Diesel)	36	38	21	12	17		11		135
Total Petroleum Hydrocarbons (Gasoline)		39	24		18				81
Lube Oil							11		11
Total Petroleum Hydrocarbons (Residual)	36	38	21	12	17				124
Total Petroleum Hydrocarbons	36	38	21	12	17				124
Grand Total	2,471	7,057	3,938	654	3,029	3,451	10,118	1,524	32,242

Table 2.3-7. Summary of Transition Zone Water Sample Counts in the RI Data Set.

	LWG					Other Parties			
	≤ 38 cm BML			> 38 cm BML		≤ 38 cm BML	> 38 cm BML		
	Push Probe [a]		Small Volume Peeper	Push Probe [a]		Push Probe [a]	Push Probe [a]		
Analyte	**filtered**	**unfiltered**	**unfiltered**	**filtered**	**unfiltered**	**unfiltered**	**unfiltered**	**Unknown**	**Grand Total**

Notes:

[a] Push probes were collected using Trident® samplers.

BML - below mudline
BTEX - benzene, toluene, ethylbenzene, and total xylene
PAH - polycyclic aromatic hydrocarbon
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
Total TCDD TEQ - sum of PCDD/F and PCB congener TCDD TEQ
VOC - volatile organic compound

Table 2.3-8. Biota Sample and Analysis Summary for the RI Data Set.

			Number of Samples										
Species	**Tissue Type**	**Task Description**	**Conven-tionals**	**Metals**	**Butyltins**	**Aroclors**	**PCB Congeners**	**PBDEs**	**PCDD/Fs**	**PCDD/F Homologs**	**Pesticides**	**PAHs**	**SVOCs**
Black crappie	Fillet	Round 1 tissue samples	4	4		4					4		4
Black crappie	Fillet without skin	Round 1 tissue samples		4									
Black crappie	Whole body	Round 1 tissue samples	4	4		4	4		4	4	4		4
Brown bullhead	Fillet without skin	Round 1 tissue samples	6	12		6					6	6	6
Brown bullhead	Whole body	Round 1 tissue samples	9	9		9	9		9	9	9	9	9
Carp	Fillet	Round 3B biota	9	9	9		9	9	9	9	9	9	9
Carp	Body without fillet	Round 3B biota						9					
Carp	Fillet	Round 1 tissue samples	6	6		6					6		6
Carp	Fillet without skin	Round 1 tissue samples		6									
Carp	Whole body	Round 1 tissue samples	6	6		6	6		6	6	6	6	6
Carp	Whole body	Round 1A tissue samples		1									
Carp	Whole body (calculated)	Round 3B biota	9	9	9		9		9	9	9	9	9
Chinook (adult)	Fillet	ODHS/USEPA/ATSDR Fish Contaminant Study (ODHS et al. 2003)	3	3		3	3	3	3	3	3	3	3
Chinook (adult)	Fillet without skin	ODHS/USEPA/ATSDR Fish Contaminant Study (ODHS et al. 2003)		3			3	3	3	3			
Chinook (adult)	Whole body	ODHS/USEPA/ATSDR Fish Contaminant Study (ODHS et al. 2003)	4	4		4	4	4	4	4	4	4	4
Chinook (juvenile)	Stomach contents	Round 2A tissue, juvenile chinook					6		6		6	6	6
Chinook (juvenile)	Whole body	Round 2A tissue, juvenile chinook	12	12	11		12		12	12	12	12	12
Chinook (juvenile)	Whole body	Round 1A tissue samples	7	7		7					7	7	7
Clam	Body without shell	Round 2A benthic tissue	33	28	25		31		32	29	31	29	32
Clam	Body without shell	Round 3B biota	10	10	10		10	6	10	10	10	10	10
Clam	Body without shell	Round 1 tissue samples	3	3	2	3					3	3	3
Clam	Depurated w/o shell	Round 3B biota	5	5	4		5		5	5	5	5	5
Crayfish	Whole body	Round 3B biota	9	9	9		9		9	9	9	9	9
Crayfish	Whole body	Round 1 tissue samples	27	27		27	10		10	10	27	27	27
Lab clam	Body without shell	Round 2A benthic tissue	39	39	39		39		39	39	39	39	39
Lab clam	Body without shell	2005 O&M Dredge Sediment Characterization (Tetra Tech 2006)	14	14	14	14	14		11		14	14	14
Lamprey, ammocoetes	Whole body	Round 2B tissue, lamprey	1				1		1	1	1		1
Lamprey, ammocoetes	Whole body	Round 3 lamprey tissue composites	6	5	1		6		6	6	6	4	6
Lamprey, macropthalmia	Whole body	Round 3 lamprey tissue composites	3	3			3		3	3	3	3	3
Largescale sucker	Whole body	Round 1 tissue samples	6	6		6					6	6	6
Lumbriculus variegatus	Whole body	Round 2A benthic tissue	39	39	39		39		39	39	39	39	39
Lumbriculus variegatus	Whole body	2005 O&M Dredge Sediment Characterization (Tetra Tech 2006)	14	14	14	14	14		11		14	14	14
Multiplate invertebrates	Whole body	Round 2A tissue, multiplate	2	2			7		7	7	7		7
Mussel	Body without shell	Round 2B tissue, freshwater mussel	7	7	7		7		7	7	7	7	7
Northern pikeminnow	Whole body	Round 1 tissue samples	6	6		6					6		6
Osprey	Whole egg	USEPA's PBDEs in osprey eggs	15	15		15	15	15	15	10	15		15
Pacific lamprey	Whole body	ODHS/USEPA/ATSDR Fish Contaminant Study (ODHS et al. 2003)	4	4		4	4	4	4	4	4	4	4
Peamouth	Whole body	Round 1 tissue samples	4	4		4					4		4
Sculpin	Whole body	Round 3B biota	16	16	16		16		16	16	16	16	16
Sculpin	Whole body	Round 1 tissue samples	26	27		26	9		9	9	26	26	26
Smallmouth bass	Fillet	Round 3B biota	18	18	18		18	18	18	18	18	18	18
Smallmouth bass	Body without fillet	Round 3B biota						18					
Smallmouth bass	Fillet	Round 1 tissue samples	5	5		5					5		5
Smallmouth bass	Fillet without skin	Round 1 tissue samples		5									
Smallmouth bass	Whole body	Round 1 tissue samples	20	20		20	20		20	20	20	20	20
Smallmouth bass	Whole body (calculated)	Round 3B biota	18	18	18		18		18	18	18	18	18
Sturgeon	Fillet without skin	ODHS/USEPA/ATSDR Fish Contaminant Study (ODHS et al. 2003)	5	5		5	5	5	5	5	5	5	5
Sturgeon (juvenile)	Stomach contents	Round 3A juvenile sturgeon	3	3			1		1		1	3	1
Sturgeon (juvenile)	Whole body	Round 3A juvenile sturgeon	15	15	15		15		15	15	15	15	15

Notes:

ATSDR - Agency for Toxic Substances and Disease Registry
USEPA - U.S. Environmental Protection Agency
ODHS - Oregon Department of Human Services
PAH - polycyclic aromatic hydrocarbon
PBDE - polybrominated diphenyl ether
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
RI - remedial investigation
SVOC - semivolatile organic compound

Table 2.3-9a. Summary of Biota Sample Counts in RI Data Set (LWG Data).

	Black crappie			Brown bullhead		Carp				Chinook, juvenile		Clam		Crayfish	Lab clam	Lamprey, ammocoetes	Lamprey, macropthalmia	Largescale sucker	*Lumbriculus variegatus*	Multiplate invertebrates	Mussel	Northern pikeminnow	Peamouth	Sculpin	Smallmouth bass				Sturgeon, juvenile		
Analyte	**fillet**	**fillet without skin**	**whole body**	**fillet without skin**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**body without shell**	**depurated w/o shell**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**whole body**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**Grand Total**
Conventionals																															
Lipids	4		4	6	9	9	15		6		19	45	5	36	35	7	3	6	35		7	6	4	42	18	23		20	3	15	382
Total solids	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Metals																															
Aluminum	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Antimony	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Arsenic	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Barium																															0
Beryllium																															0
Cadmium	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Calcium																															0
Chromium	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Cobalt																															0
Copper	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Iron																															0
Lead	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Magnesium																															0
Manganese	4		4	6	9	9	15		6		7	13	5	36				6				6	4	42	18	23		20			233
Mercury		4	4	6	9	9	9	6	7		19	38	4	36	35	4	2	6	34		7	6	4	43	18	18	5	20	3	15	371
Nickel	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Potassium																															0
Selenium	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Silver	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Sodium																															0
Thallium	4		4	6	9	9	15		6		7	13	5	36				6				6	4	42	18	23		20			233
Vanadium																															0
Zinc	4		4	6	9	9	15		6		19	41	5	36	35	5	3	6	35	2	7	6	4	42	18	23		20	3	15	378
Butyltins																															
Butyltin ion						9	9				11	37	4	9	35	1			35		7			16	18	18				15	224
Dibutyltin ion						9	9				11	37	4	9	35	1			35		7			16	18	18				15	224
Tetrabutyltin						9	9				11	37	4	9	35	1			35		7			16	18	18				15	224
Tributyltin ion						9	9				11	37	4	9	35	1			35		7			16	18	18				15	224
PCB Aroclors																															
Aroclor 1016	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1221	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1232	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1242	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1248	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1254	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1260	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1262	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Aroclor 1268	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
Total PCB Aroclors	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139
PCB Congeners																															
Total PCB TEQ (ND = 0)			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB001			2		2	9	9		5	6	12	36	5	19	33	7	3		32	7	7			23	18	18		10	1	15	279
PCB002			2		2	9	9		5	6	12	38	5	19	34	7	3		32	7	7			23	18	18		10	1	15	282
PCB003			2		2	9	9		5	6	12	38	5	19	34	7	3		32	7	7			23	18	18		10	1	15	282
PCB004			4		9	9	9		6	6	12	38	5	19	35	7	3		34	7	7			25	18	18		20	1	15	307
PCB005			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB006			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB007			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB008			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB009			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB010			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB011			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB012 & 013			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB014			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB015			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB016			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB017			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB018																															0
PCB018 & 030			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB019			4		9	9	9		6	6	12	40	5	19	35	7	3		34	7	7			25	18	18		20	1	15	309
PCB020 & 028			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB021 & 033			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB022			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB023			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB024			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311

Table 2.3-9a. Summary of Biota Sample Counts in RI Data Set (LWG Data).

	Black crappie			Brown bullhead		Carp				Chinook, juvenile		Clam		Crayfish	Lab clam	Lamprey, ammocoetes	Lamprey, macropthalmia	Largescale sucker	*Lumbriculus variegatus*	Multiplate invertebrates	Mussel	Northern pikeminnow	Peamouth	Sculpin	Smallmouth bass				Sturgeon, juvenile		
Analyte	**fillet**	**fillet without skin**	**whole body**	**fillet without skin**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**body without shell**	**depurated w/o shell**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**whole body**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**Grand Total**
PCB025			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB026 & 029			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB027			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB028																															0
PCB031			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB032			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB033																															0
PCB034			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB035			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB036			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB037			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB038			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB039			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB040 & 041 & 071			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB042			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB043			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB044																															0
PCB044 & 047 & 065			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB045 & 051			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB046			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB048			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB049																															0
PCB049 & 069			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB050 & 053			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB052			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB054			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB055			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB056			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB057			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB058			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB059 & 062 & 075			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB060			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB061 & 070 & 074 & 076			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB063			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB064			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB066			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB067			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB068			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB070																															0
PCB072			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB073			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB074																															0
PCB077			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB078			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB079			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB080			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB081			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB082			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB083 & 099			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB084			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB085 & 116 & 117			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB086 & 087 & 097 & 108 & 119 & 125			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB087																															0
PCB088 & 091			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB089			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB090																															0
PCB090 & 101 & 113			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB092			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB093 & 095 & 098 & 100 & 102			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB094			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB095																															0
PCB096			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB097																															0
PCB099																															0
PCB101																															0
PCB103			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB104			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB105			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB106			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311

Table 2.3-9a. Summary of Biota Sample Counts in RI Data Set (LWG Data).

	Black crappie			Brown bullhead		Carp				Chinook, juvenile		Clam		Crayfish	Lab clam	Lamprey, ammocoetes	Lamprey, macropthalmia	Largescale sucker	*Lumbriculus variegatus*	Multiplate invertebrates	Mussel	Northern pikeminnow	Peamouth	Sculpin	Smallmouth bass				Sturgeon, juvenile		
Analyte	**fillet**	**fillet without skin**	**whole body**	**fillet without skin**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**body without shell**	**depurated w/o shell**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**whole body**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**Grand Total**
PCB107 & 124			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB109			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB110																															0
PCB110 & 115			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB111			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB112			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB114			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB118			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB119																															0
PCB120			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB121			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB122			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB123			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB126			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB127			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB128																															0
PCB128 & 166			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB129 & 138 & 160 & 163			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB130			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB131			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB132			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB133			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB134 & 143			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB135 & 151 & 154			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB136			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB137			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB138																															0
PCB139 & 140			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB141			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB142			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB144			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB145			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB146			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB147 & 149			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB148			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB149																															0
PCB150			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB151																															0
PCB152			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB153																															0
PCB153 & 168			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB155			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB156			4		9				6					10										9				20			58
PCB156 & 157						9	9			6	12	41	5	9	35	7	3		35	7	7			16	18	18			1	15	253
PCB157			4		9				6					10										9				20			58
PCB158			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB159			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB161			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB162			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB164			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB165			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB166																															0
PCB167			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB168																															0
PCB169			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB170			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB171 & 173			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB172			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB174			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB175			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB176			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB177			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB178			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB179			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB180																															0
PCB180 & 193			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB181			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB182			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB183																															0

Table 2.3-9a. Summary of Biota Sample Counts in RI Data Set (LWG Data).

	Black crappie			Brown bullhead		Carp				Chinook, juvenile		Clam		Crayfish	Lab clam	Lamprey, ammocoetes	Lamprey, macropthalmia	Largescale sucker	*Lumbriculus variegatus*	Multiplate invertebrates	Mussel	Northern pikeminnow	Peamouth	Sculpin	Smallmouth bass				Sturgeon, juvenile		
Analyte	**fillet**	**fillet without skin**	**whole body**	**fillet without skin**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**body without shell**	**depurated w/o shell**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**whole body**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**Grand Total**
PCB183 & 185			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB184			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB186			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB187			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB188			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB189			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB190			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB191			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB192			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB194			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB195			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB196			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB197 & 200			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB198 & 199			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB201			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB202			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB203			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB204			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB205			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB206			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB207			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB208			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCB209			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Total PCB Congeners			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PBDE Congeners																															
PBDE001																															0
PBDE002																															0
PBDE003																															0
PBDE007																															0
PBDE008 & PBDE011																															0
PBDE010																															0
PBDE012																															0
PBDE012 & 013																															0
PBDE013																															0
PBDE015																															0
PBDE017																															0
PBDE017 & 025																															0
PBDE025																															0
PBDE028 & PBDE033																															0
PBDE030																															0
PBDE032																															0
PBDE035																															0
PBDE037																															0
PBDE047																															0
PBDE049																															0
PBDE051																															0
PBDE066																															0
PBDE071																															0
PBDE075																															0
PBDE077																															0
PBDE079																															0
PBDE085																															0
PBDE099																															0
PBDE100																															0
PBDE105																															0
PBDE116																															0
PBDE119																															0
PBDE119 & 120																															0
PBDE126																															0
PBDE128																															0
PBDE138 & PBDE166																															0
PBDE140																															0
PBDE153																															0
PBDE154																															0
PBDE155																															0
PBDE181																															0
PBDE183																															0
PBDE190																															0
PBDE203																															0

Table 2.3-9a. Summary of Biota Sample Counts in RI Data Set (LWG Data).

	Black crappie			Brown bullhead		Carp				Chinook, juvenile		Clam		Crayfish	Lab clam	Lamprey, ammocoetes	Lamprey, macropthalmia	Largescale sucker	*Lumbriculus variegatus*	Multiplate invertebrates	Mussel	Northern pikeminnow	Peamouth	Sculpin	Smallmouth bass				Sturgeon, juvenile		
Analyte	**fillet**	**fillet without skin**	**whole body**	**fillet without skin**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**body without shell**	**depurated w/o shell**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**whole body**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**Grand Total**
PBDE206																															0
PBDE207																															0
PBDE208																															0
PBDE209																															0
PCB Homologs																															
Dichlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Heptachlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Hexachlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Monochlorobiphenyl homologs			2		2	9	9		5	6	12	38	5	19	35	6	3		32	7	7			23	18	18		10	1	15	282
Nonachlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Octachlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Pentachlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Tetrachlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
Trichlorobiphenyl homologs			4		9	9	9		6	6	12	41	5	19	35	7	3		35	7	7			25	18	18		20	1	15	311
PCDD/Fs																															
1,2,3,4,6,7,8-Heptachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,4,7,8,9-Heptachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,4,7,8-Hexachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,6,7,8-Hexachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,7,8,9-Hexachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,7,8-Pentachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
1,2,3,7,8-Pentachlorodibenzo-p-dioxin			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
2,3,4,6,7,8-Hexachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
2,3,4,7,8-Pentachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
2,3,7,8-Tetrachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
2,3,7,8-Tetrachlorodibenzo-p-dioxin			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
TCDD TEQ (ND = 0)			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Total TCDD TEQ (ND = 0)			4		9	9	9		6	6	12	42	5	19	35	7	3		35	7	7			25	18	18		20	1	15	312
PCDD/F Homologs																															
Heptachlorodibenzofuran homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Heptachlorodibenzo-p-dioxin homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Hexachlorodibenzofuran homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Hexachlorodibenzo-p-dioxin homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Octachlorodibenzofuran			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Octachlorodibenzo-p-dioxin			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Pentachlorodibenzofuran homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Pentachlorodibenzo-p-dioxin homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Tetrachlorodibenzofuran homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Tetrachlorodibenzo-p-dioxin homologs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Total PCDD/Fs			4		9	9	9		6		12	39	5	19	35	7	3		35	7	7			25	18	18		20		15	302
Pesticides																															
2,4'-DDD	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
2,4'-DDE	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
2,4'-DDT	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
4,4'-DDD	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
4,4'-DDE	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
4,4'-DDT	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Aldrin	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
alpha-Endosulfan	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
alpha-Hexachlorocyclohexane	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
beta-Endosulfan	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
beta-Hexachlorocyclohexane	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	33	7	7	6	4	42	18	23		20	1	15	390
cis-Chlordane	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
cis-Nonachlor	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
delta-Hexachlorocyclohexane	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Dieldrin	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Endosulfan sulfate	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Endrin	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Endrin aldehyde	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Endrin ketone	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
gamma-Hexachlorocyclohexane (Lindane)	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Heptachlor	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Heptachlor epoxide	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Methoxychlor	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Mirex	4		4	6	9		6		6		7	3		27				6				6	4	26		5		20			139

Table 2.3-9a. Summary of Biota Sample Counts in RI Data Set (LWG Data).

	Black crappie			Brown bullhead		Carp				Chinook, juvenile		Clam		Crayfish	Lab clam	Lamprey, ammocoetes	Lamprey, macropthalmia	Largescale sucker	*Lumbriculus variegatus*	Multiplate invertebrates	Mussel	Northern pikeminnow	Peamouth	Sculpin	Smallmouth bass				Sturgeon, juvenile		
Analyte	**fillet**	**fillet without skin**	**whole body**	**fillet without skin**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**body without shell**	**depurated w/o shell**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**whole body**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**Grand Total**
Oxychlordane	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Total Chlordanes	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Total Endosulfan	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Total DDD	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
DDx	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Total DDE	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Total DDT	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
Total 4,4'-DDx	4		4	6	9		6		6	6	19	34		27	35	7	3	6	35	7		6	4	26		5		20			275
Toxaphene	4		4	6	9		6		6		19	3		27				6				6	4	26		5		20			151
trans-Chlordane	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
trans-Nonachlor	4		4	6	9	9	15		6	6	19	44	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	392
PAHs																															
1-Methylnaphthalene						9	9					10	5											16	18	18					85
2-Methylnaphthalene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Acenaphthene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Acenaphthylene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Anthracene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Benzo(a)anthracene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Benzo(a)pyrene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Benzo(b)fluoranthene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Benzo(b+k)fluoranthene																															0
Benzo(e)pyrene												10	5																		15
Benzo(g,h,i)perylene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Benzo(j+k)fluoranthene										6																					6
Benzo(k)fluoranthene				6	9	9	9		6		19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	347
C1-Chrysene												10	5																		15
C1-Dibenzothiophene												10	5																		15
C1-Fluoranthene/pyrene												10	5																		15
C1-Fluorene												10	5																		15
C1-Phenanthrene/anthracene												10	5																		15
C2-Chrysene												10	5																		15
C2-Dibenzothiophene												10	5																		15
C2-Fluoranthene/pyrene												10	5																		15
C2-Fluorene												10	5																		15
C2-Naphthalene												10	5																		15
C2-Phenanthrene/anthracene												10	5																		15
C3-Chrysene												10	5																		15
C3-Dibenzothiophene												10	5																		15
C3-Fluoranthene/pyrene												10	5																		15
C3-Fluorene												10	5																		15
C3-Naphthalene												10	5																		15
C3-Phenanthrene/anthracene												10	5																		15
C4-Chrysene												10	5																		15
C4-Naphthalene												10	5																		15
C4-Phenanthrene/anthracene												10	5																		15
Chrysene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Dibenzo(a,h)anthracene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Dibenzothiophene						9	9					10	5											16	18	18					85
Fluoranthene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Fluorene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
High Molecular Weight PAH				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Indeno(1,2,3-cd)pyrene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Low Molecular Weight PAH				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Naphthalene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Perylene												10	5																		15
Phenanthrene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Pyrene				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Total cPAHs				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Total PAHs				6	9	9	9		6	6	19	42	5	36	35	4	3	6	35		7			42	18	18		20	3	15	353
Phthalates																															
Bis(2-ethylhexyl) phthalate				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Butylbenzyl phthalate				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Dibutyl phthalate				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Diethyl phthalate				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Dimethyl phthalate				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Di-n-octyl phthalate				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
SVOCs																															
1,2,4-Trichlorobenzene				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
1,2-Dichlorobenzene				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336

Table 2.3-9a. Summary of Biota Sample Counts in RI Data Set (LWG Data).

	Black crappie			Brown bullhead		Carp				Chinook, juvenile		Clam		Crayfish	Lab clam	Lamprey, ammocoetes	Lamprey, macropthalmia	Largescale sucker	*Lumbriculus variegatus*	Multiplate invertebrates	Mussel	Northern pikeminnow	Peamouth	Sculpin	Smallmouth bass				Sturgeon, juvenile		
Analyte	**fillet**	**fillet without skin**	**whole body**	**fillet without skin**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**body without shell**	**depurated w/o shell**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**whole body**	**whole body**	**body without shell**	**whole body**	**whole body**	**whole body**	**body without fillet**	**fillet**	**fillet without skin**	**whole body**	**stomach contents**	**whole body**	**Grand Total**
1,2-Diphenylhydrazine				6	9				6		7	3		27				6						26				20			110
1,3-Dichlorobenzene				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
1,4-Dichlorobenzene				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
2,4-Dinitrotoluene				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2,6-Dinitrotoluene				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2-Chloronaphthalene				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2-Nitroaniline				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
3,3'-Dichlorobenzidine				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
3-Nitroaniline				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
4-Bromophenyl phenyl ether				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
4-Chloroaniline				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
4-Chlorophenyl phenyl ether				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
4-Nitroaniline				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
Aniline				6	9	9	9		5			10	4	36										16	18	18		20			160
Azobenzene				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
Benzoic acid				6	9	9	9		6			10	4	36										16	18	18		20			161
Benzyl alcohol				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Bis(2-chloro-1-methylethyl) ether				6	9				6		7	3		27				6						26				20			110
Bis(2-chloroethoxy) methane				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
Bis(2-chloroethyl) ether				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
Bis(2-chloroisopropyl) ether						9	9					10	4	9										16	18	18					93
Carbazole				6	9				6		7	3		27				6						26				20			110
Dibenzofuran				6	9	9	9		6		19	42	5	36	35			6	35					42	18	18		20			315
Diphenyl																															0
Hexachlorobenzene	4		4	6	9	9	15		6	6	19	45	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	393
Hexachlorobutadiene	4		4	6	9	9	15		6	6	19	41	5	36	35	7	3	6	35	7	7	6	4	42	18	23		20	1	15	389
Hexachlorocyclopentadiene				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
Hexachloroethane	4		4	6	9	9	15		6		15	41	4	36	35	4	1	6	35		7	6	4	42	18	23		20		15	365
Isophorone				6	9	9	9		6			10	4	36										16	18	18		20			161
Nitrobenzene				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
N-Nitrosodimethylamine				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
N-Nitrosodiphenylamine				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
N-Nitrosodipropylamine				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
Retene																															0
Phenols																															
2,3,4,5-Tetrachlorophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2,3,4,6-Tetrachlorophenol						9	9					10	4	9										16	18	18					93
2,3,5,6-Tetrachlorophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2,4,5-Trichlorophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2,4,6-Trichlorophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2,4-Dichlorophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2,4-Dimethylphenol				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
2,4-Dinitrophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2-Chlorophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
2-Methylphenol				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
2-Nitrophenol				6	9	9	9		6			10	4	36										16	18	18		20			161
4,6-Dinitro-2-methylphenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
4-Chloro-3-methylphenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
4-Methylphenol				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
4-Nitrophenol				6	9	9	9		6		7	13	4	36				6						42	18	18		20			203
Pentachlorophenol				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Phenol				6	9	9	9		6		15	41	4	36	35	4	1	6	35		7			42	18	18		20		15	336
Grand Total	252	4	1,044	822	2,996	2,943	3,321	6	2,012	1,362	4,359	12,682	1,689	8,614	10,181	1,861	821	798	10,168	1,655	2,023	384	256	10,474	5,886	6,201	5	6,680	310	4,335	104,144

Notes:

LWG - Lower Willamette Group
PAH - polycyclic aromatic hydrocarbon
PBDE - polybrominated diphenyl ether
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
Total TCDD TEQ - sum of PCDD/F and PCB congener TCDD TEQ

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
Conventionals														
Lipids	3		4	11	11	4	5				15			53
Moisture											15			15
Total solids				11	11									22
Metals														
Aluminum	3		4			4	5							16
Antimony	3		4	11	11	4	5							38
Arsenic	3		4	11	11	4	5							38
Barium	3		4			4	5							16
Beryllium	3		4			4	5							16
Cadmium	3		4	11	11	4	5							38
Calcium	3		4			4	5							16
Chromium	3		4	11	11	4	5							38
Cobalt	3		4			4	5							16
Copper	3		4	11	11	4	5							38
Iron	3		4			4	5							16
Lead	3		4	11	11	4	5							38
Magnesium	3		4			4	5							16
Manganese	3		4			4	5							16
Mercury		3	4	11	11	4	5				15			53
Nickel	3		4	11	11	4	5							38
Potassium	3		4			4	5							16
Selenium	3		4			4	5							16
Silver	3		4	11	11	4	5							38
Sodium	3		4			4	5							16
Thallium	3		4			4	5							16
Vanadium	3		4			4	5							16
Zinc	3		4	11	11	4	5							38
Butyltins														
Butyltin ion				11	11									22
Dibutyltin ion				11	11									22
Tetrabutyltin				11	11									22
Tributyltin ion				11	11									22
PCB Aroclors														
Aroclor 1016	3		4	11	11	4	5							38
Aroclor 1221	3		4	11	11	4	5							38
Aroclor 1232	3		4	11	11	4	5							38
Aroclor 1242	3		4	11	11	4	5							38
Aroclor 1248	3		4	11	11	4	5							38
Aroclor 1254	3		4	11	11	4	5							38
Aroclor 1254 + Aroclor 1260											15			15
Aroclor 1260	3		4	11	11	4	5				15			53
Aroclor 1262	3		4	11	11	4	5							38
Aroclor 1268	3		4	11	11	4	5							38

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
Total PCB Aroclors	3		4	11	11	4	5				15			53
PCB Congeners														
Total PCB congener TEQ (ND = 0)	3	3	4	11	11	4	5				15			56
PCB001	3	3	4	11	11	4	5				10			51
PCB002	3	3	4			4	5				10			29
PCB003	3	3	4			4	5				10			29
PCB004	3	3	4			4	5				10			29
PCB005	3	3	4	11	11	4	5				10			51
PCB006	3	3	4			4	5				10			29
PCB007	3	3	4			4	5				10			29
PCB008	3	3	4	11	11	4	5				10			51
PCB009	3	3	4			4	5				10			29
PCB010	3	3	4			4	5				10			29
PCB011	3	3	4			4	5				10			29
PCB012 & 013	3	3	4			4	5				10			29
PCB014	3	3	4			4	5				10			29
PCB015	3	3	4			4	5				10			29
PCB016	3	3	4			4	5				10			29
PCB017	3	3	4			4	5				10			29
PCB018				11	11									22
PCB018 & 030	3	3	4			4	5				10			29
PCB019	3	3	4			4	5				10			29
PCB020 & 028	3	3	4			4	5				10			29
PCB021 & 033	3	3	4			4	5				10			29
PCB022	3	3	4			4	5				10			29
PCB023	3	3	4			4	5				10			29
PCB024	3	3	4			4	5				10			29
PCB025	3	3	4			4	5				10			29
PCB026 & 029	3	3	4			4	5				10			29
PCB027	3	3	4			4	5				10			29
PCB028				11	11									22
PCB028 & 031											5			5
PCB031	3	3	4	11	11	4	5				10			51
PCB032	3	3	4			4	5				10			29
PCB033				11	11									22
PCB034	3	3	4			4	5				10			29
PCB035	3	3	4			4	5				10			29
PCB036	3	3	4			4	5				10			29
PCB037	3	3	4	11	11	4	5				10			51
PCB038	3	3	4			4	5				10			29
PCB039	3	3	4			4	5				10			29
PCB040 & 041 & 071	3	3	4			4	5				10			29
PCB042	3	3	4			4	5				15			34
PCB043	3	3	4			4	5				10			29

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
PCB044				11	11						5			27
PCB044 & 047 & 065	3	3	4			4	5				10			29
PCB045 & 051	3	3	4			4	5				10			29
PCB046	3	3	4			4	5				10			29
PCB048	3	3	4			4	5				10			29
PCB049				11	11						5			27
PCB049 & 069	3	3	4			4	5				10			29
PCB050 & 053	3	3	4			4	5				10			29
PCB052	3	3	4	11	11	4	5				15			56
PCB054	3	3	4			4	5				10			29
PCB055	3	3	4			4	5				10			29
PCB056	3	3	4	11	11	4	5				10			51
PCB056 & 060											5			5
PCB057	3	3	4			4	5				10			29
PCB058	3	3	4			4	5				10			29
PCB059 & 062 & 075	3	3	4			4	5				10			29
PCB060	3	3	4	11	11	4	5				10			51
PCB061 & 070 & 074 & 076	3	3	4			4	5				10			29
PCB063	3	3	4			4	5				10			29
PCB064	3	3	4			4	5				15			34
PCB066	3	3	4	11	11	4	5				10			51
PCB066 & 095											5			5
PCB067	3	3	4			4	5				10			29
PCB068	3	3	4			4	5				10			29
PCB070				11	11									22
PCB070 & 076											5			5
PCB072	3	3	4			4	5				10			29
PCB073	3	3	4			4	5				10			29
PCB074				11	11						5			27
PCB077	3	3	4	11	11	4	5				10			51
PCB078	3	3	4			4	5				10			29
PCB079	3	3	4			4	5				10			29
PCB080	3	3	4			4	5				10			29
PCB081	3	3	4	11	11	4	5				10			51
PCB082	3	3	4			4	5				10			29
PCB083 & 099	3	3	4			4	5				10			29
PCB084	3	3	4			4	5				10			29
PCB085 & 116 & 117	3	3	4			4	5				10			29
PCB086 & 087 & 097 & 108 & 119 & 125	3	3	4			4	5				10			29
PCB087				11	11						5			27
PCB088 & 091	3	3	4			4	5				10			29
PCB089	3	3	4			4	5				10			29
PCB090				11	11									22
PCB090 & 101 & 113	3	3	4			4	5				10			29

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
PCB092	3	3	4			4	5				10			29
PCB093 & 095 & 098 & 100 & 102	3	3	4			4	5				10			29
PCB094	3	3	4			4	5				10			29
PCB095				11	11									22
PCB096	3	3	4			4	5				10			29
PCB097				11	11						5			27
PCB099				11	11						5			27
PCB101				11	11						5			27
PCB103	3	3	4			4	5				10			29
PCB104	3	3	4			4	5				10			29
PCB105	3	3	4	11	11	4	5				15			56
PCB106	3	3	4			4	5				10			29
PCB107 & 124	3	3	4			4	5				10			29
PCB109	3	3	4			4	5				10			29
PCB110				11	11						5			27
PCB110 & 115	3	3	4			4	5				10			29
PCB111	3	3	4			4	5				10			29
PCB112	3	3	4			4	5				10			29
PCB114	3	3	4	11	11	4	5				10			51
PCB118	3	3	4	11	11	4	5				15			56
PCB119				11	11									22
PCB120	3	3	4			4	5				10			29
PCB121	3	3	4			4	5				10			29
PCB122	3	3	4			4	5				10			29
PCB123	3	3	4	11	11	4	5				10			51
PCB126	3	3	4	11	11	4	5				10			51
PCB127	3	3	4			4	5				10			29
PCB128				11	11						5			27
PCB128 & 166	3	3	4			4	5				10			29
PCB129 & 138 & 160 & 163	3	3	4			4	5				10			29
PCB130	3	3	4			4	5				10			29
PCB131	3	3	4			4	5				10			29
PCB132	3	3	4	11	11	4	5				10			51
PCB133	3	3	4			4	5				10			29
PCB134 & 143	3	3	4			4	5				10			29
PCB135 & 151 & 154	3	3	4			4	5				10			29
PCB136	3	3	4			4	5				10			29
PCB137	3	3	4			4	5				10			29
PCB138				11	11						5			27
PCB139 & 140	3	3	4			4	5				10			29
PCB141	3	3	4	11	11	4	5				15			56
PCB142	3	3	4			4	5				10			29
PCB144	3	3	4			4	5				10			29
PCB145	3	3	4			4	5				10			29

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
PCB146	3	3	4			4	5				15			34
PCB147 & 149	3	3	4			4	5				10			29
PCB148	3	3	4			4	5				10			29
PCB149				11	11						5			27
PCB150	3	3	4			4	5				10			29
PCB151				11	11						5			27
PCB152	3	3	4			4	5				10			29
PCB153				11	11						5			27
PCB153 & 168	3	3	4			4	5				10			29
PCB155	3	3	4			4	5				10			29
PCB156	3	3	4	11	11	4	5				10			51
PCB156 & 157														0
PCB156 & 171											5			5
PCB157	3	3	4	11	11	4	5				10			51
PCB158	3	3	4	11	11	4	5				15			56
PCB159	3	3	4			4	5				10			29
PCB161	3	3	4			4	5				10			29
PCB162	3	3	4			4	5				10			29
PCB164	3	3	4			4	5				10			29
PCB165	3	3	4			4	5				10			29
PCB166				11	11									22
PCB167	3	3	4	11	11	4	5				10			51
PCB168				11	11									22
PCB169	3	3	4	11	11	4	5				10			51
PCB170	3	3	4	11	11	4	5				10			51
PCB170 & 190											5			5
PCB171 & 173	3	3	4			4	5				10			29
PCB172	3	3	4			4	5				15			34
PCB174	3	3	4	11	11	4	5				15			56
PCB175	3	3	4			4	5				10			29
PCB176	3	3	4			4	5				10			29
PCB177	3	3	4	11	11	4	5				15			56
PCB178	3	3	4			4	5				15			34
PCB179	3	3	4			4	5				15			34
PCB180				11	11						5			27
PCB180 & 193	3	3	4			4	5				10			29
PCB181	3	3	4			4	5				10			29
PCB182	3	3	4			4	5				10			29
PCB183				11	11						5			27
PCB183 & 185	3	3	4			4	5				10			29
PCB184	3	3	4	11	11	4	5				10			51
PCB186	3	3	4			4	5				10			29
PCB187	3	3	4	11	11	4	5				15			56
PCB188	3	3	4			4	5				10			29

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
PCB189	3	3	4	11	11	4	5				10			51
PCB190	3	3	4			4	5				10			29
PCB191	3	3	4			4	5				10			29
PCB192	3	3	4			4	5				10			29
PCB194	3	3	4	11	11	4	5				15			56
PCB195	3	3	4	11	11	4	5				15			56
PCB196	3	3	4			4	5				10			29
PCB197 & 200	3	3	4			4	5				10			29
PCB198 & 199	3	3	4			4	5				10			29
PCB200											5			5
PCB201	3	3	4	11	11	4	5				15			56
PCB202	3	3	4			4	5				10			29
PCB203	3	3	4	11	11	4	5				15			56
PCB204	3	3	4			4	5				10			29
PCB205	3	3	4			4	5				10			29
PCB206	3	3	4	11	11	4	5				15			56
PCB207	3	3	4			4	5				10			29
PCB208	3	3	4			4	5				10			29
PCB209	3	3	4	11	11	4	5				10			51
Total PCB Congeners	3	3	4	11	11	4	5				15			56
PBDE Congeners														
PBB101											15			15
PBDE001	3	3	4			3								13
PBDE002	3	3	4			3								13
PBDE003	3	3	4			3								13
PBDE007	3	3	4			3	1							14
PBDE008 & PBDE011	3	3	4			3	1							14
PBDE010	3	3	4			3	1							14
PBDE012	3	3	4			3								13
PBDE012 & 013							1							1
PBDE013	3	3	4			3								13
PBDE015	3	3	4			3	1							14
PBDE017	3	3	4			3					15			28
PBDE017 & 025						1	5							6
PBDE025	3	3	4			3								13
PBDE028								9	9	6	15	18	18	75
PBDE028 & PBDE033	3	3	4			4	5							19
PBDE030	3	3	4			4	5							19
PBDE032	3	3	4			4	5							19
PBDE035	3	3	4			4	5							19
PBDE037	3	3	4			4	5							19
PBDE047	3	3	4			4	5	9	9	6	15	18	18	94
PBDE049	3	3	4			4	5				15			34
PBDE051						1	5							6

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
PBDE066	3	3	4			4	5				15			34
PBDE071	3	3	4			4	5							19
PBDE075	3	3	4			4	5							19
PBDE077	3	3	4			4	5							19
PBDE079						1	5							6
PBDE085	3	3	4			4	5				15			34
PBDE099	3	3	4			4	5	9	9	6	15	18	18	94
PBDE100	3	3	4			4	5	9	9	6	15	18	18	94
PBDE105	3	3	4			4	5							19
PBDE116	3	3	4			4	5							19
PBDE119	3	3	4			3								13
PBDE119 & 120						1	5							6
PBDE126	3	3	4			4	5							19
PBDE128						1	5							6
PBDE138											15			15
PBDE138 & PBDE166	3	3	4			4	5							19
PBDE140	3	3	4			4	5							19
PBDE153	3	3	4			4	5	9	9	6	15	18	18	94
PBDE154	3	3	4			4	5	9	9	6		18	18	79
PBDE154 & PBB153											15			15
PBDE155	3	3	4			4	5							19
PBDE181	3	3	4			4	5							19
PBDE183	3	3	4			4	5	9	9	6	15	18	18	94
PBDE190	3	3	4			4	5				15			34
PBDE203						1	5							6
PBDE206	3	3	4			4	5							19
PBDE207	3	3	4			4	5							19
PBDE208	3	3	4			4	5							19
PBDE209	3	3	4			4	5	9	9	6	15	18	18	94
PCB Homologs														
Dichlorobiphenyl homologs	3	3	4			4	5				10			29
Heptachlorobiphenyl homologs	3	3	4			4	5				15			34
Hexachlorobiphenyl homologs	3	3	4			4	5				15			34
Monochlorobiphenyl homologs	3	3	4			4	5				10			29
Nonachlorobiphenyl homologs	3	3	4			4	5				15			34
Octachlorobiphenyl homologs	3	3	4			4	5				15			34
Pentachlorobiphenyl homologs	3	3	4			4	5				15			34
Tetrachlorobiphenyl homologs	3	3	4			4	5				15			34
Trichlorobiphenyl homologs	3	3	4			4	5				15			34

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
PCDD/Fs														
1,2,3,4,6,7,8-Heptachlorodibenzofuran	3	3	4			4	5				10			29
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	3	3	4			4	5				10			29
1,2,3,4,7,8,9-Heptachlorodibenzofuran	3	3	4			4	5				10			29
1,2,3,4,7,8-Hexachlorodibenzofuran	3	3	4			4	5				10			29
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	3	3	4			4	5				10			29
1,2,3,6,7,8-Hexachlorodibenzofuran	3	3	4			4	5				10			29
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	3	3	4			4	5				10			29
1,2,3,7,8,9-Hexachlorodibenzofuran	3	3	4			4	5				10			29
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	3	3	4			4	5				10			29
1,2,3,7,8-Pentachlorodibenzofuran	3	3	4			4	5				10			29
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3	3	4			4	5				10			29
2,3,4,6,7,8-Hexachlorodibenzofuran	3	3	4			4	5				10			29
2,3,4,7,8-Pentachlorodibenzofuran	3	3	4			4	5				10			29
2,3,7,8-Tetrachlorodibenzofuran	3	3	4			4	5				10			29
2,3,7,8-Tetrachlorodibenzo-p-dioxin	3	3	4			4	5				10			29
TCDD TEQ (ND = 0)	3	3	4			4	5				10			29
Total TCDD TEQ (ND = 0)	3	3	4	11	11	4	5				15			56
PCDD/F Homologs														
Heptachlorodibenzofuran homologs	3	3	4			4	5				10			29
Heptachlorodibenzo-p-dioxin homologs	3	3	4			4	5				10			29
Hexachlorodibenzofuran homologs	3	3	4			4	5				10			29
Hexachlorodibenzo-p-dioxin homologs	3	3	4			4	5				10			29
Octachlorodibenzofuran	3	3	4			4	5				10			29
Octachlorodibenzo-p-dioxin	3	3	4			4	5				10			29
Pentachlorodibenzofuran homologs	3	3	4			4	5				10			29
Pentachlorodibenzo-p-dioxin homologs	3	3	4			4	5				10			29
Tetrachlorodibenzofuran homologs	3	3	4			4	5				10			29
Tetrachlorodibenzo-p-dioxin homologs	3	3	4			4	5				10			29
Total PCDD/F	3	3	4			4	5				10			29

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
Pesticides														
2,4'-DDD	3		4	11	11	4	5				5			43
2,4'-DDE	3		4	11	11	4	5				5			43
2,4'-DDT	3		4	11	11	4	5				5			43
4,4'-DDD	3		4	11	11	4	5				15			53
4,4'-DDE	3		4	11	11	4	5				15			53
4,4'-DDT	3		4	11	11	4	5				15			53
Aldrin	3		4	11	11	4	5				5			43
alpha-Endosulfan	3		4	11	11	4	5				5			43
alpha-Hexachlorocyclohexane	3		4	11	11	4	5				15			53
beta-Endosulfan	3		4	11	11	4	5				5			43
beta-Hexachlorocyclohexane	3		4	11	11	4	5				15			53
Chlorothalonil											15			15
cis-Chlordane	3		4	11	11	4	5				15			53
cis-Nonachlor				11	11						15			37
Dacthal											15			15
delta-Hexachlorocyclohexane	3		4	11	11	4	5				5			43
Dieldrin	3		4	11	11	4	5				15			53
Dimethyl tetrachlorophthalate											15			15
Endosulfan sulfate	3		4	11	11	4	5				5			43
Endrin	3		4	11	11	4	5				5			43
Endrin aldehyde	3		4	11	11	4	4				5			42
Endrin ketone	3		4	11	11	4	5				5			43
gamma-Hexachlorocyclohexane (Lindane)	3		4	11	11	4	5				15			53
Heptachlor	3		4	11	11	4	5				5			43
Heptachlor epoxide	3		4	11	11	4	5				15			53
Methoxychlor	3		4	11	11	4	5				5			43
Mirex				11	11						15			37
Oxychlordane				11	11						15			37
Total Chlordanes	3		4	11	11	4	5				15			53
Total Endosulfan	3		4	11	11	4	5				5			43
Total DDD	3		4	11	11	4	5				15			53
DDx	3		4	11	11	4	5				15			53
Total DDE	3		4	11	11	4	5				15			53
Total DDT	3		4	11	11	4	5				15			53
Total 4,4'-DDx	3		4	11	11	4	5							38
Toxaphene				11	11									22
trans-Chlordane	3		4	11	11	4	5				15			53
trans-Nonachlor				11	11						15			37

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
PAHs														
1-Methylnaphthalene	3		4			4	5							16
2-Methylnaphthalene	3		4	11	11	4	5							38
Acenaphthene	3		4	11	11	4	5							38
Acenaphthylene	3		4	11	11	4	5							38
Anthracene	3		4	11	11	4	5							38
Benzo(a)anthracene	3		4	11	11	4	5							38
Benzo(a)pyrene	3		4	11	11	4	5							38
Benzo(b)fluoranthene	3		4	11	11	4	5							38
Benzo(b+k)fluoranthene	3		4			4	5							16
Benzo(e)pyrene														0
Benzo(g,h,i)perylene	3		4	11	11	4	5							38
Benzo(j+k)fluoranthene														0
Benzo(k)fluoranthene	3		4	11	11	4	5							38
C1-Chrysene														0
C1-Dibenzothiophene														0
C1-Fluoranthene/pyrene														0
C1-Fluorene														0
C1-Phenanthrene/anthracene														0
C2-Chrysene														0
C2-Dibenzothiophene														0
C2-Fluoranthene/pyrene														0
C2-Fluorene														0
C2-Naphthalene														0
C2-Phenanthrene/anthracene														0
C3-Chrysene														0
C3-Dibenzothiophene														0
C3-Fluoranthene/pyrene														0
C3-Fluorene														0
C3-Naphthalene														0
C3-Phenanthrene/anthracene														0
C4-Chrysene														0
C4-Naphthalene														0
C4-Phenanthrene/anthracene														0
Chrysene	3		4	11	11	4	5							38
Dibenzo(a,h)anthracene	3		4	11	11	4	5							38
Dibenzothiophene														0
Fluoranthene	3		4	11	11	4	5							38
Fluorene	3		4	11	11	4	5							38
High Molecular Weight PAH	3		4	11	11	4	5							38
Indeno(1,2,3-cd)pyrene	3		4	11	11	4	5							38
Low Molecular Weight PAH	3		4	11	11	4	5							38
Naphthalene	3		4	11	11	4	5							38
Perylene														0

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
Phenanthrene	3		4	11	11	4	5							38
Pyrene	3		4	11	11	4	5							38
Total cPAHs	3		4	11	11	4	5							38
Total PAHs	3		4	11	11	4	5							38
Phthalates														
Bis(2-ethylhexyl) phthalate				11	11									22
Butylbenzyl phthalate				11	11									22
Dibutyl phthalate				11	11									22
Diethyl phthalate				11	11									22
Dimethyl phthalate				11	11									22
Di-n-octyl phthalate				11	11									22
SVOCs														
1,2,4-Trichlorobenzene	3		4	11	11	4	5							38
1,2-Dichlorobenzene	3		4	11	11	4	5							38
1,2-Diphenylhydrazine				10	10									20
1,3-Dichlorobenzene	3		4	11	11	4	5							38
1,4-Dichlorobenzene	3		4	11	11	4	5							38
2,4-Dinitrotoluene	3		4	11	11	4	5							38
2,6-Dinitrotoluene	3		4	11	11	4	5							38
2-Chloronaphthalene	3		4	11	11	4	5							38
2-Nitroaniline				11	11									22
3,3'-Dichlorobenzidine				11	11									22
3-Nitroaniline				11	11									22
4-Bromophenyl phenyl ether	3		4	11	11	4	5							38
4-Chloroaniline				11	11									22
4-Chlorophenyl phenyl ether	3		4	11	11	4	5							38
4-Nitroaniline				11	11									22
Aniline				11	11									22
Azobenzene				1	1									2
Benzoic acid				11	11									22
Benzyl alcohol				11	11									22
Bis(2-chloro-1-methylethyl) ether														0
Bis(2-chloroethoxy) methane	3		4	11	11	4	5							38
Bis(2-chloroethyl) ether	3		4	11	11	4	5							38
Bis(2-chloroisopropyl) ether	3		4	11	11	4	5							38
Carbazole	3		4	11	11	4	5							38
Dibenzofuran	3		4	11	11	4	5							38
Diphenyl	3		4			4	5							16
Hexabromocyclododecane											15			15
Hexachlorobenzene	3		4	11	11	4	5				15			53
Hexachlorobutadiene	3		4	11	11	4	5				5			43
Hexachlorocyclopentadiene				11	11									22
Hexachloroethane	3		4	11	11	4	5							38
Isophorone				11	11									22

Table 2.3-9b. Summary of Biota Sample Counts in RI Data Set (Non-LWG Data).

	Chinook, adult			Lab clam	*Lumbriculus variegatus*	Lamprey, adult	Sturgeon, adult	Carp		Clam	Osprey	Smallmouth Bass	Smallmouth Bass	
	fillet	fillet without skin	whole body	body without shell	whole body	whole body	fillet without skin	body without fillet	fillet	body without shell	whole egg	body without fillet	fillet	Grand Total
Nitrobenzene				11	11									22
N-Nitrosodimethylamine				11	11									22
N-Nitrosodiphenylamine	3		4	11	11	4	5							38
N-Nitrosodipropylamine				11	11									22
Octachlorostyrene										15				15
Retene	3		4			4	5							16
Phenols														
2,3,4,5-Tetrachlorophenol				11	11									22
2,3,4,6-Tetrachlorophenol				11	11									22
2,3,5,6-Tetrachlorophenol				11	11									22
2,4,5-Trichlorophenol	2		4	11	11	2	5							35
2,4,6-Trichlorophenol	2		4	11	11	2	5							35
2,4-Dichlorophenol	2		4	11	11	2	5							35
2,4-Dimethylphenol	2		4	11	11	3	5							36
2,4-Dinitrophenol				11	11									22
2-Chlorophenol	2		4	11	11	2	5							35
2-Methylphenol				11	11									22
2-Nitrophenol	2		4	11	11	2	5							35
4,6-Dinitro-2-methylphenol				11	11									22
4-Chloro-3-methylphenol				11	11									22
4-Methylphenol				11	11									22
4-Nitrophenol				11	11									22
Pentachlorophenol				11	11									22
Phenol	2		4	11	11	2	5							35
VOCs														
1,2,3,4-Tetrachlorobenzene											15			15
1,2,4,5-Tetrachlorobenzene											15			15
Pentachlorobenzene											15			15
Grand Total	1,052	723	1,416	2,189	2,189	1,397	1,744	72	72	63	3,040	144	144	14,245

Notes:

LWG - Lower Willamette Group
PAH - polycyclic aromatic hydrocarbon
PBDE - polybrominated diphenyl ether
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
Total TCDD TEQ - sum of PCDD/F and PCB congener TCDD TEQ

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Black crappie	Fillet	LWG01FZ0306TSBCFLC10	5
Black crappie	Fillet	LWG01FZ0306TSBCFLC20	5
Black crappie	Fillet	LWG01FZ0609TSBCFLC10	5
Black crappie	Fillet	LWG01FZ0609TSBCFLC20	5
Black crappie	Fillet without skin	LWG01FZ0306TSBCFSC10	5
Black crappie	Fillet without skin	LWG01FZ0306TSBCFSC20	5
Black crappie	Fillet without skin	LWG01FZ0609TSBCFSC10	5
Black crappie	Fillet without skin	LWG01FZ0609TSBCFSC20	5
Black crappie	Whole body	LWG01FZ0306TSBCWBC10	5
Black crappie	Whole body	LWG01FZ0306TSBCWBC20	5
Black crappie	Whole body	LWG01FZ0609TSBCWBC10	5
Black crappie	Whole body	LWG01FZ0609TSBCWBC20	5
Brown bullhead	Fillet without skin	LWG01FZ0306TSBBFLC10	5
Brown bullhead	Fillet without skin	LWG01FZ0306TSBBFLC20	5
Brown bullhead	Fillet without skin	LWG01FZ0306TSBBFLC30	5
Brown bullhead	Fillet without skin	LWG01FZ0306TSBBFSC10	5
Brown bullhead	Fillet without skin	LWG01FZ0306TSBBFSC20	5
Brown bullhead	Fillet without skin	LWG01FZ0306TSBBFSC30	5
Brown bullhead	Fillet without skin	LWG01FZ0609TSBBFLC10	5
Brown bullhead	Fillet without skin	LWG01FZ0609TSBBFLC20	5
Brown bullhead	Fillet without skin	LWG01FZ0609TSBBFLC30	5
Brown bullhead	Fillet without skin	LWG01FZ0609TSBBFSC10	5
Brown bullhead	Fillet without skin	LWG01FZ0609TSBBFSC20	5
Brown bullhead	Fillet without skin	LWG01FZ0609TSBBFSC30	5
Brown bullhead	Whole body	LWG0120R001TSBBWBC10	5
Brown bullhead	Whole body	LWG0120R001TSBBWBC20	5
Brown bullhead	Whole body	LWG0128R001TSBBWBC00	5
Brown bullhead	Whole body	LWG01FZ0306TSBBWBC10	5
Brown bullhead	Whole body	LWG01FZ0306TSBBWBC20	5
Brown bullhead	Whole body	LWG01FZ0306TSBBWBC30	5
Brown bullhead	Whole body	LWG01FZ0609TSBBWBC10	5
Brown bullhead	Whole body	LWG01FZ0609TSBBWBC20	5
Brown bullhead	Whole body	LWG01FZ0609TSBBWBC30	5
Carp	Body without fillet	LW3-CP0004-C10B	5
Carp	Body without fillet	LW3-CP0004-C20B	5
Carp	Body without fillet	LW3-CP0004-C30B	5
Carp	Body without fillet	LW3-CP0408-C10B	5
Carp	Body without fillet	LW3-CP0408-C20B	5
Carp	Body without fillet	LW3-CP0408-C30B	5
Carp	Body without fillet	LW3-CP0812-C11B	5
Carp	Body without fillet	LW3-CP0812-C20B	5
Carp	Body without fillet	LW3-CP0812-C30B	5
Carp	Fillet	LW3-CP0004-C10F	5
Carp	Fillet	LW3-CP0004-C20F	5
Carp	Fillet	LW3-CP0004-C30F	5
Carp	Fillet	LW3-CP0408-C10F	5
Carp	Fillet	LW3-CP0408-C20F	5
Carp	Fillet	LW3-CP0408-C30F	5
Carp	Fillet	LW3-CP0812-C11F	5
Carp	Fillet	LW3-CP0812-C20F	5
Carp	Fillet	LW3-CP0812-C30F	5
Carp	Fillet	LWG01FZ0306TSCPFLC10	5
Carp	Fillet	LWG01FZ0306TSCPFLC20	5
Carp	Fillet	LWG01FZ0306TSCPFLC30	5
Carp	Fillet	LWG01FZ0609TSCPFLC10	5
Carp	Fillet	LWG01FZ0609TSCPFLC20	5
Carp	Fillet	LWG01FZ0609TSCPFLC30	5
Carp	Fillet without skin	LWG01FZ0306TSCPFSC10	5
Carp	Fillet without skin	LWG01FZ0306TSCPFSC20	5
Carp	Fillet without skin	LWG01FZ0306TSCPFSC30	5
Carp	Fillet without skin	LWG01FZ0609TSCPFSC10	5
Carp	Fillet without skin	LWG01FZ0609TSCPFSC20	5

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Carp	Fillet without skin	LWG01FZ0609TSCPFSC30	5
Carp	Whole body	LWG01FZ0306TSCPWBC10	5
Carp	Whole body	LWG01FZ0306TSCPWBC20	5
Carp	Whole body	LWG01FZ0306TSCPWBC30	5
Carp	Whole body	LWG01FZ0609TSCPWBC10	5
Carp	Whole body	LWG01FZ0609TSCPWBC20	5
Carp	Whole body	LWG01FZ0609TSCPWBC30	5
Carp	Whole body	LWG1AFZ0609TSCPWB	1
Chinook, adult	Fillet	WLTASE03CFH03254200	3
Chinook, adult	Fillet	WLTASE03CFH03254201	3
Chinook, adult	Fillet	WLTASE03CFH03254202	3
Chinook, adult	Fillet without skin	WLTASE03CFH03254210	3
Chinook, adult	Fillet without skin	WLTASE03CFH03254211	3
Chinook, adult	Fillet without skin	WLTASE03CFH03254212	3
Chinook, adult	Whole body	WLTASE03CFH03254220	3
Chinook, adult	Whole body	WLTASE03CFH03254221	3
Chinook, adult	Whole body	WLTASE03CFH03254222	3
Chinook, adult	Whole body	WLTASE03CFH03254223	3
Chinook, juvenile	Stomach contents	LW2-T01 SC	90
Chinook, juvenile	Stomach contents	LW2-T01-NOAA SC	40
Chinook, juvenile	Stomach contents	LW2-T02 SC	90
Chinook, juvenile	Stomach contents	LW2-T02-NOAA SC	42
Chinook, juvenile	Stomach contents	LW2-T03 SC	72
Chinook, juvenile	Stomach contents	LW2-T04 SC	90
Chinook, juvenile	Whole body	LW2-T01-REP1	30
Chinook, juvenile	Whole body	LW2-T01-REP2	30
Chinook, juvenile	Whole body	LW2-T01-REP3	30
Chinook, juvenile	Whole body	LW2-T02-REP1	30
Chinook, juvenile	Whole body	LW2-T02-REP2	30
Chinook, juvenile	Whole body	LW2-T02-REP3	30
Chinook, juvenile	Whole body	LW2-T03-REP1	24
Chinook, juvenile	Whole body	LW2-T03-REP2	21
Chinook, juvenile	Whole body	LW2-T03-REP3	27
Chinook, juvenile	Whole body	LW2-T04-REP1	30
Chinook, juvenile	Whole body	LW2-T04-REP2	30
Chinook, juvenile	Whole body	LW2-T04-REP3	30
Chinook, juvenile	Whole body	LWG1A02R102TSSCWBC00	15
Chinook, juvenile	Whole body	LWG1A02R112TSSCWBC00	14
Chinook, juvenile	Whole body	LWG1A02R113TSSCWBC00	15
Chinook, juvenile	Whole body	LWG1A03R118TSSCWBC00	11
Chinook, juvenile	Whole body	LWG1A03R125TSSCWBC00	13
Chinook, juvenile	Whole body	LWG1A04R126TSSCWBC00	12
Chinook, juvenile	Whole body	LWG1A26R111TSSCWBC00	12
Clam	Body without shell	LW2-BTFC001	106
Clam	Body without shell	LW2-BTFC002	96
Clam	Body without shell	LW2-BTFC003	71
Clam	Body without shell	LW2-BTFC004	102
Clam	Body without shell	LW2-BTFC005	56
Clam	Body without shell	LW2-BTFC006 Rep 1	171
Clam	Body without shell	LW2-BTFC006 Rep 2	171
Clam	Body without shell	LW2-BTFC007	39
Clam	Body without shell	LW2-BTFC008	62
Clam	Body without shell	LW2-BTFC009	63
Clam	Body without shell	LW2-BTFC010	108
Clam	Body without shell	LW2-BTFC011	32
Clam	Body without shell	LW2-BTFC012	50
Clam	Body without shell	LW2-BTFC013	89
Clam	Body without shell	LW2-BTFC014	36
Clam	Body without shell	LW2-BTFC015	32
Clam	Body without shell	LW2-BTFC016	34
Clam	Body without shell	LW2-BTFC017	37
Clam	Body without shell	LW2-BTFC018	16

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Clam	Body without shell	LW2-BTFC019	41
Clam	Body without shell	LW2-BTFC020	52
Clam	Body without shell	LW2-BTFC021	37
Clam	Body without shell	LW2-BTFC022	49
Clam	Body without shell	LW2-BTFC023	35
Clam	Body without shell	LW2-BTFC024	110
Clam	Body without shell	LW2-BTFC025	22
Clam	Body without shell	LW2-BTFC026	50
Clam	Body without shell	LW2-BTFC027 Rep 1	75
Clam	Body without shell	LW2-BTFC027 Rep 2	75
Clam	Body without shell	LW2-BTFC028	42
Clam	Body without shell	LW2-BTFC029	10
Clam	Body without shell	LW2-BTFC030	69
Clam	Body without shell	LW2-BTFC031	41
Clam	Body without shell	LW2-BTFC032	5
Clam	Body without shell	LW2-BTFC033	14
Clam	Body without shell	LW3-CA01E-C01	15
Clam	Body without shell	LW3-CA02W-C00	14
Clam	Body without shell	LW3-CA03W-C00	Unknown
Clam	Body without shell	LW3-CA04W-C00	Unknown
Clam	Body without shell	LW3-CA05E-C00	14
Clam	Body without shell	LW3-CA05W-C00	Unknown
Clam	Body without shell	LW3-CA10W-C00	15
Clam	Body without shell	LW3-CA11E-C00	10
Clam	Body without shell	LW3-CA12E-C00	11
Clam	Body without shell	LW3-CA12W-C00	Unknown
Clam	Body without shell	LWG0106R002TSCAWBC00	Unknown
Clam	Body without shell	LWG0107R003TSCAWBC00	Unknown
Clam	Body without shell	LWG0107R006TSCAWBC00	Unknown
Clam	Depurated w/o shell	LW3-CA01E-C00D	Unknown
Clam	Depurated w/o shell	LW3-CA02W-C00D	Unknown
Clam	Depurated w/o shell	LW3-CA10W-C00D	Unknown
Clam	Depurated w/o shell	LW3-CA11E-C00D	Unknown
Clam	Depurated w/o shell	LW3-CA12E-C00D	Unknown
Crayfish	Whole body	LW3-CR01E-Alt-C00	7
Crayfish	Whole body	LW3-CR01W-C00	8
Crayfish	Whole body	LW3-CR05W-C00	6
Crayfish	Whole body	LW3-CR06W-C00	7
Crayfish	Whole body	LW3-CR08W-C00	10
Crayfish	Whole body	LW3-CR10W-C00	9
Crayfish	Whole body	LW3-CR11E-C01	8
Crayfish	Whole body	LW3-CR12E-C00	8
Crayfish	Whole body	LW3-CR12W-C00	9
Crayfish	Whole body	LWG0102R001TSCRWBC00	8
Crayfish	Whole body	LWG0102R015TSCRWBC00	8
Crayfish	Whole body	LWG0103R001TSCRWBC00	8
Crayfish	Whole body	LWG0103R002TSCRWBC00	9
Crayfish	Whole body	LWG0103R003TSCRWBC00	8
Crayfish	Whole body	LWG0103R004TSCRWBC00	8
Crayfish	Whole body	LWG0103R005TSCRWBC00	9
Crayfish	Whole body	LWG0103R032TSCRWBC00	9
Crayfish	Whole body	LWG0104R002TSCRWBC00	9
Crayfish	Whole body	LWG0104R003TSCRWBC00	8
Crayfish	Whole body	LWG0104R004TSCRWBC10	9
Crayfish	Whole body	LWG0104R004TSCRWBC20	10
Crayfish	Whole body	LWG0105R001TSCRWBC00	8
Crayfish	Whole body	LWG0105R003TSCRWBC00	8
Crayfish	Whole body	LWG0106R001TSCRWBC00	11
Crayfish	Whole body	LWG0106R004TSCRWBC10	9
Crayfish	Whole body	LWG0106R004TSCRWBC20	8
Crayfish	Whole body	LWG0106R031TSCRWBC00	8
Crayfish	Whole body	LWG0107R003TSCRWBC00	9

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Crayfish	Whole body	LWG0107R004TSCRWBC00	9
Crayfish	Whole body	LWG0107R006TSCRWBC00	8
Crayfish	Whole body	LWG0108R001TSCRWBC00	9
Crayfish	Whole body	LWG0108R002TSCRWBC00	9
Crayfish	Whole body	LWG0108R003TSCRWBC00	8
Crayfish	Whole body	LWG0109R001TSCRWBC10	8
Crayfish	Whole body	LWG0109R001TSCRWBC20	9
Crayfish	Whole body	LWG0109R002TSCRWBC00	8
Lab clam	Body without shell	LW2-BTLC001	183
Lab clam	Body without shell	LW2-BTLC002	183
Lab clam	Body without shell	LW2-BTLC003	183
Lab clam	Body without shell	LW2-BTLC004	183
Lab clam	Body without shell	LW2-BTLC005	183
Lab clam	Body without shell	LW2-BTLC006-1	183
Lab clam	Body without shell	LW2-BTLC006-2	183
Lab clam	Body without shell	LW2-BTLC007	177
Lab clam	Body without shell	LW2-BTLC008	177
Lab clam	Body without shell	LW2-BTLC009	183
Lab clam	Body without shell	LW2-BTLC010	183
Lab clam	Body without shell	LW2-BTLC011	183
Lab clam	Body without shell	LW2-BTLC012	183
Lab clam	Body without shell	LW2-BTLC013	177
Lab clam	Body without shell	LW2-BTLC014	183
Lab clam	Body without shell	LW2-BTLC015	183
Lab clam	Body without shell	LW2-BTLC016	183
Lab clam	Body without shell	LW2-BTLC017	177
Lab clam	Body without shell	LW2-BTLC018	183
Lab clam	Body without shell	LW2-BTLC019	183
Lab clam	Body without shell	LW2-BTLC020	177
Lab clam	Body without shell	LW2-BTLC021	177
Lab clam	Body without shell	LW2-BTLC022	177
Lab clam	Body without shell	LW2-BTLC023	183
Lab clam	Body without shell	LW2-BTLC024	177
Lab clam	Body without shell	LW2-BTLC025	177
Lab clam	Body without shell	LW2-BTLC026	177
Lab clam	Body without shell	LW2-BTLC027-1	177
Lab clam	Body without shell	LW2-BTLC027-2	177
Lab clam	Body without shell	LW2-BTLC028	177
Lab clam	Body without shell	LW2-BTLC029	177
Lab clam	Body without shell	LW2-BTLC030	177
Lab clam	Body without shell	LW2-BTLC031	177
Lab clam	Body without shell	LW2-BTLC032	177
Lab clam	Body without shell	LW2-BTLC033	183
Lab clam	Body without shell	LW2-BTLCCTRL 011906	177
Lab clam	Body without shell	LW2-BTLCCTRL 022406	183
Lab clam	Body without shell	LW2-BTLCTZ 012706	183
Lab clam	Body without shell	LW2-BTLCTZ 122205	177
Lab clam	Body without shell	WLCDRD050178G	Unknown
Lab clam	Body without shell	WLCDRD050184G	Unknown
Lab clam	Body without shell	WLCDRD05CtrlCf	Unknown
Lab clam	Body without shell	WLCDRD05Day0Cf	Unknown
Lab clam	Body without shell	WLCDRD05WRVC011Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC028Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC029Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC043Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC046Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC057Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC066Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC072Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC108Clam	Unknown
Lab clam	Body without shell	WLCDRD05WRVC118Clam	Unknown
Lamprey, adult	Whole body	WLTASE03WF03214300	30

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Lamprey, adult	Whole body	WLTASE03WF03214301	30
Lamprey, adult	Whole body	WLTASE03WF03214302	30
Lamprey, adult	Whole body	WLTASE03WF03214303	30
Lamprey, ammonocoetes	Whole body	LW2-BTFLamp Comp	10
Lamprey, ammonocoetes	Whole body	LW3-LTA-Comp1	7
Lamprey, ammonocoetes	Whole body	LW3-LTA-Comp2	28
Lamprey, ammonocoetes	Whole body	LW3-LTA-Comp3	19
Lamprey, ammonocoetes	Whole body	LW3-LTA-Comp4	49
Lamprey, ammonocoetes	Whole body	LW3-LTA-Comp5-1	44
Lamprey, ammonocoetes	Whole body	LW3-LTA-Comp5-2	44
Lamprey, macropthalmia	Whole body	LW3-LTM-Comp1	6
Lamprey, macropthalmia	Whole body	LW3-LTM-Comp2	6
Lamprey, macropthalmia	Whole body	LW3-LTM-Comp3	9
Largescale sucker	Whole body	LWG0103R014TSLSWBC10	5
Largescale sucker	Whole body	LWG0103R014TSLSWBC20	4
Largescale sucker	Whole body	LWG0105R006TSLSWBC00	4
Largescale sucker	Whole body	LWG0107R009TSLSWBC00	6
Largescale sucker	Whole body	LWG0108R010TSLSWBC00	6
Largescale sucker	Whole body	LWG0109R006TSLSWBC00	6
Largescale sucker	Whole body	LWG01FZ0306TSLSWBC10	1
Largescale sucker	Whole body	LWG01FZ0306TSLSWBC20	2
Lumbriculus variegatus	Whole body	LW2-BTLW001	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW002	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW003	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW004	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW005	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW006-1	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW006-2	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW007	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW008	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW009	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW010	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW011	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW012	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW013	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW014	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW015	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW016	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW017	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW018	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW019	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW020	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW021	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW022	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW023	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW024	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW025	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW026	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW027-1	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW027-2	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW028	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW029	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW030	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW031	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW032	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLW033	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLWCTRL 011106	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLWCTRL 030106	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLWTZ 020106	Unknown
Lumbriculus variegatus	Whole body	LW2-BTLWTZ 121405	Unknown
Lumbriculus variegatus	Whole body	WLCDRD050176G	Unknown
Lumbriculus variegatus	Whole body	WLCDRD050187G	Unknown

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Lumbriculus variegatus	Whole body	WLCDRD05CtrlLv	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05Day0Lv	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC011Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC028Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC029Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC043Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC046Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC057Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC066Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC072Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC108Worm	Unknown
Lumbriculus variegatus	Whole body	WLCDRD05WRVC118Worm	Unknown
Multiplate invertebrates	Whole body	LW2-MIT001	Unknown
Multiplate invertebrates	Whole body	LW2-MIT002	Unknown
Multiplate invertebrates	Whole body	LW2-MIT003/005/006	Unknown
Multiplate invertebrates	Whole body	LW2-MIT004	Unknown
Multiplate invertebrates	Whole body	LW2-MIT007	Unknown
Multiplate invertebrates	Whole body	LW2-MIT008/010	Unknown
Multiplate invertebrates	Whole body	LW2-MIT009	Unknown
Northern pikeminnow	Whole body	LWG0103R014TSNPWBC10	5
Northern pikeminnow	Whole body	LWG0103R014TSNPWBC20	5
Northern pikeminnow	Whole body	LWG0105R006TSNPWBC00	5
Northern pikeminnow	Whole body	LWG0107R009TSNPWBC00	5
Northern pikeminnow	Whole body	LWG0108R010TSNPWBC00	3
Northern pikeminnow	Whole body	LWG0109R006TSNPWBC00	4
Osprey	whole egg	WLRASE08MC-10B	1
Osprey	whole egg	WLRASE08MC-1B	1
Osprey	whole egg	WLRASE08MC-20	1
Osprey	whole egg	WLRASE08MC-2B	1
Osprey	whole egg	WLRASE08MC-9	1
Osprey	whole egg	WLRASE08W11	1
Osprey	whole egg	WLRASE08W23	1
Osprey	whole egg	WLRASE08W28	1
Osprey	whole egg	WLRASE08W30B	1
Osprey	whole egg	WLRASE08W30C	1
Osprey	whole egg	WLRASE08W32	1
Osprey	whole egg	WLRASE08W3B	1
Osprey	whole egg	WLRASE08W6	1
Osprey	whole egg	WLRASE08W7A	1
Osprey	whole egg	WLRASE08W9B	1
Peamouth	Whole body	LWG0103R014TSPMWBC00	5
Peamouth	Whole body	LWG0105R006TSPMWBC00	5
Peamouth	Whole body	LWG0107R009TSPMWBC00	4
Peamouth	Whole body	LWG0108R010TSPMWBC00	5
Peamouth	Whole body	LWG0109R006TSPMWBC00	5
Sculpin	Whole body	LW3-SP01E-C00	8
Sculpin	Whole body	LW3-SP01W-C00	12
Sculpin	Whole body	LW3-SP03E-C00	7
Sculpin	Whole body	LW3-SP04W-C00	9
Sculpin	Whole body	LW3-SP05E-C00	10
Sculpin	Whole body	LW3-SP06W-C00	20
Sculpin	Whole body	LW3-SP07E-C00	11
Sculpin	Whole body	LW3-SP07W-C00	10
Sculpin	Whole body	LW3-SP08E-C00	20
Sculpin	Whole body	LW3-SP08W-C00	10
Sculpin	Whole body	LW3-SP09W-C00	10
Sculpin	Whole body	LW3-SP10E-C00	11
Sculpin	Whole body	LW3-SP10W-C00	8
Sculpin	Whole body	LW3-SP11E-C00	12
Sculpin	Whole body	LW3-SP12E-C00	10
Sculpin	Whole body	LW3-SP12W-ALT-C01	32
Sculpin	Whole body	LWG0102R001TSSPWBC00	12

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Sculpin	Whole body	LWG0102R001TSSPWBC10	12
Sculpin	Whole body	LWG0102R015TSSPWBC00	17
Sculpin	Whole body	LWG0103R001TSSPWBC00	17
Sculpin	Whole body	LWG0103R002TSSPWBC10	21
Sculpin	Whole body	LWG0103R002TSSPWBC20	18
Sculpin	Whole body	LWG0103R004TSSPWBC10	19
Sculpin	Whole body	LWG0103R004TSSPWBC20	20
Sculpin	Whole body	LWG0103R005TSSPWBC00	13
Sculpin	Whole body	LWG0103R032TSSPWBC00	24
Sculpin	Whole body	LWG0103R034TSSPWBC00	19
Sculpin	Whole body	LWG0104R002TSSPWBC00	22
Sculpin	Whole body	LWG0104R003TSSPWBC00	20
Sculpin	Whole body	LWG0104R004TSSPWBC00	18
Sculpin	Whole body	LWG0105R001TSSPWBC00	21
Sculpin	Whole body	LWG0105R020TSSPWBC00	23
Sculpin	Whole body	LWG0106R001TSSPWBC00	17
Sculpin	Whole body	LWG0106R002TSSPWBC10	19
Sculpin	Whole body	LWG0106R002TSSPWBC20	19
Sculpin	Whole body	LWG0106R004TSSPWBC00	22
Sculpin	Whole body	LWG0107R003TSSPWBC00	16
Sculpin	Whole body	LWG0107R006TSSPWBC00	15
Sculpin	Whole body	LWG0108R001TSSPWBC00	19
Sculpin	Whole body	LWG0108R002TSSPWBC00	21
Sculpin	Whole body	LWG0108R003TSSPWBC00	18
Sculpin	Whole body	LWG0109R001TSSPWBC00	20
Sculpin	Whole body	LWG0109R002TSSPWBC00	19
Smallmouth bass	Body without fillet	LW3-SB010E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB010W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB011E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB011W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB02E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB03E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB03W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB04E-C01B	5
Smallmouth bass	Body without fillet	LW3-SB04W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB05W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB06E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB06W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB07E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB07W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB08E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB08W-C00B	5
Smallmouth bass	Body without fillet	LW3-SB09E-C00B	5
Smallmouth bass	Body without fillet	LW3-SB09W-C00B	5
Smallmouth bass	Fillet	LW3-SB010E-C00F	5
Smallmouth bass	Fillet	LW3-SB010W-C00F	5
Smallmouth bass	Fillet	LW3-SB011E-C00F	5
Smallmouth bass	Fillet	LW3-SB011W-C00F	5
Smallmouth bass	Fillet	LW3-SB02E-C00F	5
Smallmouth bass	Fillet	LW3-SB03E-C00F	5
Smallmouth bass	Fillet	LW3-SB03W-C00F	5
Smallmouth bass	Fillet	LW3-SB04E-C01F	5
Smallmouth bass	Fillet	LW3-SB04W-C00F	5
Smallmouth bass	Fillet	LW3-SB05W-C00F	5
Smallmouth bass	Fillet	LW3-SB06E-C00F	5
Smallmouth bass	Fillet	LW3-SB06W-C00F	5
Smallmouth bass	Fillet	LW3-SB07E-C00F	5
Smallmouth bass	Fillet	LW3-SB07W-C00F	5
Smallmouth bass	Fillet	LW3-SB08E-C00F	5
Smallmouth bass	Fillet	LW3-SB08W-C00F	5
Smallmouth bass	Fillet	LW3-SB09E-C00F	5
Smallmouth bass	Fillet	LW3-SB09W-C00F	5

Table 2.3-10. Number of Individual Fish or Invertebrates per Sample in the RI Data Set.

Species	Tissue	Sample	Number of Individuals per Composite
Smallmouth bass	Fillet	LWG0103R014TSSBFLC00	5
Smallmouth bass	Fillet	LWG0105R006TSSBFLC00	5
Smallmouth bass	Fillet	LWG0106R024TSSBFLC00	3
Smallmouth bass	Fillet	LWG0108R032TSSBFLC00	5
Smallmouth bass	Fillet	LWG0109R006TSSBFLC00	5
Smallmouth bass	Fillet without skin	LWG0103R014TSSBFSC00	5
Smallmouth bass	Fillet without skin	LWG0105R006TSSBFSC00	5
Smallmouth bass	Fillet without skin	LWG0106R024TSSBFSC00	3
Smallmouth bass	Fillet without skin	LWG0108R032TSSBFSC00	5
Smallmouth bass	Fillet without skin	LWG0109R006TSSBFSC00	5
Smallmouth bass	Whole body	LWG0103R014TSSBWBC00	5
Smallmouth bass	Whole body	LWG0104R023TSSBWBC10	5
Smallmouth bass	Whole body	LWG0104R023TSSBWBC20	5
Smallmouth bass	Whole body	LWG0104R023TSSBWBC30	5
Smallmouth bass	Whole body	LWG0105R006TSSBWBC00	5
Smallmouth bass	Whole body	LWG0106R024TSSBWBC00	1
Smallmouth bass	Whole body	LWG0107R009TSSBWBC10	5
Smallmouth bass	Whole body	LWG0107R009TSSBWBC20	5
Smallmouth bass	Whole body	LWG0107R009TSSBWBC30	5
Smallmouth bass	Whole body	LWG0108R010TSSBWBC10	4
Smallmouth bass	Whole body	LWG0108R010TSSBWBC20	5
Smallmouth bass	Whole body	LWG0108R010TSSBWBC30	5
Smallmouth bass	Whole body	LWG0108R032TSSBWBC00	5
Smallmouth bass	Whole body	LWG0109R006TSSBWBC00	2
Smallmouth bass	Whole body	LWG0120R001TSSBWBC10	5
Smallmouth bass	Whole body	LWG0120R001TSSBWBC20	5
Smallmouth bass	Whole body	LWG0120R001TSSBWBC30	5
Smallmouth bass	Whole body	LWG0128R001TSSBWBC10	5
Smallmouth bass	Whole body	LWG0128R001TSSBWBC20	5
Smallmouth bass	Whole body	LWG0128R001TSSBWBC30	5
Sturgeon (adult)	Fillet without skin	WLTASE03ISA03334750	1
Sturgeon (adult)	Fillet without skin	WLTASE03ISA03334751	1
Sturgeon (adult)	Fillet without skin	WLTASE03ISA03354100	1
Sturgeon (adult)	Fillet without skin	WLTASE03ISA03354101	1
Sturgeon (adult)	Fillet without skin	WLTASE03ISA03354102	1
Sturgeon (juvenile)	Stomach contents	LW3-SG001005-COMP	2
Sturgeon (juvenile)	Stomach contents	LW3-SG003-01	1
Sturgeon (juvenile)	Stomach contents	LW3-SG004-01	1
Sturgeon (juvenile)	Whole body	LW3-STWB001-01	1
Sturgeon (juvenile)	Whole body	LW3-STWB001-02	1
Sturgeon (juvenile)	Whole body	LW3-STWB001-03	1
Sturgeon (juvenile)	Whole body	LW3-STWB002-01	1
Sturgeon (juvenile)	Whole body	LW3-STWB002-02	1
Sturgeon (juvenile)	Whole body	LW3-STWB002-03	1
Sturgeon (juvenile)	Whole body	LW3-STWB003-01	1
Sturgeon (juvenile)	Whole body	LW3-STWB003-02	1
Sturgeon (juvenile)	Whole body	LW3-STWB003-03	1
Sturgeon (juvenile)	Whole body	LW3-STWB004-01	1
Sturgeon (juvenile)	Whole body	LW3-STWB004-02	1
Sturgeon (juvenile)	Whole body	LW3-STWB004-03	1
Sturgeon (juvenile)	Whole body	LW3-STWB005-01	1
Sturgeon (juvenile)	Whole body	LW3-STWB005-02	1
Sturgeon (juvenile)	Whole body	LW3-STWB005-03	1

Table 3.1-1. Portland Harbor Vertical Datum Conversion Table.

River Mile	NAVD88 Elevation	NGVD29/47 Elevation	CRD Elevation
0.4	10.0’	6.8’	5.4’
	0.0’	-3.2’	-4.6’
	-10.0’	-13.2’	-14.6’
1.3	10.0’	6.8’	5.4’
	0.0’	-3.2’	-4.7’
	-10.0’	-13.2’	-14.7’
5	10.0’	6.7’	4.9’
	0.0’	-3.3’	-5.1’
	-10.0’	-13.3’	-15.1’
9.8	10.0’	6.5’	4.7’
	0.0’	-3.5’	-5.3’
	-10.0’	-13.5’	-15.3’
12.8	10.0’	6.5’	4.6’
	0.0’	-3.5’	-5.4’
	-10.0’	-13.5’	-15.4’
15.6	10.0’	6.5’	4.6’
	0.0’	-3.5’	-5.4’
	-10.0’	-13.5’	-15.4’

Notes:

CRD - Columbia River datum
NAVD88 - North American Vertical Datum of 1988
NGVD29/47 - National Geodetic Vertical Datum of 1929 through the Pacific Northwest Supplemental Adjustment of 1947

Table 3.1-2. Summary of ADCP Transect Time, Location, and Approximate Total Flow.[a]

Transect	ADCP File	River Mile	Time (UTC)	Water Level CRD (Morrison Street Gauge)	Flow (ft^3/s)	Location Description
1	A109018R.000	1	1:13	10.87	35405	Columbia Slough
2	A109017R.000	2	1:05	10.9	34727	
3	A109016R.000	2.5	0:48	10.92	34886	
4	A109000R.000	3.1	18:50	11.47	69170	Multnomah Channel
5	A109015R.000	4	0:42	10.92	67098	
6	A109001R.000	4.6	19:23	11.41	70928	Into Terminal 4 Slip 3
7	A109012R.000	5.8	23:57	10.99	66452	St. Johns Bridge
8	A109010R.000	6.3	23:37	11.05	71113	Off Gasco
9	A109002R.000	6.8	20:11	11.18	71356	Into Willamette Cove
10	A109009R.000	7.8	23:00	11.1	67447	Off Willbridge Terminal
11	A109005R.000	8	21:14	11.27	68181	Downstream of PSY
12	A109003R.000	8	~20:45	11.31	-479	Swan Island Lagoon (mouth)
13	A109004R.000	8	21:00	11.29	183	Swan Island Lagoon (upper end)
14	A109008R.000	9.6	22:34	11.16	65452	Across deep hole in channel
15	A109007R.000	10	22:22	11.18	67643	
16	A109006R.000	11	22:04	11.19	69461	

Notes:

[a] The ADCP survey was conducted by David Evans & Associates, Inc. during a high water event on April 19, 2002 (DEA 2002b).

ADCP - acoustic doppler current profiler
CRD - Columbia River datum
UTC - Coordinated Universal Time

Table 3.1-3. Summary of Discharge Measurements Calculations in the May 2003 and January 2004 ADCP Surveys near Multnomah Channel.

May 2003 Survey - 6 passes over tidal cycle

Transect Location	**Transect Number**	**Pass Number**	**Discharge (Q) (ft^3/sec)**	**Multnomah Channel (Q) Calculated Transect 5 - Transect 3 (ft^3/sec)**	**Multnomah Channel (Q) Measured (ft^3/sec)**
RM 2.5 - downstream of MC	3	1	18923		
RM 3.1 - entrance of MC	4	1	33542		
RM 4.0 - upstream of MC	5	1	32581		
Within MC		1		13658	18693
RM 2.5 - downstream of MC	3	2	17882		
RM 3.1 - entrance of MC	4	2	36525		
RM 4.0 - upstream of MC	5	2	35737		
Within MC		2		17855	18542
RM 2.5 - downstream of MC	3	3	17662		
RM 3.1 - entrance of MC	4	3	35058		
RM 4.0 - upstream of MC	5	3	35005		
Within MC		3		17343	18194
RM 2.5 - downstream of MC	3	4	8839		
RM 3.1 - entrance of MC	4	4	21442		
RM 4.0 - upstream of MC	5	4	18358		
Within MC		4		9519	18535
RM 2.5 - downstream of MC	3	5	17995		
RM 3.1 - entrance of MC	4	5	-496		
RM 4.0 - upstream of MC	5	5	3706		
Within MC		5		-14289	15190
RM 2.5 - downstream of MC	3	6	10001		
RM 3.1 - entrance of MC	4	6	34004		
RM 4.0 - upstream of MC	5	6	36369		
Within MC		6		26368	18789

January 2004 Survey-2 passes, number one on rising tide and number two on falling tide

Transect Location	Transect Number	Pass Number	Discharge (Q) (ft^3/sec)	Multnomah Channel (Q) Calculated Transect 5 - Transect 3 (ft^3/sec)	Multnomah Channel (Q) Measured (ft^3/sec)
RM 2.5 - downstream of MC	3	1	97739		
RM 3.1 - entrance of MC	4	1	126700		
RM 4.0 - upstream of MC	5	1	125474		
Within MC	17	1		27735	31242
RM 2.5 - downstream of MC	3	2	99838		
RM 3.1 - entrance of MC	4	2	130580		
RM 4.0 - upstream of MC	5	2	130738		
Within MC	17	2		30900	31720

Notes:

ADCP - acoustic doppler current profiler
MC - Multnomah Channel

Table 3.1-4. 2002-2009 Bathymetric Change as Percent Area by River Mile Segment.

		River Mile															
	Bathymetric Change (ft)	**0-1**	**1-2**	**Multnomah Channel below RM 3**	**2-3**	**Multnomah Channel above RM 3**	**3-4**	**4-5**	**5-6**	**6-7**	**7-8**	**8-9**	**9-10**	**10-11**	**RM 11 to End of Nav. Channel**	**End of Nav. Channel to RM 11.8**	**Mean % Change**
East Side Channel																	
Shoaling	>5	0	0	NA	0	NA	0	1	0	2	2	0	0	0	0	0	0
Shoaling	2 to 5	1	23	NA	17	NA	2	3	1	6	7	3	0	4	2	1	5
Shoaling	1 to 2	6	29	NA	49	NA	10	15	4	3	21	6	2	6	4	1	12
Shoaling	.25 to 1	29	24	NA	23	NA	38	37	16	14	43	33	3	10	13	3	22
Shoaling	0 to .25	23	5	NA	4	NA	12	6	11	19	10	23	8	5	9	13	11
Deepening	-.25 to 0	16	5	NA	3	NA	9	5	17	24	9	15	21	6	15	22	13
Deepening	-1 to -.25	15	9	NA	3	NA	15	13	33	24	7	14	37	20	29	52	21
Deepening	-2 to -1	6	3	NA	0	NA	6	10	13	6	1	4	19	18	15	6	8
Deepening	-5 to -2	4	1	NA	0	NA	6	8	5	2	0	1	8	28	11	2	6
Deepening	<-5	0	0	NA	0	NA	3	2	0	0	0	0	1	2	3	0	1
Cum. No Change (+/- 0.25')		39	10	NA	7	NA	21	11	28	43	19	39	29	11	24	35	24
Navigational Channel																	
Shoaling	> 5	0	0	NA	0	NA	0	0	1	0	0	0	16	5	0	NA	2
Shoaling	2 to 5	0	13	NA	26	NA	0	8	2	2	2	24	34	9	3	NA	10
Shoaling	1 to 2	2	9	NA	32	NA	9	22	4	3	26	29	14	8	14	NA	14
Shoaling	.25 to 1	6	25	NA	25	NA	59	46	23	15	40	23	11	20	17	NA	26
Shoaling	0 to .25	9	20	NA	6	NA	23	13	23	24	16	9	5	12	11	NA	14
Deepening	-.25 to 0	24	22	NA	6	NA	7	5	23	28	10	7	7	19	25	NA	15
Deepening	-1 to -.25	52	11	NA	5	NA	2	4	21	24	6	6	11	25	26	NA	16
Deepening	-2 to -1	7	1	NA	0	NA	0	2	3	3	1	1	2	1	2	NA	2
Deepening	-5 to -2	1	0	NA	0	NA	0	1	0	0	0	0	0	0	0	NA	0
Deepening	<-5	0	0	NA	0	NA	0	0	0	0	0	0	0	0	0	NA	0
Cum. No Change (+/- 0.25')		32	42	NA	12	NA	31	18	46	52	26	16	12	31	37	NA	30
West Side Channel																	
Shoaling	>5	0	0	0	0	0	0	1	0	0	1	0	10	0	0	0	1
Shoaling	2 to 5	0	0	0	1	0	0	22	3	3	5	7	14	18	2	1	5
Shoaling	1 to 2	0	0	1	4	1	7	29	19	13	11	20	17	42	19	4	13
Shoaling	.25 to 1	1	5	20	22	7	33	22	41	27	18	21	25	25	21	14	20
Shoaling	0 to .25	1	24	17	20	11	17	7	14	14	9	8	10	5	15	19	13
Deepening	-.25 to 0	6	29	15	26	28	21	5	9	14	10	8	9	3	13	34	15
Deepening	-1 to -.25	42	34	35	23	50	19	7	10	20	25	21	13	6	21	20	23
Deepening	-2 to -1	41	5	12	4	3	1	4	3	5	12	13	3	1	5	5	8
Deepening	-5 to -2	8	2	0	1	0	0	2	1	2	8	2	0	0	2	1	2
Deepening	<-5	1	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0
Cum. No Change (+/- 0.25')		7	54	32	46	39	38	12	23	28	19	15	19	8	28	53	28

Notes:
NA - not applicable

Table 3.1-5. Summary of Shear Stress and Associated Erosion Rates for Portland Harbor Sediments.

Shear Stress (N/m^2)	Measurements Count	Erosion Rate (cm/s)	
		Min	Max
0.1	16	0	0.0003
0.2	23	0	0.0003
0.4	55	0	0.001
0.8	74	0	0.04
1.6	76	0.0002	0.1
3.2	76	0.0003	0.3
6.4	60	0.007	0.4
10	2	0.02	0.04

Table 3.1-6. Summary of Grain Size and Critical Shear Stress for Sedflume Cores by Core Depth Interval at Portland Harbor.

Sample Depth by Category	d50 (µm)		T_{cr} (N/m^2)	
	Min	Max	Min	Max
0–5 cm	9.7	401	0.06	0.64
5–10 cm	12	367	0.32	1.28
10–15 cm	10	378	0.22	1.28
15–20 cm	7.8	384	0.26	1.28
20–25 cm	10.9	357	0.24	1.28

Table 3.1-7. LWG TSS Peristaltic Sampling Events and Station Summary.

			Sampling Method		Sampling Event							
	River Mile	**Location Description / Nearest Property**	**Round 2**	**Round 3**	**R2A Nov 2004 Low Flow**	**R2 Mar 2005 Low Flow**	**R2A Jul 2005 Low Flow**	**Nov 2005 - April 2006 Hydrodynamic Model Sampling**	**R3A Jan 2006 High Flow [a]**	**R3A Sep 2006 Low Flow**	**R3A Nov 2006 Stormwater-Influenced**	**R3A Jan 2007 High Flow [b]**
Transect Stations												
Round 2 and Round 3												
W005	3.9	Kinder-Morgan (Linnton) Liquid Terminals	EDI	NB/NS	√	√	√	--	√	√	√	√
W011	6.3	Near middle of Study Area (at Gasco)	EDI	NB/NS	√	√	√	--	--	√	√	√
W023	11	Upstream boundary of Study Area	EDI	VI (E,M,W)	√	√	√	--	√	√	√	√
Hydrodynamic Model Data Collection												
HMW05	23	Upstream of Study Area	HI, VI					√				
	23.7	Upstream of Study Area	HI, VI					√				
Round 3												
W025	2	Downstream extent of Study Area (at Oregon Steel Mills)	--	VI (E,M,W)	--	--	--	--	--	√	√	√
W027	2.9, Mult. Channel	Downstream of Study Area (Multnomah Channel at Alder Creek Lumber)	--	NB/NS	--	--	--	--	--	√	√	√
W024	16	Upstream of Study Area and City of Portland	--	NB/NS	--	--	--	--	√	√	√	√
Single-Point Stations												
Round 2												
W001	2	Oregon Steel Mills	NB	--	√	√	√	--	--	--	--	--
W002	2.2	Near Western Shore Sauvie Island	NB	--	√	√	√	--	--	--	--	--

Table 3.1-7. LWG TSS Peristaltic Sampling Events and Station Summary.

			Sampling Method		Sampling Event							
	River Mile	**Location Description / Nearest Property**	**Round 2**	**Round 3**	**R2A Nov 2004 Low Flow**	**R2 Mar 2005 Low Flow**	**R2A Jul 2005 Low Flow**	**Nov 2005 - April 2006 Hydrodynamic Model Sampling**	**R3A Jan 2006 High Flow [a]**	**R3A Sep 2006 Low Flow**	**R3A Nov 2006 Stormwater-Influenced**	**R3A Jan 2007 High Flow [b]**
W003	3	PGE-Harborton Subst.	NB	--	√	√	√	--	--	--	--	--
W004	3.7	NW Pipe Co.	NB	--	√	√	√	--	--	--	--	--
W006	4	Kinder Morgan	NB	--	√	√	√	--	--	--	--	--
W007	4.4	Port of Portland, Terminal 4, Slip 1	NB	--	√	√	√	--	--	--	--	--
W008	4.6	Port of Portland, Terminal 4, Slip 3	NB	--	√	√	√	--	--	--	--	--
W009	5.6	Brix Maritime	NB	--	√	√	√	--	--	--	--	--
W010	5.7	Former Mar Com Shipyard	VI	--	√	√	√	--	--	--	--	--
W012	6.3	Gasco	NB	--	√	√	√	--	--	--	--	--
W013	6.9	Willamette Cove	NB	--	√	√	√	--	--	--	--	--
W014	6.9	Willamette Cove	VI	--	√	√	√	--	--	--	--	--
W015	6.9	Arkema (downstream)	NB	--	√	√	√	--	--	--	--	--
W016	7.2	Arkema (upstream)	NB	--	√	√	√	--	--	--	--	--
W017	7.5	Arkema/ Kinder Morgan boundary	NB	--	√	√	√	--	--	--	--	--
W018	8.3	Swan Island Lagoon (near USCG Marine Safety)	NB	--	√	√	√	--	--	--	--	--
W019	8.6	Texaco/ Gunderson	NB	--	√	√	√	--	--	--	--	--
W020	9.1	Swan Island Lagoon	VI	--	√	√	√		--	--	--	--
W021	8.7	Swan Island Lagoon (southern end)	NB	--	√	√	√		--	--	--	--
W022	9.7	Port of Portland Terminal 2	NB	--	√	√	√		--	--	--	--

Table 3.1-7. LWG TSS Peristaltic Sampling Events and Station Summary.

			Sampling Method		Sampling Event							
	River Mile	**Location Description / Nearest Property**	**Round 2**	**Round 3**	**R2A Nov 2004 Low Flow**	**R2 Mar 2005 Low Flow**	**R2A Jul 2005 Low Flow**	**Nov 2005 - April 2006 Hydrodynamic Model Sampling**	**R3A Jan 2006 High Flow [a]**	**R3A Sep 2006 Low Flow**	**R3A Nov 2006 Stormwater-Influenced**	**R3A Jan 2007 High Flow [b]**
Round 3												
W026	2.1	Oregon Steel Mills	--	NB/NS	--	--	--		--	--	√	√
W028	3.6	Time Oil Site	--	NB/NS	--	--	--		--	--	√	√
W029	4.4	Kinder Morgan	--	NB/NS	--	--	--		--	--	√	√
W030	5.5	Former Mar Com Shipyard	--	NB/NS	--	--	--		--	--	√	√
W031	6.1	Gasco	--	NB/NS	--	--	--		--	--	√	√
W032	6.9	Willamette Cove	--	NB/NS	--	--	--		--	--	√	√
W033	7	Arkema (downstream)	--	NB/NS	--	--	--		--	--	√	√
W034	7.5	Arkema (upstream)	--	NB/NS	--	--	--		--	--	√	√
W035	8.5	Swan Island Lagoon	--	NB/NS	--	--	--		--	--	√	√
W036	8.6	Texaco/ Gunderson	--	NB/NS	--	--	--		--	--	√	√
W037	9.6	Port of Portland-Terminal 2	--	NB/NS	--	--	--		--	--	√	√
W038	9.9	Near east shore, RM 9.9	--	NB/NS	--	--	--		--	--	√	√

Notes:

[a] Only near-surface samples were collected in the January 2006 high-flow event.

[b] The January/February 2007 high-flow event was cancelled after two days of sampling due to an unexpected change in flow conditions. Sampling resumed on February 21, 2008.

-- Indicates samples not collected.
EDI - equal discharge increment transect sample
HI - horizontally integrated
NB/NS - near bottom/near surface sample pair
NB - near bottom sample
TSS - total suspended solids
VI (E,M,W) - vertically integrated sample: east - middle - west

Table 3.1-8. LWG Member Independent Surface Water Sampling Event and Station Summary.

Location ID	River Mile	Location Description / Nearest Property	Sampling Method	Sampling Dates[a]
Transect Stations				
City of Portland Long Term Monitoring				
D	1.1	South Kelly Point Park	Composite of three grab samples collected from eastern, middle, and western locations across river, at depth of 10 ft from surface (peristaltic).	Dec 1, 1993 - April 3, 2008
C	6.8	St. John's Railroad Bridge		Nov 17, 1993 - April 3, 2008
E	8.8	Swan Island		Nov 17, 1993 - Jan 13 1999
B	12.7	Morrison Street Bridge		Nov 17, 1993 - April 3, 2008
F	17.9	Waverly Country Club		Feb 1, 1995 - April 3, 2008
A	20	Tryon Creek Bridge		Nov 17, 1993 - Jun 28, 2000
Single-Point Stations				
City of Portland Long Term Monitoring				
D	1.1	South Kelly Point Park	Grab samples from location mid-point across river, at depths of 0, 10, and >10 ft	Feb 5, 1992 - Oct 20, 1993
C	6.8	St. John's Railroad Bridge		
B	12.7	Morrison Street Bridge		
A	20	Tryon Creek Bridge		
NW Natural				
GSW-01	5.9	NW Natural Gas Co.	Grab samples collected from depths of 2 ft, mid-depth, and near-bottom at slack high tide, ebb tide, and slack low tide	Oct 1-9, 2007
GSW-02	6			
GSW-03	6.1			
GSW-04				
GSW-05				
GSW-06				
GSW-07				
GSW-08				
GSW-09	6.2			
GSW-10				
GSW-11				
GSW-12				
GSW-13	6.3			
GSW-14				
GSW-15	6.4			
GSW-16		Siltronic Corp.		
GSW-17				
GSW-18	6.5			
GSW-19	6.7			
GSW-20				

Notes:

[a] Only data collected after October 1, 2000 were included in the analysis in this section.

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/4/2000	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	17	13000 Ae	0.00	0.00	No	Study Area
10/4/2000	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6.2	13000 Ae	0.00	0.00	No	Study Area
10/4/2000	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3.6	13000 Ae	0.00	0.00	No	Upriver
10/4/2000	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2.6	13000 Ae	0.00	0.00	No	Upriver
10/18/2000	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	14	14000 Ae	0.01	0.15	No	Study Area
10/18/2000	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4.8	14000 Ae	0.01	0.15	No	Study Area
10/18/2000	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	14000 Ae	0.01	0.15	No	Upriver
10/18/2000	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.4	14000 Ae	0.01	0.15	No	Upriver
11/1/2000	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5.1	17000 Ae	0.04	0.02	No	Study Area
11/1/2000	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5.3	17000 Ae	0.04	0.02	No	Study Area
11/1/2000	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	17000 Ae	0.04	0.02	No	Upriver
11/1/2000	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.7	17000 Ae	0.04	0.02	No	Upriver
11/29/2000	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	2.6	21000 Ae	0.42	0.00	Yes	Upriver
11/29/2000	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2.6	21000 Ae	0.42	0.00	Yes	Upriver
12/6/2000	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	17000 Ae	0.00	0.00	No	Study Area
12/6/2000	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4.2	17000 Ae	0.00	0.00	No	Study Area
12/6/2000	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3.5	17000 Ae	0.00	0.00	No	Upriver
12/6/2000	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	17000 Ae	0.00	0.00	No	Upriver
1/3/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	19000 Ae	0.11	0.00	No	Study Area
1/3/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	19000 Ae	0.11	0.00	No	Study Area
1/3/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	19000 Ae	0.11	0.00	No	Upriver
1/3/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	19000 Ae	0.11	0.00	No	Upriver
1/17/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5.2	17000 Ae	0.00	0.00	No	Study Area
1/17/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4.4	17000 Ae	0.00	0.00	No	Study Area
1/17/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	2	17000 Ae	0.00	0.00	No	Upriver
1/17/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	17000 Ae	0.00	0.00	No	Upriver
2/7/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	24000 Ae	0.00	0.01	No	Study Area
2/7/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	24000 Ae	0.00	0.01	No	Study Area
2/7/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.8	24000 Ae	0.00	0.01	No	Upriver
2/7/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	24000 Ae	0.00	0.01	No	Upriver
2/21/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	14000 Ae	0.24	0.00	Yes	Study Area
2/21/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	3.2	14000 Ae	0.24	0.00	Yes	Study Area
2/21/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3	14000 Ae	0.24	0.00	Yes	Upriver
2/21/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2.8	14000 Ae	0.24	0.00	Yes	Upriver
3/7/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5.5	14000 Ae	0.00	0.00	No	Study Area
3/7/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	14000 Ae	0.00	0.00	No	Study Area
3/7/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.2	14000 Ae	0.00	0.00	No	Upriver
3/7/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	14000 Ae	0.00	0.00	No	Upriver
3/21/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6.4	26000 Ae	0.00	0.00	No	Study Area
3/21/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6.8	26000 Ae	0.00	0.00	No	Study Area
3/21/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	7.2	26000 Ae	0.00	0.00	No	Upriver
3/21/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5.6	26000 Ae	0.00	0.00	No	Upriver
4/4/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8.6	26000 Ae	0.00	0.00	No	Study Area
4/4/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	26000 Ae	0.00	0.00	No	Study Area
4/4/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5.6	26000 Ae	0.00	0.00	No	Upriver

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
4/4/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	6	26000 Ae	0.00	0.00	No	Upriver
4/18/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5.5	24000 Ae	0.00	0.00	No	Study Area
4/18/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6.2	24000 Ae	0.00	0.00	No	Study Area
4/18/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5.2	24000 Ae	0.00	0.00	No	Upriver
4/18/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	24000 Ae	0.00	0.00	No	Upriver
5/2/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5.2	32000 Ae	0.00	0.10	No	Study Area
5/2/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	32000 Ae	0.00	0.10	No	Study Area
5/2/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6.6	32000 Ae	0.00	0.10	No	Upriver
5/2/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	6.8	32000 Ae	0.00	0.10	No	Upriver
5/16/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	3.2	30000 Ae	0.02	0.20	Yes	Study Area
5/16/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4.3	30000 Ae	0.02	0.20	Yes	Study Area
5/16/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.2	30000 Ae	0.02	0.20	Yes	Upriver
5/16/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5.2	30000 Ae	0.02	0.20	Yes	Upriver
6/6/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6.4	17000 Ae	0.00	0.21	Yes	Study Area
6/6/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	17000 Ae	0.00	0.21	Yes	Study Area
6/6/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	17000 Ae	0.00	0.21	Yes	Upriver
6/6/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	17000 Ae	0.00	0.21	Yes	Upriver
6/20/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8	9900 Ae	0.00	0.00	No	Study Area
6/20/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6.5	9900 Ae	0.00	0.00	No	Study Area
6/20/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	7.6	9900 Ae	0.00	0.00	No	Upriver
6/20/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4.8	9900 Ae	0.00	0.00	No	Upriver
7/11/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7.8	7500 Ae	0.00	0.00	No	Study Area
7/11/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7.5	7500 Ae	0.00	0.00	No	Study Area
7/11/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	7500 Ae	0.00	0.00	No	Upriver
7/11/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.2	7500 Ae	0.00	0.00	No	Upriver
7/25/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	10	7000 Ae	0.00	0.00	No	Study Area
7/25/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7.5	7000 Ae	0.00	0.00	No	Study Area
7/25/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6.4	7000 Ae	0.00	0.00	No	Upriver
7/25/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.5	7000 Ae	0.00	0.00	No	Upriver
8/8/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8	7000 Ae	0.00	0.00	No	Study Area
8/8/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	7000 Ae	0.00	0.00	No	Study Area
8/8/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6.4	7000 Ae	0.00	0.00	No	Upriver
8/8/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	1	7000 Ae	0.00	0.00	No	Upriver
8/22/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7.2	7000 Ae	0.64	0.04	Yes	Study Area
8/22/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	11	7000 Ae	0.64	0.04	Yes	Study Area
8/22/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6.4	7000 Ae	0.64	0.04	Yes	Upriver
8/22/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	7000 Ae	0.64	0.04	Yes	Upriver
9/12/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8.8	7100 Ae	0.00	0.00	No	Study Area
9/12/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6.4	7100 Ae	0.00	0.00	No	Study Area
9/12/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5.6	7100 Ae	0.00	0.00	No	Upriver
9/12/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	7100 Ae	0.00	0.00	No	Upriver
9/26/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	8200 Ae	0.15	0.54	Yes	Study Area
9/26/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7.6	8200 Ae	0.15	0.54	Yes	Study Area
9/26/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.5	8200 Ae	0.15	0.54	Yes	Upriver
9/26/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	8200 Ae	0.15	0.54	Yes	Upriver

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/10/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	8400 Ae	0.53	0.00	Yes	Study Area
10/10/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	8400 Ae	0.53	0.00	Yes	Study Area
10/10/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	8400 Ae	0.53	0.00	Yes	Upriver
10/10/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4.3	8400 Ae	0.53	0.00	Yes	Upriver
10/31/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	18000 Ae	0.15	0.75	Yes	Study Area
10/31/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	18000 Ae	0.15	0.75	Yes	Study Area
10/31/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.4	18000 Ae	0.15	0.75	Yes	Upriver
10/31/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4.8	18000 Ae	0.15	0.75	Yes	Upriver
11/14/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	3	21000 Ae	0.30	0.78	Yes	Study Area
11/14/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	21000 Ae	0.30	0.78	Yes	Study Area
11/14/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	21000 Ae	0.30	0.78	Yes	Upriver
11/14/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	21000 Ae	0.30	0.78	Yes	Upriver
11/28/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	12	48000 Ae	1.41	0.00	Yes	Study Area
11/28/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	11	48000 Ae	1.41	0.00	Yes	Study Area
11/28/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	16	48000 Ae	1.41	0.00	Yes	Upriver
11/28/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	20	48000 Ae	1.41	0.00	Yes	Upriver
12/5/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	20	100000 Ae	0.14	0.38	Yes	Study Area
12/5/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	26	100000 Ae	0.14	0.38	Yes	Study Area
12/5/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	36	100000 Ae	0.14	0.38	Yes	Upriver
12/5/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	44	100000 Ae	0.14	0.38	Yes	Upriver
12/19/2001	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	33.6	130000 Ae	0.12	0.39	Yes	Study Area
12/19/2001	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	35.4	130000 Ae	0.12	0.39	Yes	Study Area
12/19/2001	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	43.4	130000 Ae	0.12	0.39	Yes	Upriver
12/19/2001	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	35.4	130000 Ae	0.12	0.39	Yes	Upriver
1/9/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	38	110000 Ae	0.00	0.06	No	Study Area
1/9/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	49.3	110000 Ae	0.00	0.06	No	Study Area
1/9/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	62.5	110000 Ae	0.00	0.06	No	Upriver
1/9/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	61	110000 Ae	0.00	0.06	No	Upriver
1/23/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	29	98000 Ae	0.00	0.11	No	Study Area
1/23/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	31	98000 Ae	0.00	0.11	No	Study Area
1/23/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	47.2	98000 Ae	0.00	0.11	No	Upriver
1/23/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	50.8	98000 Ae	0.00	0.11	No	Upriver
2/13/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8.8	46000 Ae	0.00	0.00	No	Study Area
2/13/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	9.2	46000 Ae	0.00	0.00	No	Study Area
2/13/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8.4	46000 Ae	0.00	0.00	No	Upriver
2/13/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	10	46000 Ae	0.00	0.00	No	Upriver
2/27/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	13	35000 Ae	0.00	0.00	No	Study Area
2/27/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	8.4	35000 Ae	0.00	0.00	No	Study Area
2/27/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8.6	35000 Ae	0.00	0.00	No	Upriver
2/27/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	8.6	35000 Ae	0.00	0.00	No	Upriver
3/13/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	18	88000 Ae	0.10	0.30	Yes	Study Area
3/13/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	27	88000 Ae	0.10	0.30	Yes	Study Area
3/13/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	43.1	88000 Ae	0.10	0.30	Yes	Upriver
3/13/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	48	88000 Ae	0.10	0.30	Yes	Upriver
3/27/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5.2	40000 Ae	0.00	0.00	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
3/27/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7.2	40000 Ae	0.00	0.00	No	Study Area
3/27/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	7.2	40000 Ae	0.00	0.00	No	Upriver
3/27/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	12	40000 Ae	0.00	0.00	No	Upriver
4/10/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	43000 Ae	0.23	0.35	Yes	Study Area
4/10/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	43000 Ae	0.23	0.35	Yes	Study Area
4/10/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.4	43000 Ae	0.23	0.35	Yes	Upriver
4/10/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.8	43000 Ae	0.23	0.35	Yes	Upriver
4/24/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4.4	31000 Ae	0.00	0.00	No	Study Area
4/24/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5.2	31000 Ae	0.00	0.00	No	Study Area
4/24/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5.2	31000 Ae	0.00	0.00	No	Upriver
4/24/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	7.2	31000 Ae	0.00	0.00	No	Upriver
5/8/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5.6	24000 Ae	0.00	0.01	No	Study Area
5/8/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4.4	24000 Ae	0.00	0.01	No	Study Area
5/8/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	24000 Ae	0.00	0.01	No	Upriver
5/8/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	24000 Ae	0.00	0.01	No	Upriver
5/22/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	24000 Ae	0.12	0.08	No	Study Area
5/22/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	3	24000 Ae	0.12	0.08	No	Study Area
5/22/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3	24000 Ae	0.12	0.08	No	Upriver
5/22/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2	24000 Ae	0.12	0.08	No	Upriver
6/12/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	9.6	19000 Ae	0.00	0.00	No	Study Area
6/12/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4.8	19000 Ae	0.00	0.00	No	Study Area
6/12/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	19000 Ae	0.00	0.00	No	Upriver
6/12/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	19000 Ae	0.00	0.00	No	Upriver
6/26/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7.7	12000 Ae	0.00	0.00	No	Study Area
6/26/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	3.8	12000 Ae	0.00	0.00	No	Study Area
6/26/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	12000 Ae	0.00	0.00	No	Upriver
6/26/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.7	12000 Ae	0.00	0.00	No	Upriver
7/24/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7.2	8600 Ae	0.00	0.00	No	Study Area
7/24/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6.8	8600 Ae	0.00	0.00	No	Study Area
7/24/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6.6	8600 Ae	0.00	0.00	No	Upriver
7/24/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	8600 Ae	0.00	0.00	No	Upriver
8/7/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	39.4	8400 Ae	0.00	0.00	No	Study Area
8/7/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	8	8400 Ae	0.00	0.00	No	Study Area
8/7/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6.8	8400 Ae	0.00	0.00	No	Upriver
8/7/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	8400 Ae	0.00	0.00	No	Upriver
8/21/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	11	8700 Ae	0.00	0.00	No	Study Area
8/21/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	2	8700 Ae	0.00	0.00	No	Study Area
8/21/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.4	8700 Ae	0.00	0.00	No	Upriver
8/21/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	8700 Ae	0.00	0.00	No	Upriver
9/4/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4.6	8700 Ae	0.00	0.00	No	Study Area
9/4/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5.6	8700 Ae	0.00	0.00	No	Study Area
9/4/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5.2	8700 Ae	0.00	0.00	No	Upriver
9/4/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.2	8700 Ae	0.00	0.00	No	Upriver
9/18/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8.6	10000 Ae	0.00	0.05	No	Study Area
9/18/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	26	10000 Ae	0.00	0.05	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
9/18/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	10000 Ae	0.00	0.05	No	Upriver
9/18/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3.2	10000 Ae	0.00	0.05	No	Upriver
10/1/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8	11000 Ae	0.00	0.73	Yes	Study Area
10/1/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6.5	11000 Ae	0.00	0.73	Yes	Study Area
10/1/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	11000 Ae	0.00	0.73	Yes	Upriver
10/1/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	17	11000 Ae	0.00	0.73	Yes	Upriver
10/16/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4.8	11000 Ae	0.00	0.00	No	Study Area
10/16/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4.4	11000 Ae	0.00	0.00	No	Study Area
10/16/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5.2	11000 Ae	0.00	0.00	No	Upriver
10/16/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	11000 Ae	0.00	0.00	No	Upriver
11/13/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	19000 Ae	0.35	0.28	Yes	Study Area
11/13/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	2.5	19000 Ae	0.35	0.28	Yes	Study Area
11/13/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	2	19000 Ae	0.35	0.28	Yes	Upriver
11/13/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	19000 Ae	0.35	0.28	Yes	Upriver
12/4/2002	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	8800 Ae	0.06	0.00	No	Study Area
12/4/2002	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	8800 Ae	0.06	0.00	No	Study Area
12/4/2002	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4.4	8800 Ae	0.06	0.00	No	Upriver
12/4/2002	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	8800 Ae	0.06	0.00	No	Upriver
1/8/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	14	73000 Ae	0.00	0.00	No	Study Area
1/8/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	14	73000 Ae	0.00	0.00	No	Study Area
1/8/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	20	73000 Ae	0.00	0.00	No	Upriver
1/8/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	19	73000 Ae	0.00	0.00	No	Upriver
2/5/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	23	91000 Ae	0.00	0.00	No	Study Area
2/5/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	23.4	91000 Ae	0.00	0.00	No	Study Area
2/5/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	25.8	91000 Ae	0.00	0.00	No	Upriver
2/5/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	23	91000 Ae	0.00	0.00	No	Upriver
3/4/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6.2	24000 Ae	0.06	0.01	No	Study Area
3/4/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	24000 Ae	0.06	0.01	No	Study Area
3/4/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5.2	24000 Ae	0.06	0.01	No	Upriver
3/4/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	8.4 J	24000 Ae	0.06	0.01	No	Upriver
4/9/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	11	48600 A	0.04	0.11	No	Study Area
4/9/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	8.4	48600 A	0.04	0.11	No	Study Area
4/9/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	10	48600 A	0.04	0.11	No	Upriver
4/9/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	13	48600 A	0.04	0.11	No	Upriver
5/15/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	24000 Ae	0.18	0.00	No	Study Area
5/15/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	24000 Ae	0.18	0.00	No	Study Area
5/15/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	24000 Ae	0.18	0.00	No	Upriver
5/15/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	24000 Ae	0.18	0.00	No	Upriver
6/11/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	16000 Ae	0.00	0.00	No	Study Area
6/11/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	16000 Ae	0.00	0.00	No	Study Area
6/11/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	16000 Ae	0.00	0.00	No	Upriver
6/11/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	16000 Ae	0.00	0.00	No	Upriver
7/9/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	10	8800 Ae	0.00	0.00	No	Study Area
7/9/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	8800 Ae	0.00	0.00	No	Study Area
7/9/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8	8800 Ae	0.00	0.00	No	Upriver

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
7/9/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	8800 Ae	0.00	0.00	No	Upriver
8/6/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	9	7800 Ae	0.00	0.12	No	Study Area
8/6/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	10	7800 Ae	0.00	0.12	No	Study Area
8/6/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	7800 Ae	0.00	0.12	No	Upriver
8/6/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	7800 Ae	0.00	0.12	No	Upriver
9/3/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8	7500 Ae	0.00	0.00	No	Study Area
9/3/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	7500 Ae	0.00	0.00	No	Study Area
9/3/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	7500 Ae	0.00	0.00	No	Upriver
9/3/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2 U	7500 Ae	0.00	0.00	No	Upriver
10/1/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	8600 Ae	0.00	0.00	No	Study Area
10/1/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	8600 Ae	0.00	0.00	No	Study Area
10/1/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	8600 Ae	0.00	0.00	No	Upriver
10/1/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2	8600 Ae	0.00	0.00	No	Upriver
11/4/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	9500 Ae	0.00	0.00	No	Study Area
11/4/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	2	9500 Ae	0.00	0.00	No	Study Area
11/4/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	2	9500 Ae	0.00	0.00	No	Upriver
11/4/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2 U	9500 Ae	0.00	0.00	No	Upriver
12/3/2003	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	9	39100 A	0.01	0.31	Yes	Study Area
12/3/2003	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	8	39100 A	0.01	0.31	Yes	Study Area
12/3/2003	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	10	39100 A	0.01	0.31	Yes	Upriver
12/3/2003	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	12	39100 A	0.01	0.31	Yes	Upriver
1/14/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	9	70600 A	0.31	0.00	Yes	Study Area
1/14/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	10	70600 A	0.31	0.00	Yes	Study Area
1/14/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	11	70600 A	0.31	0.00	Yes	Upriver
1/14/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	12	70600 A	0.31	0.00	Yes	Upriver
2/4/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	17	96800 A	0.03	0.08	No	Study Area
2/4/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	18	96800 A	0.03	0.08	No	Study Area
2/4/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	22	96800 A	0.03	0.08	No	Upriver
2/4/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	19	96800 A	0.03	0.08	No	Upriver
3/3/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8	42000 Ae	0.22	0.00	Yes	Study Area
3/3/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	8	42000 Ae	0.22	0.00	Yes	Study Area
3/3/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	10	42000 Ae	0.22	0.00	Yes	Upriver
3/3/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	9	42000 Ae	0.22	0.00	Yes	Upriver
4/7/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	26000 Ae	0.00	0.00	No	Study Area
4/7/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	26000 Ae	0.00	0.00	No	Study Area
4/7/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	26000 Ae	0.00	0.00	No	Upriver
4/7/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	26000 Ae	0.00	0.00	No	Upriver
5/5/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	21000 Ae	0.00	0.03	No	Study Area
5/5/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	21000 Ae	0.00	0.03	No	Study Area
5/5/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	21000 Ae	0.00	0.03	No	Upriver
5/5/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	21000 Ae	0.00	0.03	No	Upriver
6/2/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7	24000 Ae	0.00	0.00	No	Study Area
6/2/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	24000 Ae	0.00	0.00	No	Study Area
6/2/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	24000 Ae	0.00	0.00	No	Upriver
6/2/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	24000 Ae	0.00	0.00	No	Upriver

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
7/14/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7	8600 Ae	0.00	0.00	No	Study Area
7/14/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	8600 Ae	0.00	0.00	No	Study Area
7/14/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	8600 Ae	0.00	0.00	No	Upriver
7/14/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	8600 Ae	0.00	0.00	No	Upriver
8/10/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	8	8200 Ae	0.00	0.00	No	Study Area
8/10/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	8200 Ae	0.00	0.00	No	Study Area
8/10/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	8200 Ae	0.00	0.00	No	Upriver
8/10/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	8200 Ae	0.00	0.00	No	Upriver
9/7/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	9600 Ae	0.00	0.00	No	Study Area
9/7/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	9600 Ae	0.00	0.00	No	Study Area
9/7/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	9600 Ae	0.00	0.00	No	Upriver
9/7/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2	9600 Ae	0.00	0.00	No	Upriver
10/6/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7	12700 Ae	0.30	0.25	Yes	Study Area
10/6/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	12700 Ae	0.30	0.25	Yes	Study Area
10/6/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3	12700 Ae	0.30	0.25	Yes	Upriver
10/6/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	12700 Ae	0.30	0.25	Yes	Upriver
11/3/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	33600 Ae	0.00	0.80	Yes	Study Area
11/3/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	33600 Ae	0.00	0.80	Yes	Study Area
11/3/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	33600 Ae	0.00	0.80	Yes	Upriver
11/3/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	6	33600 Ae	0.00	0.80	Yes	Upriver
11/8/2004	Study Area	R2A Nov 2004 Low Flow	W013-1	6.7	5 U	24700 Ae	0.00	0.00	No	Study Area
11/9/2004	Study Area	R2A Nov 2004 Low Flow	W013-2	6.7	5 U	23600 Ae	0.00	0.00	No	Study Area
11/10/2004	Study Area	R2A Nov 2004 Low Flow	W018	8.3	5 U	23100 Ae	0.04	0.00	No	Study Area
11/12/2004	Study Area	R2A Nov 2004 Low Flow	W001	2.0	5 U	21500 Ae	0.01	0.00	No	Study Area
11/12/2004	Study Area	R2A Nov 2004 Low Flow	W002	2.2	5	21500 Ae	0.01	0.00	No	Study Area
11/12/2004	Multnomah Channel	R2A Nov 2004 Low Flow	W003	3.0	7	21500 Ae	0.01	0.00	No	Study Area
11/15/2004	Study Area	R2A Nov 2004 Low Flow	W023	11	8 T	18500 Ae	0.37	0.00	Yes	Study Area
11/17/2004	Study Area	R2A Nov 2004 Low Flow	W011	6.3	5	17800 Ae	0.00	0.05	No	Study Area
11/18/2004	Study Area	R2A Nov 2004 Low Flow	W004	3.7	5 U	17400 Ae	0.35	0.00	Yes	Study Area
11/19/2004	Study Area	R2A Nov 2004 Low Flow	W006	4	8	17400 Ae	0.00	0.35	Yes	Study Area
11/19/2004	Study Area	R2A Nov 2004 Low Flow	W007	4.4	5 UT	17400 Ae	0.00	0.35	Yes	Study Area
11/22/2004	Study Area	R2A Nov 2004 Low Flow	W005	3.9	7	15400 Ae	0.01	0.00	No	Study Area
11/23/2004	Study Area	R2A Nov 2004 Low Flow	W008	4.6	6 T	14900 Ae	0.15	0.01	No	Study Area
11/23/2004	Study Area	R2A Nov 2004 Low Flow	W010	5.7	7	14900 Ae	0.15	0.01	No	Study Area
11/29/2004	Study Area	R2A Nov 2004 Low Flow	W015	6.9	5 U	19800 Ae	0.24	0.00	Yes	Study Area
11/30/2004	Study Area	R2A Nov 2004 Low Flow	W016-1	7.2	5 U	18900 Ae	0.07	0.24	Yes	Study Area
11/30/2004	Study Area	R2A Nov 2004 Low Flow	W016-2	7.2	7	18900 Ae	0.07	0.24	Yes	Study Area
12/1/2004	Study Area	R2A Nov 2004 Low Flow	W009	5.6	5 U	18600 Ae	0.02	0.07	No	Study Area
12/1/2004	Study Area	R2A Nov 2004 Low Flow	W014	6.7	5 U	18600 Ae	0.02	0.07	No	Study Area
12/1/2004	Study Area	R2A Nov 2004 Low Flow	W017	7.5	7	18600 Ae	0.02	0.07	No	Study Area
12/1/2004	Study Area	R2A Nov 2004 Low Flow	W021	8.7	5 U	18600 Ae	0.02	0.07	No	Study Area
12/1/2004	Study Area	R2A Nov 2004 Low Flow	W020	9.1	5 U	18600 Ae	0.02	0.07	No	Study Area
12/2/2004	Study Area	R2A Nov 2004 Low Flow	W012	6.3	5	18300 Ae	0.00	0.02	No	Study Area
12/2/2004	Study Area	R2A Nov 2004 Low Flow	W019	8.6	5 U	18300 Ae	0.00	0.02	No	Study Area
12/2/2004	Study Area	R2A Nov 2004 Low Flow	W022	9.7	5 U	18300 Ae	0.00	0.02	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
12/8/2004	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	31200 Ae	0.42	0.56	Yes	Study Area
12/8/2004	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	31200 Ae	0.42	0.56	Yes	Study Area
12/8/2004	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	31200 Ae	0.42	0.56	Yes	Upriver
12/8/2004	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	7	31200 Ae	0.42	0.56	Yes	Upriver
1/5/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	19600 Ae	0.00	0.00	No	Study Area
1/5/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	3	19600 Ae	0.00	0.00	No	Study Area
1/5/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3	19600 Ae	0.00	0.00	No	Upriver
1/5/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	19600 Ae	0.00	0.00	No	Upriver
2/1/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	18100 Ae	0.00	0.01	No	Study Area
2/1/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	3	18100 Ae	0.00	0.01	No	Study Area
2/1/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	18100 Ae	0.00	0.01	No	Upriver
2/1/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	18100 Ae	0.00	0.01	No	Upriver
3/1/2005	Study Area	R2A March 2005 Low Flow	W013-1	6.7	5 U	11900 Ae	0.00	0.17	No	Study Area
3/2/2005	Study Area	R2A March 2005 Low Flow	W013-2	6.7	11.5 T	11600 Ae	0.00	0.00	No	Study Area
3/3/2005	Study Area	R2A March 2005 Low Flow	W018	8.3	5 U	11600 Ae	0.00	0.00	No	Study Area
3/4/2005	Study Area	R2A March 2005 Low Flow	W001	2.0	5	11400 Ae	0.00	0.00	No	Study Area
3/4/2005	Study Area	R2A March 2005 Low Flow	W002	2.2	5 U	11400 Ae	0.00	0.00	No	Study Area
3/4/2005	Study Area	R2A March 2005 Low Flow	W002	2.2	5 U	11400 Ae	0.00	0.00	No	Study Area
3/4/2005	Multnomah Channel	R2A March 2005 Low Flow	W003	3.0	5 U	11400 Ae	0.00	0.00	No	Study Area
3/4/2005	Study Area	R2A March 2005 Low Flow	W006	4	10 T	11400 Ae	0.00	0.00	No	Study Area
3/7/2005	Study Area	R2A March 2005 Low Flow	W023	11	6.5 T	10100 Ae	0.00	0.00	No	Study Area
3/9/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	9750 Ae	0.00	0.00	No	Study Area
3/9/2005	Study Area	R2A March 2005 Low Flow	W010	5.7	6	9750 Ae	0.00	0.00	No	Study Area
3/9/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	9750 Ae	0.00	0.00	No	Study Area
3/9/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	9750 Ae	0.00	0.00	No	Upriver
3/9/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	6	9750 Ae	0.00	0.00	No	Upriver
3/10/2005	Study Area	R2A March 2005 Low Flow	W005	3.9	6	9680 Ae	0.00	0.00	No	Study Area
3/11/2005	Study Area	R2A March 2005 Low Flow	W007	4.4	5	9490 Ae	0.00	0.00	No	Study Area
3/11/2005	Study Area	R2A March 2005 Low Flow	W008	4.6	5.5 T	9490 Ae	0.00	0.00	No	Study Area
3/11/2005	Study Area	R2A March 2005 Low Flow	W009	5.6	5 U	9490 Ae	0.00	0.00	No	Study Area
3/14/2005	Study Area	R2A March 2005 Low Flow	W015	6.9	7	8730 Ae	0.00	0.00	No	Study Area
3/15/2005	Study Area	R2A March 2005 Low Flow	W016-1	7.2	5 UT	8600 Ae	0.00	0.00	No	Study Area
3/16/2005	Study Area	R2A March 2005 Low Flow	W017	7.5	10	8390 Ae	0.13	0.00	No	Study Area
3/16/2005	Study Area	R2A March 2005 Low Flow	W019	8.6	14 T	8390 Ae	0.13	0.00	No	Study Area
3/16/2005	Study Area	R2A March 2005 Low Flow	W021	8.7	5 U	8390 Ae	0.13	0.00	No	Study Area
3/16/2005	Study Area	R2A March 2005 Low Flow	W020	9.1	5 U	8390 Ae	0.13	0.00	No	Study Area
3/16/2005	Study Area	R2A March 2005 Low Flow	W022	9.7	9	8390 Ae	0.13	0.00	No	Study Area
3/17/2005	Study Area	R2A March 2005 Low Flow	W004	3.7	7	8640 Ae	0.00	0.13	No	Study Area
3/17/2005	Study Area	R2A March 2005 Low Flow	W011	6.3	5 U	8640 Ae	0.00	0.13	No	Study Area
3/17/2005	Study Area	R2A March 2005 Low Flow	W012	6.3	5 U	8640 Ae	0.00	0.13	No	Study Area
3/17/2005	Study Area	R2A March 2005 Low Flow	W014	6.7	6	8640 Ae	0.00	0.13	No	Study Area
4/13/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	36400 Ae	0.11	0.14	Yes	Study Area
4/13/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7	36400 Ae	0.11	0.14	Yes	Study Area
4/13/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8	36400 Ae	0.11	0.14	Yes	Upriver
4/13/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	9	36400 Ae	0.11	0.14	Yes	Upriver

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
5/4/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	22400 Ae	0.20	0.05	Yes	Study Area
5/4/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	22400 Ae	0.20	0.05	Yes	Study Area
5/4/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	22400 Ae	0.20	0.05	Yes	Upriver
5/4/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	22400 Ae	0.20	0.05	Yes	Upriver
6/8/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7	28200 Ae	0.00	0.15	No	Study Area
6/8/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	28200 Ae	0.00	0.15	No	Study Area
6/8/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8	28200 Ae	0.00	0.15	No	Upriver
6/8/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	7	28200 Ae	0.00	0.15	No	Upriver
7/5/2005	Study Area	R2A July 2005 Low Flow	W001	2.0	7 J	10800 Ae	0.00	0.00	No	Study Area
7/5/2005	Study Area	R2A July 2005 Low Flow	W002	2.2	13 J	10800 Ae	0.00	0.00	No	Study Area
7/5/2005	Study Area	R2A July 2005 Low Flow	W002	2.2	15 J	10800 Ae	0.00	0.00	No	Study Area
7/5/2005	Multnomah Channel	R2A July 2005 Low Flow	W003	3.0	15 J	10800 Ae	0.00	0.00	No	Study Area
7/5/2005	Study Area	R2A July 2005 Low Flow	W004	3.7	9 J	10800 Ae	0.00	0.00	No	Study Area
7/6/2005	Study Area	R2A July 2005 Low Flow	W013-1	6.7	8 J	10800 Ae	0.01	0.00	No	Study Area
7/8/2005	Study Area	R2A July 2005 Low Flow	W006	4	7 J	10300 Ae	0.24	0.00	Yes	Study Area
7/8/2005	Study Area	R2A July 2005 Low Flow	W007	4.4	7 J	10300 Ae	0.24	0.00	Yes	Study Area
7/8/2005	Study Area	R2A July 2005 Low Flow	W008	4.6	4 J	10300 Ae	0.24	0.00	Yes	Study Area
7/8/2005	Study Area	R2A July 2005 Low Flow	W009	5.6	10 J	10300 Ae	0.24	0.00	Yes	Study Area
7/11/2005	Study Area	R2A July 2005 Low Flow	W023	11	17 J	10600 Ae	0.00	0.04	No	Study Area
7/12/2005	Study Area	R2A July 2005 Low Flow	W011	6.3	25 J	10600 Ae	0.00	0.00	No	Study Area
7/13/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	10400 Ae	0.00	0.00	No	Study Area
7/13/2005	Study Area	R2A July 2005 Low Flow	W005	3.9	8 J	10400 Ae	0.00	0.00	No	Study Area
7/13/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	10400 Ae	0.00	0.00	No	Study Area
7/13/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	10400 Ae	0.00	0.00	No	Upriver
7/13/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	10400 Ae	0.00	0.00	No	Upriver
7/14/2005	Study Area	R2A July 2005 Low Flow	W018	8.3	4 J	9910 Ae	0.00	0.00	No	Study Area
7/15/2005	Study Area	R2A July 2005 Low Flow	W010	5.7	7 J	9750 Ae	0.00	0.00	No	Study Area
7/15/2005	Study Area	R2A July 2005 Low Flow	W012	6.3	13 J	9750 Ae	0.00	0.00	No	Study Area
7/15/2005	Study Area	R2A July 2005 Low Flow	W014	6.7	5 J	9750 Ae	0.00	0.00	No	Study Area
7/15/2005	Study Area	R2A July 2005 Low Flow	W017	7.5	10 J	9750 Ae	0.00	0.00	No	Study Area
7/18/2005	Study Area	R2A July 2005 Low Flow	W016-1	7.2	7 J	9660 Ae	0.00	0.00	No	Study Area
7/19/2005	Study Area	R2A July 2005 Low Flow	W015	6.9	5 J	9310 Ae	0.00	0.00	No	Study Area
7/20/2005	Study Area	R2A July 2005 Low Flow	W019	8.6	12 J	8910 Ae	0.00	0.00	No	Study Area
7/20/2005	Study Area	R2A July 2005 Low Flow	W021	8.7	4 J	8910 Ae	0.00	0.00	No	Study Area
7/20/2005	Study Area	R2A July 2005 Low Flow	W020	9.1	3 J	8910 Ae	0.00	0.00	No	Study Area
7/20/2005	Study Area	R2A July 2005 Low Flow	W022	9.7	8 J	8910 Ae	0.00	0.00	No	Study Area
8/16/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	11	7950 Ae	0.00	0.00	No	Study Area
8/16/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	8	7950 Ae	0.00	0.00	No	Study Area
8/16/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8	7950 Ae	0.00	0.00	No	Upriver
8/16/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	7950 Ae	0.00	0.00	No	Upriver
9/14/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	9980 Ae	0.00	0.00	No	Study Area
9/14/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	9980 Ae	0.00	0.00	No	Study Area
9/14/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	9980 Ae	0.00	0.00	No	Upriver
9/14/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2	9980 Ae	0.00	0.00	No	Upriver
10/12/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7	11600 Ae	0.00	0.00	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/12/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	2	11600 Ae	0.00	0.00	No	Study Area
10/12/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	11600 Ae	0.00	0.00	No	Upriver
10/12/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	11600 Ae	0.00	0.00	No	Upriver
11/9/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	9	42100 A	0.00	0.00	No	Study Area
11/9/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	11	42100 A	0.00	0.00	No	Study Area
11/9/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	13	42100 A	0.00	0.00	No	Upriver
11/9/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	12	42100 A	0.00	0.00	No	Upriver
11/22/2005	Upriver	Hydrodynamic Model Data	HMW05	23.7	8	24200 A	0.00	0.00	No	Upriver
12/7/2005	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	10	44500 A	0.00	0.00	No	Study Area
12/7/2005	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	10	44500 A	0.00	0.00	No	Study Area
12/7/2005	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	15	44500 A	0.00	0.00	No	Upriver
12/7/2005	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	14	44500 A	0.00	0.00	No	Upriver
12/22/2005	Upriver	Hydrodynamic Model Data	HMW05	23	50	71100 A	0.77	0.58	Yes	Upriver
1/18/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	34	164000 A	0.16	0.48	Yes	Study Area
1/18/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	41	164000 A	0.16	0.48	Yes	Study Area
1/18/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	42	164000 A	0.16	0.48	Yes	Upriver
1/18/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	43	164000 A	0.16	0.48	Yes	Upriver
1/19/2006	Upriver	R3A Jan 2006 High Flow	W024	15.9	49 J	169000 A	0.03	0.16	No	Upriver
1/20/2006	Study Area	R3A Jan 2006 High Flow	W023	11	62 T	169000 A	0.45	0.03	Yes	Study Area
1/20/2006	Study Area	R3A Jan 2006 High Flow	W023	11	54	169000 A	0.45	0.03	Yes	Study Area
1/21/2006	Study Area	R3A Jan 2006 High Flow	W005	3.9	49	167000 A	0.05	0.45	Yes	Study Area
2/3/2006	Upriver	Hydrodynamic Model Data	HMW05	23	39	143000 A	0.20	0.31	Yes	Upriver
2/7/2006	Upriver	Hydrodynamic Model Data	HMW05	23	25	115000 A	0.00	0.00	No	Upriver
2/11/2006	Upriver	Hydrodynamic Model Data	HMW05	23	20	61200 A	0.00	0.00	No	Upriver
2/15/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	12	38600 A	0.00	0.09	No	Study Area
2/15/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	14	38600 A	0.00	0.09	No	Study Area
2/15/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	14	38600 A	0.00	0.09	No	Upriver
2/15/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	15	38600 A	0.00	0.09	No	Upriver
2/21/2006	Upriver	Hydrodynamic Model Data	HMW05	23	7	22400 A	0.05	0.00	No	Upriver
2/21/2006	Upriver	Hydrodynamic Model Data	HMW05	23	7	22400 A	0.05	0.00	No	Upriver
3/1/2006	Upriver	Hydrodynamic Model Data	HMW05	23	9	31800 A	0.00	0.62	Yes	Upriver
3/3/2006	Upriver	Hydrodynamic Model Data	HMW05	23	22	36300 A	0.00	0.00	No	Upriver
3/3/2006	Upriver	Hydrodynamic Model Data	HMW05	23	21.5 T	36300 A	0.00	0.00	No	Upriver
3/15/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	10	33700 A	0.12	0.09	Yes	Study Area
3/15/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	9	33700 A	0.12	0.09	Yes	Study Area
3/15/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8	33700 A	0.12	0.09	Yes	Upriver
3/15/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	9	33700 A	0.12	0.09	Yes	Upriver
4/3/2006	Study Area	Hydrodynamic Model Data	HMW01	2	8	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Study Area	Hydrodynamic Model Data	HMW01	2	9	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Study Area	Hydrodynamic Model Data	HMW01	2	9	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Study Area	Hydrodynamic Model Data	HMW01	2	9	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Study Area	Hydrodynamic Model Data	HMW01	2	8	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Study Area	Hydrodynamic Model Data	HMW01	2	7	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Multnomah Channel	Hydrodynamic Model Data	HMW02	3	8	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Multnomah Channel	Hydrodynamic Model Data	HMW02	3	8	37300 Ae	0.08	0.06	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
4/3/2006	Multnomah Channel	Hydrodynamic Model Data	HMW02	3	8	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Multnomah Channel	Hydrodynamic Model Data	HMW02	3	7	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Multnomah Channel	Hydrodynamic Model Data	HMW02	3	7	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Multnomah Channel	Hydrodynamic Model Data	HMW02	3	9	37300 Ae	0.08	0.06	No	Study Area
4/3/2006	Multnomah Channel	Hydrodynamic Model Data	HMW02	3	9.5 T	37300 Ae	0.08	0.06	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW03	6.3	8	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW03	6.3	8	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW03	6.3	7	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW03	6.3	8	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW03	6.3	9	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW03	6.3	9	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	8	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	9	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	8	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	9	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	10 T	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	12	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	9	36300 A	0.01	0.08	No	Study Area
4/4/2006	Study Area	Hydrodynamic Model Data	HMW04	11	10 T	36300 A	0.01	0.08	No	Study Area
4/5/2006	Upriver	Hydrodynamic Model Data	HMW05	23	9	36500 A	0.01	0.01	No	Upriver
6/7/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	31200 Ae	0.00	0.00	No	Study Area
6/7/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	31200 Ae	0.00	0.00	No	Study Area
6/7/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	31200 Ae	0.00	0.00	No	Upriver
6/7/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	6	31200 Ae	0.00	0.00	No	Upriver
7/12/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	8830 Ae	0.45	0.00	Yes	Study Area
7/12/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	8830 Ae	0.45	0.00	Yes	Study Area
7/12/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	8	8830 Ae	0.45	0.00	Yes	Upriver
7/12/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	8830 Ae	0.45	0.00	Yes	Upriver
8/9/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7	8220 Ae	0.00	0.00	No	Study Area
8/9/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7	8220 Ae	0.00	0.00	No	Study Area
8/9/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	7	8220 Ae	0.00	0.00	No	Upriver
8/9/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	5	8220 Ae	0.00	0.00	No	Upriver
9/4/2006	Study Area	R3A Sept 2006 Low Flow	W025E	2.0	8	8450 Ae	0.00	0.00	No	Study Area
9/4/2006	Study Area	R3A Sept 2006 Low Flow	W025M	2.0	6	8450 Ae	0.00	0.00	No	Study Area
9/5/2006	Study Area	R3A Sept 2006 Low Flow	W025W	2.0	4	8320 Ae	0.00	0.00	No	Study Area
9/5/2006	Study Area	R3A Sept 2006 Low Flow	W023M	10.9	1 U	8320 Ae	0.00	0.00	No	Study Area
9/6/2006	Study Area	R3A Sept 2006 Low Flow	W023E	11	5	8490 Ae	0.00	0.00	No	Study Area
9/6/2006	Study Area	R3A Sept 2006 Low Flow	W023W	11	10	8490 Ae	0.00	0.00	No	Study Area
9/7/2006	Multnomah Channel	R3A Sept 2006 Low Flow	W027	2.9	12 T	8640 Ae	0.00	0.00	No	Study Area
9/7/2006	Multnomah Channel	R3A Sept 2006 Low Flow	W027	2.9	6	8640 Ae	0.00	0.00	No	Study Area
9/8/2006	Study Area	R3A Sept 2006 Low Flow	W005	3.9	16	8860 Ae	0.00	0.00	No	Study Area
9/8/2006	Study Area	R3A Sept 2006 Low Flow	W005	3.9	8	8860 Ae	0.00	0.00	No	Study Area
9/12/2006	Study Area	R3A Sept 2006 Low Flow	W011	6.3	15	9240 Ae	0.00	0.00	No	Study Area
9/12/2006	Study Area	R3A Sept 2006 Low Flow	W011	6.3	6	9240 Ae	0.00	0.00	No	Study Area
9/13/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	10	9080 Ae	0.00	0.00	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
9/13/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	9080 Ae	0.00	0.00	No	Study Area
9/13/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	9080 Ae	0.00	0.00	No	Upriver
9/13/2006	Upriver	R3A Sept 2006 Low Flow	W024	15.9	3	9080 Ae	0.00	0.00	No	Upriver
9/13/2006	Upriver	R3A Sept 2006 Low Flow	W024	15.9	3 T	9080 Ae	0.00	0.00	No	Upriver
9/13/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	9080 Ae	0.00	0.00	No	Upriver
10/11/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	11800 Ae	0.00	0.00	No	Study Area
10/11/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	3	11800 Ae	0.00	0.00	No	Study Area
10/11/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	2	11800 Ae	0.00	0.00	No	Upriver
10/11/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2	11800 Ae	0.00	0.00	No	Upriver
11/2/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W025M	2.0	5 J	13200 Ae	1.11	0.02	Yes	Study Area
11/2/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W025W	2.0	5 J	13200 Ae	1.11	0.02	Yes	Study Area
11/2/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W023M	10.9	4 J	13200 Ae	1.11	0.02	Yes	Study Area
11/2/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W023E	11	4 J	13200 Ae	1.11	0.02	Yes	Study Area
11/2/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W023W	11	1 UJ	13200 Ae	1.11	0.02	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W025E	2.0	5 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W029	4.4	6 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W029	4.4	5 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W011	6.3	5 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W011	6.3	3 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W033	7.0	4 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W033	7.0	6 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W033	7.0	6 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W033	7.0	6 J	16300 Ae	0.30	1.11	Yes	Study Area
11/3/2006	Upriver	R3A Nov 2006 Stormwater-Influenced	W024	15.9	5 J	16300 Ae	0.30	1.11	Yes	Upriver
11/3/2006	Upriver	R3A Nov 2006 Stormwater-Influenced	W024	15.9	5 J	16300 Ae	0.30	1.11	Yes	Upriver
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W026	2.1	7	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W026	2.1	4	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Multnomah Channel	R3A Nov 2006 Stormwater-Influenced	W027	2.9	4	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Multnomah Channel	R3A Nov 2006 Stormwater-Influenced	W027	2.9	3	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W028	3.6	4	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W028	3.6	4	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W005	3.9	6	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W005	3.9	6	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W030	5.5	4	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W030	5.5	2	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W034	7.5	3	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W034	7.5	4	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W036	8.6	4	20800 Ae	0.56	0.30	Yes	Study Area
11/4/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W036	8.6	5	20800 Ae	0.56	0.30	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W031	6.1	2	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W031	6.1	4	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W032	6.7	4	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W032	6.7	3	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W035	8.5	5	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W035	8.5	3	32300 A	1.12	0.56	Yes	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W037	9.6	3	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W037	9.6	3	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W038	9.9	5	32300 A	1.12	0.56	Yes	Study Area
11/5/2006	Study Area	R3A Nov 2006 Stormwater-Influenced	W038	9.9	4	32300 A	1.12	0.56	Yes	Study Area
11/8/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	53	99900 A	0.37	0.94	Yes	Study Area
11/8/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	80	99900 A	0.37	0.94	Yes	Study Area
11/8/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	154	99900 A	0.37	0.94	Yes	Upriver
11/8/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	112	99900 A	0.37	0.94	Yes	Upriver
12/6/2006	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	7	38700 A	0.00	0.00	No	Study Area
12/6/2006	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7	38700 A	0.00	0.00	No	Study Area
12/6/2006	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	6	38700 A	0.00	0.00	No	Upriver
12/6/2006	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	7	38700 A	0.00	0.00	No	Upriver
1/15/2007	Study Area	R3A Jan 2007 High Flow	W025M	2.0	12	61700 A	0.00	0.00	No	Study Area
1/15/2007	Study Area	R3A Jan 2007 High Flow	W023M	10.9	13	61700 A	0.00	0.00	No	Study Area
1/15/2007	Upriver	R3A Jan 2007 High Flow	W024	15.9	11 T	61700 A	0.00	0.00	No	Upriver
1/15/2007	Upriver	R3A Jan 2007 High Flow	W024	15.9	14 T	61700 A	0.00	0.00	No	Upriver
1/18/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	9	46700 A	0.01	0.00	No	Study Area
1/18/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	7	46700 A	0.01	0.00	No	Study Area
1/18/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	9	46700 A	0.01	0.00	No	Upriver
1/18/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	9	46700 A	0.01	0.00	No	Upriver
2/20/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	13	58700 A	0.48	0.10	Yes	Study Area
2/20/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	12	58700 A	0.48	0.10	Yes	Study Area
2/20/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	17	58700 A	0.48	0.10	Yes	Upriver
2/20/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	18	58700 A	0.48	0.10	Yes	Upriver
2/21/2007	Study Area	R3A Jan 2007 High Flow	W032	6.7	18	57200 A	0.11	0.48	Yes	Study Area
2/21/2007	Study Area	R3A Jan 2007 High Flow	W032	6.7	14	57200 A	0.11	0.48	Yes	Study Area
2/22/2007	Study Area	R3A Jan 2007 High Flow	W038	9.9	18	58900 A	0.10	0.11	Yes	Study Area
2/22/2007	Study Area	R3A Jan 2007 High Flow	W038	9.9	17	58900 A	0.10	0.11	Yes	Study Area
2/23/2007	Study Area	R3A Jan 2007 High Flow	W037	9.6	23	55900 A	0.04	0.10	No	Study Area
2/23/2007	Study Area	R3A Jan 2007 High Flow	W037	9.6	22	55900 A	0.04	0.10	No	Study Area
2/24/2007	Study Area	R3A Jan 2007 High Flow	W031	6.1	60	56400 A	0.49	0.04	Yes	Study Area
2/24/2007	Study Area	R3A Jan 2007 High Flow	W031	6.1	17	56400 A	0.49	0.04	Yes	Study Area
2/24/2007	Study Area	R3A Jan 2007 High Flow	W034	7.5	17	56400 A	0.49	0.04	Yes	Study Area
2/24/2007	Study Area	R3A Jan 2007 High Flow	W034	7.5	16	56400 A	0.49	0.04	Yes	Study Area
2/25/2007	Study Area	R3A Jan 2007 High Flow	W035	8.5	16	63100 A	0.28	0.49	Yes	Study Area
2/25/2007	Study Area	R3A Jan 2007 High Flow	W035	8.5	16	63100 A	0.28	0.49	Yes	Study Area
2/26/2007	Study Area	R3A Jan 2007 High Flow	W026	2.1	13	69400 A	0.13	0.28	Yes	Study Area
2/26/2007	Study Area	R3A Jan 2007 High Flow	W026	2.1	13	69400 A	0.13	0.28	Yes	Study Area
2/26/2007	Study Area	R3A Jan 2007 High Flow	W033	7.0	23	69400 A	0.13	0.28	Yes	Study Area
2/26/2007	Study Area	R3A Jan 2007 High Flow	W033	7.0	16	69400 A	0.13	0.28	Yes	Study Area
2/26/2007	Study Area	R3A Jan 2007 High Flow	W033	7.0	25	69400 A	0.13	0.28	Yes	Study Area
2/26/2007	Study Area	R3A Jan 2007 High Flow	W033	7.0	18	69400 A	0.13	0.28	Yes	Study Area
2/27/2007	Multnomah Channel	R3A Jan 2007 High Flow	W027	2.9	36	71700 A	0.22	0.13	Yes	Study Area
2/27/2007	Multnomah Channel	R3A Jan 2007 High Flow	W027	2.9	29	71700 A	0.22	0.13	Yes	Study Area
2/27/2007	Study Area	R3A Jan 2007 High Flow	W036	8.6	32	71700 A	0.22	0.13	Yes	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
2/27/2007	Study Area	R3A Jan 2007 High Flow	W036	8.6	30	71700 A	0.22	0.13	Yes	Study Area
3/1/2007	Study Area	R3A Jan 2007 High Flow	W028	3.6	20 J	62900 A	0.06	0.08	No	Study Area
3/1/2007	Study Area	R3A Jan 2007 High Flow	W028	3.6	18 J	62900 A	0.06	0.08	No	Study Area
3/1/2007	Study Area	R3A Jan 2007 High Flow	W030	5.5	20 J	62900 A	0.06	0.08	No	Study Area
3/1/2007	Study Area	R3A Jan 2007 High Flow	W030	5.5	19 J	62900 A	0.06	0.08	No	Study Area
3/1/2007	Study Area	R3A Jan 2007 High Flow	W011	6.3	22 J	62900 A	0.06	0.08	No	Study Area
3/1/2007	Study Area	R3A Jan 2007 High Flow	W011	6.3	18 J	62900 A	0.06	0.08	No	Study Area
3/2/2007	Study Area	R3A Jan 2007 High Flow	W023M	10.9	18	64300 A	0.41	0.06	Yes	Study Area
3/3/2007	Study Area	R3A Jan 2007 High Flow	W005	3.9	17	65000 A	0.03	0.41	Yes	Study Area
3/3/2007	Study Area	R3A Jan 2007 High Flow	W005	3.9	15	65000 A	0.03	0.41	Yes	Study Area
3/3/2007	Study Area	R3A Jan 2007 High Flow	W023E	11	16	65000 A	0.03	0.41	Yes	Study Area
3/4/2007	Study Area	R3A Jan 2007 High Flow	W023W	11	20	66200 A	0.00	0.03	No	Study Area
3/5/2007	Study Area	R3A Jan 2007 High Flow	W029	4.4	17	65300 A	0.00	0.00	No	Study Area
3/5/2007	Study Area	R3A Jan 2007 High Flow	W029	4.4	16	65300 A	0.00	0.00	No	Study Area
3/8/2007	Study Area	R3A Jan 2007 High Flow	W025E	2.0	9	54900 A	0.00	0.18	No	Study Area
3/9/2007	Study Area	R3A Jan 2007 High Flow	W025W	2.0	10	51800 A	0.07	0.00	No	Study Area
3/10/2007	Study Area	R3A Jan 2007 High Flow	W025M	2.0	9	51000 A	0.05	0.07	No	Study Area
3/14/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	10	51900 A	0.01	0.00	No	Study Area
3/14/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	8	51900 A	0.01	0.00	No	Study Area
3/14/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	10	51900 A	0.01	0.00	No	Upriver
3/14/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	11	51900 A	0.01	0.00	No	Upriver
4/4/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	26200 A	0.00	0.01	No	Study Area
4/4/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	26200 A	0.00	0.01	No	Study Area
4/4/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	26200 A	0.00	0.01	No	Upriver
4/4/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	6	26200 A	0.00	0.01	No	Upriver
5/2/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	3	24700 A	0.54	0.12	Yes	Study Area
5/2/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	3	24700 A	0.54	0.12	Yes	Study Area
5/2/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3	24700 A	0.54	0.12	Yes	Upriver
5/2/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	24700 A	0.54	0.12	Yes	Upriver
6/6/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	11	15000 Ae	0.00	0.39	Yes	Study Area
6/6/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	15000 Ae	0.00	0.39	Yes	Study Area
6/6/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	15000 Ae	0.00	0.39	Yes	Upriver
6/6/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	15000 Ae	0.00	0.39	Yes	Upriver
7/11/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	8060 Ae	0.00	0.00	No	Study Area
7/11/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	5	8060 Ae	0.00	0.00	No	Study Area
7/11/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	5	8060 Ae	0.00	0.00	No	Upriver
7/11/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	8060 Ae	0.00	0.00	No	Upriver
8/8/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	6	7480 Ae	0.00	0.00	No	Study Area
8/8/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	7480 Ae	0.00	0.00	No	Study Area
8/8/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	7480 Ae	0.00	0.00	No	Upriver
8/8/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	7480 Ae	0.00	0.00	No	Upriver
9/6/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	12	8140 Ae	0.00	0.00	No	Study Area
9/6/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	8140 Ae	0.00	0.00	No	Study Area
9/6/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3	8140 Ae	0.00	0.00	No	Upriver
9/6/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	8140 Ae	0.00	0.00	No	Upriver

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/1/2007	Study Area	NW Natural	GSW-01	5.9	5	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-01	5.9	5 U	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-01	5.9	8	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-03	6.1	5	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-03	6.1	6	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-03	6.1	5	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-07	6.1	5	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-07	6.1	5 U	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-07	6.1	5 U	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-09	6.2	6	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-09	6.2	6	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-09	6.2	5	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-12	6.2	5 U	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-12	6.2	5	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-12	6.2	8	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-13	6.3	5 U	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-13	6.3	6	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-13	6.3	8	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-18	6.5	5 U	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-18	6.5	5	14100 0	0.07	0.61	Yes	Study Area
10/1/2007	Study Area	NW Natural	GSW-18	6.5	9	14100 0	0.07	0.61	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-02	6.0	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-02	6.0	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-02	6.0	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-04	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-04	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-04	6.1	5	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-06	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-06	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-06	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-08	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-08	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-08	6.1	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-10	6.2	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-10	6.2	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-10	6.2	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-11	6.2	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-11	6.2	5	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-11	6.2	6	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-13	6.3	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-13	6.3	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-13	6.3	6	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-14	6.3	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-14	6.3	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-14	6.3	5 U	14400 0	0.21	0.07	Yes	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/2/2007	Study Area	NW Natural	GSW-15	6.4	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-15	6.4	5	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-15	6.4	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-20	6.7	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-20	6.7	5 U	14400 0	0.21	0.07	Yes	Study Area
10/2/2007	Study Area	NW Natural	GSW-20	6.7	5 U	14400 0	0.21	0.07	Yes	Study Area
10/3/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-01	5.9	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-01	5.9	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-01	5.9	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-03	6.1	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-03	6.1	6	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-03	6.1	6	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-07	6.1	5	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-07	6.1	6	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-07	6.1	7	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-09	6.2	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-09	6.2	5	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-09	6.2	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-11	6.2	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-11	6.2	5	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-11	6.2	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-12	6.2	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-12	6.2	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-12	6.2	6	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-17	6.4	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-17	6.4	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-17	6.4	6	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-17	6.4	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-17	6.4	7	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-17	6.4	5	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-20	6.7	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-20	6.7	5 U	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	NW Natural	GSW-20	6.7	7	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	15000 0	0.47	0.21	Yes	Study Area
10/3/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	3	15000 0	0.47	0.21	Yes	Upriver
10/3/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	15000 0	0.47	0.21	Yes	Upriver
10/4/2007	Study Area	NW Natural	GSW-02	6.0	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-02	6.0	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-02	6.0	5	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-04	6.1	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-04	6.1	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-04	6.1	6	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-04	6.1	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-04	6.1	7	14400 0	0.10	0.47	Yes	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/4/2007	Study Area	NW Natural	GSW-04	6.1	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-05	6.1	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-05	6.1	6	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-05	6.1	5	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-06	6.1	5	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-06	6.1	6	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-06	6.1	8	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-08	6.1	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-08	6.1	5	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-08	6.1	7	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GS-C7	6.4	6	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GS-C7	6.4	8	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GS-D5	6.4	8	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-15	6.4	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-15	6.4	6	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-15	6.4	6	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-16	6.4	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-16	6.4	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-16	6.4	7	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-20	6.7	5 U	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-20	6.7	5	14400 0	0.10	0.47	Yes	Study Area
10/4/2007	Study Area	NW Natural	GSW-20	6.7	9	14400 0	0.10	0.47	Yes	Study Area
10/5/2007	Study Area	NW Natural	GSW-01	5.9	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-01	5.9	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-01	5.9	5	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-03	6.1	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-03	6.1	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-03	6.1	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-05	6.1	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-05	6.1	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-05	6.1	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-07	6.1	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-07	6.1	5	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-07	6.1	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-10	6.2	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-10	6.2	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-10	6.2	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-12	6.2	5	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-12	6.2	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-12	6.2	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-13	6.3	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-13	6.3	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-13	6.3	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-14	6.3	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-14	6.3	5 U	14000 0	0.00	0.10	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/5/2007	Study Area	NW Natural	GSW-14	6.3	5	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GS-B7	6.4	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GS-B7	6.4	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GS-C7	6.4	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GS-C7	6.4	8	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GS-D5	6.4	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GS-D5	6.4	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-18	6.5	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-18	6.5	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-18	6.5	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-19	6.7	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-19	6.7	5 U	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-19	6.7	5	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-19	6.7	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-19	6.7	6	14000 0	0.00	0.10	No	Study Area
10/5/2007	Study Area	NW Natural	GSW-19	6.7	5	14000 0	0.00	0.10	No	Study Area
10/6/2007	Study Area	NW Natural	GS-B7	6.4	6	14500 0	0.01	0.00	No	Study Area
10/6/2007	Study Area	NW Natural	GS-C7	6.4	5	14500 0	0.01	0.00	No	Study Area
10/6/2007	Study Area	NW Natural	GS-D5	6.4	5 U	14500 0	0.01	0.00	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-05	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-05	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-05	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-06	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-06	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-06	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-08	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-08	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-08	6.1	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-09	6.2	6	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-09	6.2	7	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-09	6.2	14	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-10	6.2	5	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-10	6.2	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-10	6.2	8	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-11	6.2	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-11	6.2	5	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-11	6.2	8	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-14	6.3	5	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-14	6.3	6	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-14	6.3	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-15	6.4	6	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-15	6.4	6	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-15	6.4	7	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-16	6.4	6	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-16	6.4	5 U	11500 0	0.00	0.17	No	Study Area

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area
10/8/2007	Study Area	NW Natural	GSW-16	6.4	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-16	6.4	5	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-16	6.4	6	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-16	6.4	8	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-18	6.5	5	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-18	6.5	5 U	11500 0	0.00	0.17	No	Study Area
10/8/2007	Study Area	NW Natural	GSW-18	6.5	8	11500 0	0.00	0.17	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-02	6.0	5	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-02	6.0	5 U	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-02	6.0	6	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-17	6.4	6	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-17	6.4	5 U	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-17	6.4	5 U	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-19	6.7	5 U	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-19	6.7	5 U	10700 0	0.03	0.00	No	Study Area
10/9/2007	Study Area	NW Natural	GSW-19	6.7	5 U	10700 0	0.03	0.00	No	Study Area
11/7/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	4	10800 0	0.00	0.00	No	Study Area
11/7/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	10800 0	0.00	0.00	No	Study Area
11/7/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	10800 0	0.00	0.00	No	Upriver
11/7/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	2	10800 0	0.00	0.00	No	Upriver
12/12/2007	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	11	48500 P	0.00	0.00	No	Study Area
12/12/2007	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	12	48500 P	0.00	0.00	No	Study Area
12/12/2007	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	12	48500 P	0.00	0.00	No	Upriver
12/12/2007	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	15	48500 P	0.00	0.00	No	Upriver
1/9/2008	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	16	92400 P	0.19	0.60	Yes	Study Area
1/9/2008	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	17	92400 P	0.19	0.60	Yes	Study Area
1/9/2008	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	20	92400 P	0.19	0.60	Yes	Upriver
1/9/2008	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	18	92400 P	0.19	0.60	Yes	Upriver
2/6/2008	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	13	62900 P	0.66	0.12	Yes	Study Area
2/6/2008	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	13	62900 P	0.66	0.12	Yes	Study Area
2/6/2008	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	14	62900 P	0.66	0.12	Yes	Upriver
2/6/2008	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	15	62900 P	0.66	0.12	Yes	Upriver
3/5/2008	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	26200 P	0.00	0.01	No	Study Area
3/5/2008	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	4	26200 P	0.00	0.01	No	Study Area
3/5/2008	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	26200 P	0.00	0.01	No	Upriver
3/5/2008	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	3	26200 P	0.00	0.01	No	Upriver
4/3/2008	Downstream	City of Portland	SOUTH KELLY POINT PARK	1.1	5	32000 P	0.00	0.00	No	Study Area
4/3/2008	Study Area	City of Portland	ST JOHNS RR BRIDGE	6.8	6	32000 P	0.00	0.00	No	Study Area
4/3/2008	Downtown Reach	City of Portland	MORRISON ST BRIDGE	12.7	4	32000 P	0.00	0.00	No	Upriver
4/3/2008	Upriver	City of Portland	WAVERLY COUNTRY CLUB	17.9	4	32000 P	0.00	0.00	No	Upriver

Notes:

[a] For the purposes of this evaluation, TSS samples associated with rainfall totals of 0.2 inch or more summed over the day the TSS samples were collected and the day prior were flagged as potentially influenced by rainfall.

Table 3.1-9. TSS Data and Associated Discharge and Precipitation Values.

Sample Date	Reach	Data Set	Location Name	River Mile	TSS (mg/L)	Q (cfs)	Precipitation on Day of Sampling	Precipitation on Day Prior to Sampling	Precipitation-influenced TSS?[a]	Upriver or Study Area

Reason codes for qualifiers:
e - Discharge value has been estimated.
J - The associated numerical value is an estimated quantity.
P - Provisional data subject to revision.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Approved for publication, processing and review completed.
T - The associated numerical value was mathematically derived (e.g., calculating the average of multiple results for a single analyte).

TSS - total suspended solids

Table 3.1-10. TSS Grain Size Distribution throughout Portland Harbor Study Area.

		Maximum Grain Sizes per Station		
Location	**Station**	**d10 (µm)**	**d50 (µm)**	**d90 (µm)**
RM 2 West Side	HMV01	4.28	25.76	204.36
RM 6.3 East Side	HMV02	4.1	40.66	274.53
RM 11 West Side	HMV03	3.32	35.28	242.34
RM 11 Mid-Channel	HMV04	2.98	32.11	242.91
RM 18 Mid-Channel	HMV05	3.78	79.3	383.11

Notes:

d10, d50, d90 = diameter of the 10th, 50th, and 90th percentiles of the grain size distribution.

Table 3.1-11. Summary of Sediment Transport Characteristics, RM 0 - 26.

Reach ID	RMs	Estimated Average Cross-Sectional Area	Bathymetric Change 2001-2009[a]	Average Bed Shear (high flow)	Percentage Fine-Grained Surface Sediment Area[b]
Upriver	15.3 - 26	NA	NA	5.8 N/m^2	NA
Downtown Reach	11.8 - 15.3	34,000	Net deepening in areas of the main channel, primarily ≤ 30 cm ft; no change or small-scale deepening dominant in nearshore areas, primarily ≤30 cm; some limited nearshore depositional areas.	3.4 N/m^2	NA
Study Area	10 - 11.8	49,000	Nearly equal proportion of small scale deepening, shallowing, and no-change portions in nearshore area. Predominantly minor net deepening ≤30 cm in the channel. Several feet of deposition in the deep areas (dredged holes/borrow pits) on western side of channel.	5.0 N/m^2	46
Study Area	9.2 - 10	63,000	A broad western portion of the channel shows widespread net deposition ranging from 60 to 150 cm. Areas of no change and scour occur along the eastern portion of the channel and nearshore area.	2.7 N/m^2	54
Study Area	6.9 - 9.2	68,000	Majority of reach is depositional. Some areas, e.g., center of channel from RM 6.9 to 7.7, Swan Island Lagoon, show little or no change. Deepening/scour due to anthropogenic factors such as dredging and propwash is evident in some berthing areas.	1.7 N/m^2 [c] 0.5 N/m^2 (Swan Island Lagoon)	60
Study Area	5.0 - 6.9	57,000	Mosaic of no change, net deepening (≤30 cm), and shoaling (low lying areas) in the channel. Sand wave migration evident in the channel from RM 5 to 6. Eastern nearshore generally shows scour; western nearshore sediment accumulation.	4.2 N/m^2	41

Table 3.1-11. Summary of Sediment Transport Characteristics, RM 0 - 26.

Reach ID	RMs	Estimated Average Cross-Sectional Area	Bathymetric Change 2001-2009[a]	Average Bed Shear (high flow)	Percentage Fine-Grained Surface Sediment Area[b]
Study Area	3.0 - 5.0	65,000	Main channel area shows widespread net sediment accumulation, mostly small-scale (≤30 cm), but more significant accumulation along the east and west channel margins. Deepening in some nearshore areas appears to be due to anthropogenic factors such as dredging and propwash.	1.4 N/m^2	53
Study Area	1.9 - 3.0	68,000	Widespread shoaling up to and exceeding 60 cm in extent in channel and broad eastern nearshore area. Little or no riverbed elevation change west of the channel line.	0.7 N/m^2	57
Downstream	0.0 - 1.9	70,000	Some minor shoaling in channel and east of channel to RM 1; apparently natural deepening (to 60 cm) along western shoreline; more dynamic from RM 0 to 1.	1 N/m^2	50

Notes:

[a] Descriptions based on visual examination of 2002-2009 bathymetric change data shown on Map 3.1-6.

[b] Estimated based on silt and clay content from grain-size data in the RI data set.

[c] Outside of Swan Island Lagoon.

NA - not available
RM - river mile

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Evraz Oregon Steel Mills #141	2.2	E	Current: manufacturing of carbon steel coils, plates and pipe.	Prior to current ownership, pipe mounted on a trestle was used by the War Shipping Administration, and possible later operators, to convey bilge water from river barges, tied up to prior dock, to the former sump. Current dock added by current owner in 1969. Leased dock for temporary moorage, unloaded ore slurry (via piping).	None	Fill soils (hydraulically placed dredged material) were placed in the area over an extended time from the 1940s through the 1960s. In the 1970s, EOSM did some filling of the riverbank area of the property, using soil from the site, imported soil, dredge material and slag generated from its processes. Three artificial fill units are present in near-surface soils: 1) soils (sand and silt) used to construct the berm at the top of the shoreline riverbank, 2) a surficial layer of slag-soil fill, and 3) older dredge-fill (predominantly sand and silty sand) used to achieve development grades for the site prior to industrial manufacturing operations. The slag-soil deposits cover a majority of the upland EOSM plant area and are typically 2 to 6 ft thick; however, along the riverbank area, the slag-soil unit appears to be wedge-shaped, with a maximum thickness of approximately 12 ft that forms the cliff bank along the shoreline. The wedge configuration appears to be the result of historical placement of the slag-soil along the former shoreline bank.
Private Residences	2.2	W	NA	Dock added in 1957.	NA	NA
South Rivergate Industrial Park #2980	2.5	E	Current: JR Simplot - storage and distribution of urea and anhydrous ammonia; Union Chemical - manufacturer of adhesives and glues; Ash Grove Cement - manufacturer of calcium oxide; POP/Ft James - distribution of paper products; Douglas Walters/T&G Trucking/Online Roofing - container hauling, com'l/resid roofing; PGE - utility power line tower.	JR Simplot - Anhydrous ammonia, urea, and diesel fuel are transferred overwater; Ash Grove - overwater conveyor belt system for loading barges with lime products. One large dock added in 1966 off of present day Ash Grove Cement, one dock added in 1969 off of present day JR Simplot, and one dock added in 1969 off of present day Ft James/NW Service Center.		Ash Grove: from 1936 until 1956, the parcel was undeveloped and covered with dredged fill. From the 1950s to 1970s, dredge material was placed here from Post Office Bar and mouth of Willamette River.
Alder Creek Lumber Company #2446	2.9	Southern end of Sauvie Island	Lumber related activities (log storage, sawmill, lumber, planing).	Floating logs delivered to docks (1959 to present day).		In 1971, dredged material, obtained from the Multnomah Channel about 1,500 ft west of the southern tip of Sauvie Island, was placed on the bank of the Alder Creek property. In 1972, dredged material from the Georgia Pacific Linnton Fiber Terminal was also placed on the property, approximately 500 ft from Multnomah Channel.
PGE Harborton #2353	3.2	W	Electrical switchyard, easement of oil/gas pipelines, radio communication station, turbine power plant, two distillate fuel tanks, and storage of new and surplus equipment.	None.	None. Floating logs visible offshore on aerial photo (2000).	Sand and silt fill were hydraulically placed at the site in the early 1970s to depths ranging from 4 to 10 ft bgs. Perimeter dike constructed of silt fill materials. Fill source unknown.
Time Oil #170	3.4	E	Current: Terminal operations ceased in 2001 -- no current operations. Historical: petroleum products handling and storage, wood treatment products storage and formulation, waste oil storage.	Dock added in 1939. Dock used for the mooring of tanker ships while transferring petroleum products to pipelines located on the dock.	Dock still present, not used. Operations ceased in 2001.	Gravel fill covers portions of site within former terminal operations. It is assumed that dredged fill material was placed into this area around the turn of the 20th century, based on the similar practices along the river, but there is no documentation of the specific dates of this activity. In 1989 an excavated area in the former wood treatment area was backfilled with clean soil (fill source unknown).

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Premier Edible Oils #2013	3.6	E	Current: none. Historical: aboveground oil storage, manufacturing, packaging, and distribution of chemicals, metals, and metal products, edible oil processing and storage facility.	Three docks associated with operations at the PEO site since the early 1950s (dock added in 1957). A wooden dock and pilings were located in the slip from the 1950s until the early 1990s. A terminal associated with the Northwest Oil tank farm was also present on the Willamette, south of the existing terminal, until the early 1970s. A pipeline from the dock at PEO ran to the adjacent Time Oil Bell Terminal until 1973, when it was removed during construction, resulting in a documented release. By 1977, a large dock was built on the Willamette frontage, which was retrofitted and reconstructed through the years to accommodate operational needs of the facilities. PEO received edible oils for refining by ship.	None. Dock still present on Willamette River frontage, but not used.	The site was a marsh prior to 1941. The bottomlands were filled soon thereafter. The fill material (20-25 ft) has been described as medium-grained sand, most likely a combination of native sands and river dredge material.
Portland Container Repair (Burgard Industrial Park) #2375	3.6	E	Current: storage and repair of intermodal containers; Historical: WWII shipyard (1940s-1945, Oregon Shipbuilding Corp.), scrap metal storage	Site is upland only. Ship building (assembly) was conducted by the U.S. Maritime Commission and its contractor, Oregon Shipbuilding Corporation, in the shipways at the adjacent Schnitzer property. Ship-related equipment and parts were fabricated upland then transported by rail to shipways on the river (International Terminals Slip - Schnitzer Burgard Industrial Park).	None	During the WWII years, this property was ~~likely~~ part of the shipyard owned by the Oregon Shipbuilding Corporation. The International Terminals Slip was built during this time, and much of the Burgard Industrial Park's low-lying property was filled. From the 1960s into the early 1970s, shipways associated with the former shipyard were filled.
Noncontiguous Burgard Industrial Park Properties	3.7	E	Current: Boydstun Metal Works - automotive trailer manufacturing and automotive parts storage; Morgan CFS - container unloading (lumber and building materials); Northwest Pipe - storage; Schnitzer Steel Remnant- storage. Historical: WWII shipbuilding.	Site is upland only. Ship building (assembly) was conducted by the U.S. Maritime Commission and its contractor, Oregon Shipbuilding Corporation, in the shipways at the adjacent Schnitzer property. Ship-related equipment and parts were fabricated upland then transported by rail to shipways on the river (International Terminals Slip - Schnitzer Burgard Industrial Park).	None	During WWII, the general site area was the location of a large shipyard owned by the Oregon Shipbuilding Corporation. The deep draft International Terminals Slip was created during this period, and much of the site was filled to address marshy, low-lying areas present on the site. In 1970, dredged sand was placed as fill at present day Boydstun property.
Owens Corning #1036	3.8	W	Current: asphalt product production. Historical: wood product operations and wood treatment, solvent, lubricant, and fuel storage.	Dock added in 1985. Vessels delivered asphalt products to the site at the facility's dock from 1982 to 1987. Vessel activity and product transfer occurred on southern portion of site at location of former dock (removed in 1975).	One dock remains on site but no longer in use.	The fill material was identified as consisting mostly of sand with clay, silt, and gravel. The thickness of the fill ranges from 8 ft to at least 24 ft. Fill source unknown.
Northwest Pipe Company #138	4	E	Current: pipe manufacturing. Historical: pipe manufacturing and ship building (1937-1950, WWII years) at Oregon Shipbuilding Corp.	Site is upland only. Ship building (assembly) was conducted in the shipways at the adjacent Schnitzer property. Ship-related equipment and parts were fabricated upland then transported by rail to shipways on the river (International Terminals Slip - Schnitzer Burgard Industrial Park).	None	Fill materials were placed over the Schnitzer Burgard Industrial Park in the late 1930s and during the filling of the shipways in the 1960s and early 1970s. The depth of the dredge fill ranges from 2 ft to approximately 20 ft bgs.
Schnitzer-Calbag #2355	4	E	Current: metals recycling, truck maintenance and repair, warehousing; Historical: ship construction/shipyard activities (1941-1945, Oregon Shipbuilding Corp.), metals recycling, truck maintenance and repair, warehousing; upland log storage and log rafting; filling of shipways; grain storage, steel pipe and tank manufacturing.	From 1941 to 1945, ships commissioned by the U.S. Maritime Commission were assembled in the shipways and moored along the southern edge of the slip for outfitting. Interior mechanical and electrical features were installed and the deck painted. In 1945, a fire destroyed the dock and shops along the south side of the dock. Several ships were damaged, and cranes fell into the slip as the dock collapsed. In 1948 boat rails were added, and removed in 1969, as shown on historical photos. Between 1945 and 1972, industrial use was limited to the dismantling of the shipyard, filling of shipways associated with the former shipyard, and log rafting. Historical photos indicate that on river side, in 1978 and 1985, docks were added.	Scrap metal sometimes arrives at the SSI dock in the International Terminals Slip by barge. Bulk materials are loaded and off-loaded by using three dock-mounted cranes.	Prior to 1941, the property was largely undeveloped except for bulk petroleum storage in six aboveground storage tanks near the river owned by NW Oil Co.and NW Terminal Co., predecessors of Time Oil. The tanks were removed to make way for the shipyard . During WWII (1941-1945), the site was the location of a large shipyard owned by the Oregon Shipbuilding Corporation. The deep draft International Terminals Slip was created during this period, and portions of the marshy, low-lying areas on the site were filled. The shipways were filled in the later 1960s and early 1970s with dredged material. Thickness varies from 25 to 35 ft along the river to 15 ft on the eastern edge of the site.

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Port of Portland - Terminal 4, Slip 1 #2356	4.3	E	Current: grain mill, liquid bulk storage, storage and maintenance of equipment for loading and unloading ships, loading soda ash to ships, unloading from rail. Historical: marine terminal, bulk storage facilities (grain and liquid).	A dock existed as early as 1920. At Pier 1, grain was transported to and from berth using conveyor (1920-2003). Tri-calcium phosphate was also handled at Pier 1. Ore and other bulk raw products were handled at Pier 2 (1921-1996). Berth 409 was removed in 1962. In June 1996, during the Pier 2 dismantling project, the dock structure at Berths 406 and 407 collapsed. The dock structure and berths were subsequently removed.	No current activities at Pier 1 (Berths 401 and 405). Currently, IRM handles urea ammonium nitrate (UAN, a fertilizer), at Berth 408.	In 1917, dredged fill material was deposited across the low-lying ground. Most of lower Gatton Slough was filled at that time. Fill was also placed into the offshore shallows to extend the riverbank out into the channel. In 1950s Slip 1 was dredged. A Slip 2 was planned and excavated but later filled. Fill materials typically consist of silty sand and sandy dredge material, with pockets of gravel, silt, clay, concrete, and wood debris.
Babcock #2361	4.4	W	Current: site leased to steel railroad materials storage. Historical: lumber storage and loading.	Historical loading and dock operations (dates unknown). No docks appear on current aerial photograph.	Docks not present in current aerial photograph. No known activities.	Varying thicknesses of fill up to approximately 25 ft. Fill consists of medium-grained sand and silt, source unknown.
Kinder Morgan Liquids Terminal - Linnton #1096	4.4	W	Refined petroleum products storage since 1918.	A dock existed as of 1936. The dock is infrequently used for loading and unloading of petroleum fuels through above-grade conveyance pipelines connecting the site dock to the ASTs. No petroleum storage occurs at or near the riverfront outside of the AST containment area.		Soils are composed of fill material from 1 to 35 ft bgs. The source of the fill (silt and sand) is likely from dredging activities on the Willamette and Columbia rivers.
RK Storage and Warehousing #2376 (Includes West Coast Adhesives #333)	4.5	W	Current: lumber storage and log loading. Historical: lumber storage and log loading, manufactured phenol-formaldehyde glues, and storage of railroad materials.	Dock associated with lumber handling demolished in 1957.	None	Mostly composed of fill. Between 1961 and 1980, aerial photographs show dumping and fill activities south of the West Coast Adhesives facility. Debris present in the fill consists of concrete, metal, fiberglass, and asphalt to a depth of 5 ft bgs. Fill source unknown.
Port of Portland Terminal 4, Slip 3 # 272	4.6	E	Current: loading soda ash at docks. Historical: oil supply docks for locomotives, loading soda ash, unloading pencil pitch, storage and unloading of bulk oil, import and export of ore and concentrate, unloading diesel, No. 6 fuel, and Bunker C oil and transferring via pipeline.	Oil dock in place by 1906. Other site docks existed as early as 1920. Bulk materials (including pencil pitch) and petroleum products unloaded and/or loaded at ships. Petroleum pipeline traversed Terminal 4. Pencil pitch (1978-1998), ammonium sulfate (1970), sodium sulfate, soybean meal, sulfur (1961-1967), lead and zinc concentrates (1961-1971), soda ash (1988-present), and alumina/bauxite and chromite (1963) were handled at Pier 4.	None at Slip 3 Upland Facility. Berths 410 and 411 along north side of Slip 3 used by Kinder Morgan Bulk Terminals. Ship loading of soda ash at Pier 4.	Approximately 10 to 30 ft of sandy fill was placed on the lowland area along the Willamette River circa 1920 to create Terminal 4. Site filled between 1917 and 1920 with material dredged from the river adjacent to the site and with material excavated to create the facility slips. Soil removed from the east bank of Slip 3 during cleanup activity in the 1990s was re-used to fill the excavation (non-impacted soils). Slip 3 was dredged in the teens to 1920s and widened in 1958.
Linnton Plywood Association #2373	4.7	W	Linnton Plywood: sawmill and lumber company, plywood manufacturing, and warehousing in plywood building. CRSG: sand barging and distribution.	Dock existed as of 1936. Raw logs stored along waterfront pilings until processing operations began at dock (cutting logs and loading onto conveyor).	Operations ceased at Linnton in 2001. Sand is delivered to the CRSG site by tug and barge.	The area leased to CRSG was once used for dredge material disposal from dredging the historic log processing area. The historic wigwam burner was also located on the CRSG site in the area used for dredge material placement. CRSG has since placed 10 ft of clean fill in this area. The air treatment system on the CRSG site captured solids from the sander dust burner, which were spread on the ground to dry and used as fill on this parcel. CRSG has since placed 10 ft of clean fill in this area. Currently, CRSG mixes the dust with the sand. Boring logs indicate fill material at least 24 ft thick in the above areas consisting primarily of silt and fine-to-medium-grained sand. The fill also includes burner ash, angular gravel, wood chips, and brick. Fill source unknown.
ARCO #1528	4.9	W	Current: petroleum storage and distribution. Historical: petroleum storage and distribution, foamite plant, toy manufacturing, lumber company.	Dock existed as of 1936. Fuel transfer activities conducted at site.	Fuel transfer facilities.	Recent fill (consisting of sand, sandy gravel and cobbles, and/or gravelly sand and containing some debris), source of material unknown.
Port of Portland - Terminal 4 (Auto Storage Facility) #172 #2642	5	E	Current: unloading, storing, and processing of new automobiles. Historical: unloading, storing, and processing of new automobiles; unloading of steel and export of lumber products on the northern third of the facility. The upper portion of Toyota Logistics Services' leasehold (their processing facility) is not included in the ESCI facility, but is located northeast of the facility along North Lombard Street.	In 1971 and 1974, docks were constructed. Unloading new automobiles and steel from ships. Throughout the 1990s lumber was loaded from the yard to ships.	Unloading new automobiles from ships.	In the 1950s, 1960s, and possibly the early 1970s, sand fill was used to bring the facility up to an elevation above the flood level. Fill is about 5 ft thick at the base of the bluff east of the facility and thickens to about 40 ft at the riverbank.

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Exxon Mobil #137	5.1	W	Petroleum storage and distribution.	Dock existed as of 1936. Fuel transfer activities conducted at site.		None
ST Services/Shore Terminals #1989	5.3	W	Bulk petroleum storage and marine terminal.	A dock (constructed in 1978) extends approximately 90 ft into the Willamette River from the site. The dock is used for the mooring of tanker ships while transferring petroleum products to pipelines located on the dock.		Fill placed upland in 1948. Fill material, consisting of sand and silt, was historically placed in the site vicinity on alluvial floodplain materials. Fill source unknown. Petroleum-hydrocarbon-impacted soils, resulting from the release of gasoline in 1988 and 1992, were excavated, aerated onsite, and ultimately used as fill in the excavations.
Foss Maritime/Brix Marine #2364	5.5	W	Current: marine vessel transportation services and maintenance. Historical: above and tugboat service and fueling.	Maintenance activities performed at the covered barge permanently moored at the facility dock.		Some infilling of the northeastern portion of the property occurred in 1948. Fill material was fine to medium sand (dredge fill).
Transloader International #2367	5.6	W	Current: unknown. Historical: store, sort and reship logs by land.	Aerial photographs from the early to mid-1960s show log rafts in the river adjacent to the site, but the source and duration of this activity cannot be determined. Offshore there are four dolphins and a 3-ft wide floating walkway. It is not known if these structures are completed.		The site was constructed on varying thicknesses of recent fill composed of fine to medium sands and silts.
Mar Com North (Brix DeArmond)	5.6	E	Current: unknown. Historical: mostly vacant, storage of abandoned ship repair equipment and excess parts (bone yard). Quonset hut on site used for storing ship repair material and timber. Stored, manufactured, and distributed timber and lumber products.	While Mar Com was in operation from ~1905 to 2004, a floating dry dock located at the adjacent Mar Com South Facility was used to conduct ship repairs, hull overhauls, and maintenance services (e.g., mechanical/electrical retrofits). Barges acted as support platforms relative to operations.	None	Filling activities have occurred at the North Parcel from as far back as 1917 to at least 1983-1984. Fill encountered in test pits in 1986 included organics, silts and sands with variable amounts of concrete, wood and wood products, asphalt, plastic and glass. The fill material at the Mar Com and DSL sites originated from various sources. A substantial amount of fill (greater than 10,000 cubic yards) originating from excavation materials from the Veterans Hospital is documented to have been placed at the Mar Com and DSL sites. During the 1970s, sediments dredged from the river as part of maintenance operations were placed on the southern half of the North Parcel.
Mar Com South (Langley St. Johns)	5.7	E	Current: unknown. Historical: from ~1905 to 2004 site operated as a shipway, ship repair operations (maintenance, fabrication, electrical/mechanical repairs, storage). A sawmill occupied a portion of the site between the late 1940s and ~1990. For years (dates unknown), a portion of the property was leased for sandblasting and painting services during ship construction and repair.	Two marine ways for pulling ships up to 1,000 tons out of the water to the upland shipyard facilities. An offshore floating dry dock was also present and designed to sink down to allow ships as heavy as 4,000 tons to navigate into position prior to performing maintenance activities.	Unknown. Facility structures and equipment remain onsite, but all shipbuilding and repair activities have ceased.	Fill materials had been placed on the South Parcel since approximately 1945. In 1987, the "knoll" at the south corner of the South Parcel was constructed using dredged sediment from the marine way area.
Marine Finance (Hendren Tow Boats) #2352	5.8	W	Current: tugboat business, houseboat/sailboat construction. Historical: above and metal salvage, moorage.	Overwater structures include a home builder's dock and a gangway and floating facilities owned by a tow boat company. Overwater activities have been prevalent at this site since the early 1920s when there was a ferry slip located here.		Between 1936 and 1948 the area was filled; the fill was likely obtained from private dredging operations. In 1961 material was excavated at the site. Artificial fill material was placed at the site during the 1930s and 1960s. The excavations and soil borings completed at the site indicate that the fill material underlying the site is approximately 9 to 30 ft thick. The fill material consists of road base material, brownish-gray, poorly graded, fine to medium sand and silty sand, and organic and construction debris.
U.S. Moorings #1641	6	W	Government port, supply, repair facilities for dredge and other support vessels, warehousing facilities, fuel storage, motor pool garage and parking.	In 1963 a dock and floating structure were removed from the site. On the south end of the property a dock was constructed in 1936. Fueling of dredges, sandblasting, and vehicle maintenance occur at the site.	Docking facilities, maintenance, and overhaul to support the dredge fleet and the hydrographic survey vessels.	Dredge material from river used as fill upland (1914), and partial filling of new parcel in 1945.
City of Portland BES Water Pollution Control Laboratory #2452	6.1	E	Current: analytical lab. Historical: lumber mill operations, fruit box manufacturer, and original site of Terminal 3.	Lumber mill operations when dock present. Dock removed in 1979.	None	Pre-1970s fill that brought the site to the grade of the pavement for the Portland Lumber Mill. Early 1970s fill in the foundation of the Coast Veneer facility and along the bank of the river. Placement of "black sand" fill in the Coast Veneer area and in piles on the southern portion of the site. From 1988 to 1989, construction and other debris were disposed of in the southern and northwestern portions of the site. Black sand and debris were removed from the property during site development in the mid-1990s.

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Crawford Street Corporation #2363	6.1	W	Current: metal forging, steel ~~recycling and~~ distribution. Historical: above activities and lumber and sawmill.	None/Unknown	None/Unknown	Up to approximately 6 ft of black sand fill material was placed by previous property owners during the demolition of the former lumber mill building in 1977-1978. The sand had reportedly been obtained from a local sandblasting company and previously had been used to clean land- and ship-based oil tanks. Reported to have been transported to the beach fronting the property and into the Willamette River by riverbank erosion.
Gasco #84	6.2	W	Current: liquefied natural gas storage and distribution, solid and liquid coal tar pitch storage and distribution; northern portion - bulk fuel storage and distribution. Historical: oil manufactured gas plant, coal tar formulation, storage and distribution, electrode grade pitch manufacture and distribution.	A dock existed as of 1936 and a second dock was removed in 1957 (on the south end of the property). Fuel and Marine Marketing Inc. conducts overwater transfer of bulk petroleum from barge to their bulk storage facility. Koppers Industries (now Beazer East) conducts overwater transfer of heated liquid coal tar pitch from barge to their bulk storage facility.		Much of the Gasco property has been extensively filled through time, beginning with initial MGP site development activities between 1905 and 1913. Low-lying areas, primarily to the southeast (lampblack storage and tar pond area) received MGP by-product placement through time (1940, 1952 aerial photographs), and likely received soils from the excavation of the LNG tank containment basin at the central portion of the site in 1967 and 1968 (1968 aerial photograph). By 1975, the southern portion of the property was predominantly filled. Retention ponds were filled in 1981. The thickness of the surficial fill ranges from approximately 2 ft along the western portion of the site near the Tualatin Mountains, to a maximum of approximately 30 ft in the northern and eastern portions of the site, near the Willamette River. Much of the fill at the site, especially in the northwestern and central areas, was found to consist of poorly graded sands and silty sands that were likely hydraulically placed river-dredge material. Other areas of fill at the site were found to contain lampblack and/or pencil pitch material, solidified tars, oil, quarry reject rock, and building debris, which were incorporated into the fill when these areas were brought to current grade.
Siltronic #183	6.2	W	Current: manufactures silicon wafers from silicon crystal ingots. Historical: waste disposal area (waste effluent pond, 11-acre lagoon, disposal pit, spent oxide/lampblack disposal pile).	Tugboat refueling by former Western Transportation facility. In 1957 two docks were removed from the upstream end of the site.	None	By 1975, the site was covered with fill up to 30 ft thick in places. The fill consisted of former MGP process wastes, dredged material from Willamette River dredging operations, quarry rock, and potentially materials and wastes from other onsite and offsite sources. The southern portion of the site was filled to about 30 ft above MSL (current grade) between 1971 and 1977. The fill included quarry rock, Willamette River dredge material (which may or may not have included sediments impacted by direct discharge of wastes), and MGP waste from the PG&C facility.
Willamette Cove #2066	6.7	E	Current: vacant. Historical: plywood manufacturing plant (west parcel), structures to support ship repair on dry docks (central parcel) - U.S. Government facilitated during Great Depression and wars (WWI, WWII, and the Korean War), cooperage plant-manufactured wood vats, kegs, barrels, shingles (east parcel).	The central parcel of the Willamette Cove facility was used for ship repair on dry docks between 1903 and 1953. During wartime, U.S. Government contractors utilized the dry docks for military ship outfitting and repair. Dry docks were relocated in 1953. The plywood facility (West Parcel) and cooperage facility (East Parcel) were used for a variety of overwater activities associated with wood processing. The dock structure was removed between 1965 and 1969.	None	Sandy fill was placed on a strip of lowland adjacent to the bluff and outward into the Willamette River prior to and concurrent with facility development (completed by 1930). In early 1970s, filled the former log pond on the West Parcel. Fill source unknown. Debris in fill (bricks, metal, wood). Fill was placed on the upstream end of the site (in the head of the cove) in 1985.
McCormick and Baxter #74	7	E	Current: none. Historical: manufactured fir lumber and wood products treatment.	Historically, creosote was unloaded at a dock and transported to a large tank by pipeline. The facility was operational from 1944 to 1991. Unloading at the creosote dock was gradually phased out throughout the 1980s. A pier was removed in 1980 and the dock removed in 2000.	None	The site is located in an area that was filled in the early 1900s.
Arkema #398	7	W	NA	Dock removed in 1957.		Fill added in 1957.

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Arkema #398	7.3	W	Current: none. Historical: inorganic chemical manufacturing company from 1941 to 2001. Produced sodium chlorate and potassium chlorate, chlorine, sodium hydroxide, hydrogen gas, hydrochloric acid, and DDT.	Dock 1 was most likely constructed in 1941 and Dock 2 was constructed sometime between 1954 and 1959. The Salt Dock was under construction in 1962. Shipments of sodium chloride (salt) were historically delivered by ship to either the Salt Dock or Dock 1. Sodium hydroxide, sodium chlorate solution, and chlorine were loaded onto barges for shipment from Dock 2.	None. Dock structures still remain.	The eastern portion of the site generally between Docks 1 and 2 has been filled with plant debris consisting of asphalt, concrete, pipe, and clean soil, in addition to fill from the City of Portland and excavation contractors. The majority of the fill material between Docks 1 and 2 was placed between 1948 and the mid-1960s.
Triangle Park LLC - North Portland Yard #277	7.4	E	Current: vacant. Historical: wharf, shipbuilding (1921-1946), lumber manufacturing, sawmill, concrete, marine towing, construction and heavy equipment (Riedel International). Riedel also responded to chemical, industrial, and accidental spills of contaminants on the ground or in waterways. Equipment was stored and cleaned onsite. Between 1980 and 1984, the site included a regulated hazardous waste storage area.	Dock existed as of 1936. Docks associated with ship building, repair, and product transfer. In 1966 a dock and floating structure was removed.	A dock and dolphins are still present at the site, but the site is vacant. There is temporary barge moorage along the shoreline.	Fill was place on the downstream end of the property in 1974 and upstream in 1966. The fill blanketing the site extends to a depth of approximately 15 ft bgs and is composed predominantly of sand. Fill was used to create the dock and berth area.
Willbridge Terminals #1549	7.5	W	Bulk petroleum storage since early 1900s.	Dock existed as of 1936. Each of the three terminals, which compose the Willbridge Terminals site, have a marine dock for the loading and unloading of petroleum products to or from tankers, barges and tug boats.		Fill material of gravel, silt and sand was deposited over most of the site. The former Holbrook Slough that connected Kittridge Lake with the Willamette River was filled in the early 1900s. The source of the fill is primarily Willamette River dredging. There is relatively little fill in the KMLT terminal's south tank yard, while there are significant fill areas on the rest of the site.
Willbridge Terminals (WMCSR-NWR-94-06) #2355	7.7	W	Current: distribution of refined petroleum products (gasoline, diesel fuel, lubricating oil), fuel storage.	Petroleum products have been loaded and unloaded at the terminal since the early 1900s.	Current marine docks (one at each facility - constructed by 1936) for loading and unloading petroleum products to or from tankers, barges, and tug boats.	Fill material of gravel, silt and sand has been deposited over most of the site. The source of the fill is primarily Willamette River dredging. The thickness of the fill material ranges from nonexistent to greater than 30 ft. There is relatively little fill in the KMLT terminal's south tank yard, while there are significant fill areas on the rest of the site. The former Holbrook Slough that connected Kittridge Lake with the Willamette River was filled in the early 1900s. Fill material placed on downstream end of site from 1948-1957.
McCall Oil #134	7.9	W	Asphalt manufacturing and chemical manufacturing, storage and distribution.	A dock structure and an oil transfer pipeline historically were located at the McCall Oil site prior to filling in the late 1960s. Douglas Oil operated a marine dock at the northeastern portion of the site. This dock was added in 1975 and was used to transfer asphalt from moored barges to the asphalt facility via pipeline. The dock was later replaced by the existing dock located northeast of the terminal.	Petroleum products are received and dispensed at the marine dock.	In 1966, dredge materials from the Willamette River were added to the shoreline to create additional land.
US Coast Guard - Marine Safety Station #1338	8	E	Current: USCG marine safety and marine inspection offices. Historical: roofing shingle manufacturer, lumber company.	A dock was constructed in 1974. Activities unknown.	A fixed pier is located in the southwest corner of the property and is used as a dock and fueling platform for the buoy tender CGC Bluebell. Support activities include minor onboard ship repair and storage of ship equipment. A floating dock is located east of the fixed pier and is used for servicing and launching the smaller vessels.	The property was created by filling marshy lowlands in Mocks Bottom beginning in the late 1930s. Filling of Mocks Bottom was completed in 1974.
Fred Devine Diving and Salvage #2365	8.2	E	Current: moorage. Historical: moorage and waterfront structures (1940s), cleaner and solvent storage.	A dock was constructed in 1979 where fueling and loading/unloading activities occur.		None/not reported in CSM

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Front Avenue LP Properties #1239	8.2	W	Lumber facility/storage, concrete plant, pipe fittings manufacturing.	A dock was constructed in 1991. Ships deliver raw materials to facilities at the site (e.g., sand and aggregate to Glacier NW on Parcel 1).		Large portions of the site were formed by filling the riverbed and lake bed from 1887 through 1980. A large volume of fill was placed on Parcels 1 and 3 between the 1940s and the 1970s. The fill was made up of slag from a steel mill which began operating at the property in approximately 1942 (predecessor to Oregon Steel Mills), dredged material from the Willamette River, and construction debris. Fill is estimated to range from 15 to 45 ft thick on all but the northeastern third of the property.
Cascade General #271	8.4	E	Current: Cascade General - Ship repair yard and other industrial operations, POP - parking lot/undeveloped property. Historical: airport (1927-1941); shipbuilding facility (1942-1945); ship repair/industrial operations (1949-present). Between 1942 and 1949, the U.S. Maritime Commission leased Swan Island from the POP and contracted with the Kaiser Company to construct a shipyard and associated facilities. The shipyard facilities were used to build WWII T2 tanker ships. A Kaiser affiliate, Consolidated Builders, Inc., conducted ship dismantling between 1947 and 1949. After the war, the area was redeveloped and used for ship repair purposes by various ship repair contractors and their subcontractors. In addition, facilities were leased to a number of industrial tenants who conducted a range of activities, including steel fabrication and storage, wood products manufacturing, equipment manufacturing, maritime supply sales, printing, chemical and soap storage, war surplus storage, fire extinguisher service and storage, paint storage, aluminum oil tank manufacturing, service station operation, sheet metal work, roofing supply storage, and general office storage.	Shipways were constructed in the early 1940s and removed or abandoned in the late 1940s through 1962 for the installation of dry docks. Dry docks were installed on the downstream end of the site in 1945, 1953, 1962, and 1978. Boat rails were added in three areas (one added in 1948, the other two removed in 1957 and 1963 where docks were placed). Activities at the dry docks have included: ship dismantling, ship repair, ship hull washing, abrasive blasting and painting.	Activities at the dry docks include ship dismantling, ship repair, ship hull washing, abrasive blasting and painting.	From 1923 to 1927, the main navigational channel was relocated from the east side of Swan Island to the west side. Dredged materials were placed on Swan Island to raise its elevation and used to construct a causeway that connected the upstream end of the island to the east shore of the mainland. Between 1950 and 1962, the eight military-era shipways were abandoned in place by filling with dredged materials.
Shaver Transportation #2377	8.4	W	Current: general towing and lightering. Historical: mobile telephone service and marine transportation.	Overwater activities include a fleet of 11 tugboats and 16 barges, a main dock including ramp and 3-finger piers, 200-ft shop barge including ramp and fuel dispensers (unknown type and capacity), and a 200-ft floating shed.		From 1923 to 1927, the main navigational channel was relocated from the east side of Swan Island to the west side. Dredged materials were placed on Swan Island to raise its elevation and used to construct a causeway that connected the upstream end of the island to the east shore of the mainland. Between 1950 and 1962, the military-era shipways were abandoned in place by filling with dredged materials.
Kittridge Distribution Center - Schnitzer Investment Corp #2442	8.6	W	Current: storage, mixing, and distribution of oil-based inks; storage of trailer-mounted generators and large spools of cables and supplies for maintenance of telecommunication cables; newspaper machines, limited bearing cleaning with lube oil; distribution of household decorative tiles and tile installation supplies. Historical: activities above and acetylene production and lime recovery operations, scrap metal handling, and diesel truck refueling.	None - upland location		The small portion (~10%) of the site that is not paved is covered with imported clean landscape fill.
Lakeside Industries #2372	8.6	W	Current: asphalt manufacturing. Historical: asphalt manufacturing and moorage.	Dock added in 1948. Since 1995, raw aggregate is delivered to the site by tug and barge, and after being unloaded with a conveyor system, the aggregate is stockpiled along the edge of the river.		The fill predominantly consists of sand extending to approximately 10 feet bgs.
Christianson Oil #2426	8.7	E	Petroleum/lubricant storage, blending, and distribution.	None - upland location		None

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Gunderson LLC #1155	8.8	W	Current: Manufacturing rail cars and marine barges. Historical: rail car and marine vessel manufacturing, ship dismantling and auto salvage.	Dock was present 1936 and launchways in 1957. The application of marine primers and paints onto the marine barges is conducted on the launchways. This work is considered overwater activity. Completed railcars are temporarily staged on outfitting dock (gantry) for rework of welds, touch-up painting, and using a transit to make sure cars are level. Prior to the 1960s, the area offshore of Gunderson was used for mooring of log rafts.		Gunderson site adjacent to the Willamette River was raised above the river level beginning in the 1930s using dredged fill material. The man-made fills were placed over much of the site. Therefore, most of the sand and silt found in the subsurface of the Gunderson site are fill materials obtained from the dredging of the Willamette River channel. A gully onsite was filled in the 1970s, fill source unknown. Fill was also placed in 1957.
Equilon Property (Pipeline Containment) #2117	8.8	W	Current: storage/distribution of gasoline, diesel, and ethanol. Historical: Beginning in 1928, storage/distribution of petroleum, bunker fuel, jet fuel, and lubrication oil.	The Equilon facility includes a dock on the Willamette where petroleum products are transferred from vessels to an underground pipeline corridor that extends upgradient beneath the Gunderson property to the main bulk petroleum facility. The dock has existed since at least 1936.		The riverbank in the vicinity of the dock is composed of fill materials deposited there sometime after 1936. The fill is believed to be dredged sand material.
Trumbull Asphalt #1160	9.1	W	Asphalt and roofing manufacturing plant.	None - upland location		The industrial area surrounding the site is known as the Guilds Lake area because of a shallow lake that formerly occupied the area until it was filled to provide industrial land in the early 1900s. Fill consists of asphalt, crushed rock subgrade, silt and sand. Fill source unknown.
Van Waters and Rogers #330	9	W	Bulk chemical packaging, storage and distribution.	None - upland location		Between 1910 and 1930, the lake and surrounding area were filled with dredged sediment from the Willamette River and upland fill material.
Columbia Plating #29	9.1	E	Electroplating, plating, polishing, anodizing, and coloring (all after 1975).	None - upland location		None
City of Portland	9.5-10.0	E	NA	Kerr-Gifford grain dock removed in 1939 (based on 1935 Commission of Public Docks Industrial Map).	NA	Original shoreline formed cove. In 1969, area was filled (corresponding with filling of lagoon).
Goldendale Aluminum #2440	10	E	Current: storage of lubricating and hydraulic oils. Historical: alumina and electrode binder pitch unloading facility, grain shipment facility.	Two docks constructed in 1936. Activities began in 1957 and included ship refueling, alumina and pitch unloading. Prior to this time, the site was a grain shipment facility.	None	A small area in the northeast section of the site was filled beginning in 1969.
Port of Portland - Terminal 2 #2769	10	W	Current: marine terminal. Historical: marine terminal, shipyard-ship construction during WWII (unknown to 1949), exporter of agricultural and manufactured wood products.	Overwater activities associated with the historical sawmill and shipyard operations were performed in areas that were subsequently filled to create the current facility. Thus, none of these operations were conducted in areas that are currently within the Willamette River. A dock was removed from the site in 1966 and then in 1987 two docks were added. Activities at site included loading and unloading by SSA of break-bulk lumber, plywood, pulp, and products on vessels, railcars, trucks, including agricultural and manufactured wood products.	Infrequent loading and unloading by SSA of break-bulk lumber, plywood, pulp and products on vessels, railcars, and trucks.	The facility is built largely on filled riverbed. In 1927, fill was placed east of the old sawmill operations. In 1966, a dock was removed and the area filled. Backfilling occurred downstream of Terminal 2 in the late 1960s. Backfilling of the Terminal 2 upstream slip occurred by 1987. In 1981 the dredge berth was filled after it was relocated. Fill source not identified.
Sulzer Bingham Pumps #1235	10.3	W	Current: Equipment pump manufacturer. Historical: part of WISCO shipyard where conversion, maintenance, and repair of government ships was conducted. WISCO also constructed minesweepers, minelayers, escort vessels, and patrol vessels, and repaired various operating vessels.	Several large pieces of metal slag are located along the Willamette River bank, at and above the surface water level. Information regarding the lease of submerged lands and/or overwater structures was not found in Oregon DSL files. Historical: ship repair activities		By 1947 the site was filled with layers of sand and layers of silt and sand mixed with brick and wood debris up to 22.5 ft bgs.
UPRR Albina Rail Yard #178	10.4	E	Switching yard.	There were several former docks located along the shoreline between RM 10 and 11 originating from 1936 until approximately 1975. Two docks are still visible on 2005 aerial photo, see Goldendale Aluminum. There is no information regarding the types of activities associated with the former docks.	None	The Albina Rail Yard is situated over both hydraulic fill and fine-grained alluvium. The hydraulic fill may be 10 ft to 20 ft in thickness and most likely originated from sediments previously dredged from the river.

Table 3.2-1. Historical Overwater Features and Fill Placement.

Site Name and ECSI Number	River Mile	River Bank	Major Industrial Operations[a]	Overwater Activities [a,b,c] Historical	Overwater Activities [a,b,c] Current	Fill [a,c]
Port of Portland-Terminal 1 North #3377	10.6	W	Current: lumber company operations (Emerson hardwood), combined sewer overflow shaft and tunneling operations (City of Portland). Historical: sawmill, planing mill, steam plant/drying kilns, and lumber storage yard, retail coal and wood dealer, edible oil refiners, finished wood products, retail fuel wood dealer and wholesale dried fruit.	In 1908, a coal and gravel dock was located along the river. In 1946, a single-berth dock was used as a lumber terminal. Loading and unloading of items such as lumber, logs, paper products, steel, containers, and bagged grain.	None, dock berth structures still present.	Filled submersible and submerged lands. Filling was occurring in 1957. Fill source not identified. The fill consists of sandy gravel, sand, silty sand with traces of clayey silt and wood debris.
Port of Portland - Terminal 1 South (Riverscape) #2642	10.9	W	Current: mixed commercial and residential. Historical: marine terminal, Emerson Hardwood dock, Willamette Iron and Steel dock. Prior to and during WWII, WISCO periodically used T1 South for temporary equipment storage.	Docks were constructed in the early 1900s. Activities included loading and unloading of items such as lumber, logs, paper products, steel, containers, and bagged grain. All overwater activities ceased in 1986 and most dock/pier structures have been removed.	None, some dock structures still remain.	Filled submersible and submerged lands in early 1900s. Fill source not identified. Albina Ferry Slip (Slip 1) created in 1914 and Slip 2 in 1923. Filling occurred at the downstream end of former Terminal 1 in 1922, upstream end in 1936, and the former Terminal 1, Slip No. 1, in the early 1970s.
Former Albina Engine and Machine Works Shipyard (and immediate surrounding areas) Tucker Building (#3036)	11 to 11.6	E	Current: cement handling (Glacier NW), grain storage and distribution (Cargill), misc. warehouses, fabrication shops, parking strips, garages, light industry. Historical: former shipyard and machine works, former electrical operations (Tucker Bldg, PP&L, Western Electric, and Westinghouse).	Albina Engine and Machine Works was founded in 1904 as a repair yard and included both riverfront and non-riverfront property. Overwater features consisted of 6 shipways and attendant dock structures. After ships were assembled in the Albina shipways, they were moored at the Albina dock for outfitting, which included installing interior mechanical and electrical features and deck painting. Incidental spills of paint residue and fuels into the slip were possible during this time. Bilge water (often containing oily residue) was likely discharged from the grain ships, as well as other ships that moored in this area in the early 1900s. Other historical riverfront activities included sand and gravel storage, asphalt manufacturing, general cargo handling, grain shipping, and cement manufacturing. Docks have been present in the area of the Glacier facility from 1936 to present day. Present-day docks at the Cargill facility were constructed sometime between 1957 and 1966. A large overwater structure called the Irvine Dock was present at this location prior to construction of the present-day Cargill dock. The dock appears to have been present since 1906 or earlier according to information obtained from the City of Portland.	Docks associated with Glacier NW and Cargill for loading and unloading. Glacier's dock has been in existence since 1936. Two additions to Cargill's docks occurred in 1966.	Infilling of the former shipways associated with the Albina shipyard began in the 1950s and was completed by 1963. The source of the fill material is unknown.
Albers Mill	11.6	W	Current: commercial office building and pay parking lot. Historical: grain and cereal mill.	At least as far back as 1889, the site was occupied by docks and grain storage warehouses that were constructed on pilings.	None	The warehousing was demolished in 1965-1966. Addition of 5-30 ft of fill to the northwest end of the site was begun in 1966. The fill may have included concrete-steel bow sections of scrapped Liberty ships. Aerial photographs indicate that additional fill may have been placed along the river and northwest property line sometime after 1980.

Notes:

[a] Information obtained from CSM site summaries (2005) and site summary addenda (2006).
[b] Known or documented spills at the sites were obtained from DEQ ERIS database for the period of 1995 to 2008.
[c] Additional information obtained from Maps 3.1-14a-f.

AST - aboveground storage tank
BES - City of Portland Bureau of Environmental Services
bgs - below ground surface
CRSG - Columbia River Sand and Gravel
CSM - conceptual site model
DEQ - Oregon Department of Environmental Quality
DSL - Oregon Division of State Lands
ECSI - Oregon Environmental Cleanup Site Inventory
EOSM - Evraz Oregon Steel Mills
ERIS - Emergency Response Information System
KMLT - Kinder Morgan Linnton Terminal
LNG - liquified natural gas
MGP - manufactured gas plant
MSL - mean sea level
NA - not applicable
PEO - Premier Edible Oils
PG&C - Portland Gas & Coke
PGE - Portland General Electric
POP - Port of Portland
SSA - Stevedore Services of America
SSI - Schnitzer Steel Industries
UPRR - Union Pacific Rail Road
USCG - U.S. Coast Guard
WISCO - Willamette Iron and Steel Company

Table 3.2-2. Property Name Index (RM 1.9 - 11.8).

Property Owner (as shown in Map 3.2-1a-e)	River Mile	Other Site Names
ACF Industries, Inc.	3.8	
ADM Milling Co.	11.4	
Advanced American Construction	5.8	Marine Finance Corporation (see Hendren Tow Boats)
Albers Mill Property	11.6	
Alder Creek Lumber Co., Inc	2.8	
Anchor Park LLC	9	
Anderson Bros, Inc.	7.8	
ANRFS Holdings Inc.	9.2	
Apollo Dev., Inc.	11	former Terminal 1 South
Arkema Inc.	7.4	Atofina, Atochem North America, Elf Atochem
Armstrong Disposal Company	8.6	
Ash Grove Cement Co.	2.8	
Ash Grove Cement Co.	10	former Goldendale Aluminum
ATC Leasing Co.	8.8	
Automatic Vending	9.2	
Babcock Land Co. LLC	4.4	
Benson Industries	11.2	
Becker Land LLC	8.8	former Port of Portland
Betty Campbell Building	10.6	
Blue Lagoon - Terminal 5	2	
BNSF Railway Co.	6.8	
BP West Coast Products LLC	4.8	ARCO, BP Bulk Terminal 22T
Brazil & Co.	8.4	
Brix De Armond LLC	5.6	
Brix Maritime Co.	5.4	Foss Maritime Company
Cargill Corp/CLD Pacific Grain	11.5	
Carson Oil - NW 35th AVE	9.2	
Chevron USA, Inc.	7.6	
City of Portland	5.8, 6, 7, 9.2, 9.9, 10.6	BES WPCL (RM 6), former Terminal 1 North (RM 10.6)
Columbia River Sand & Gravel Inc.	4.6	
ConocoPhillips Co.	7.8	Tosco
Consolidated Freightways Inc.	10.8	
Consolidated Metco, Inc.	3	Metco, Inc.
Container Recovery	9	
Cornerstone Property	8.8	McWhorter, Inc., Eastman Chemical, McCloskey Corporation
Crosby & Overton	9	
Dasic International Corp.	10.2	
Dolan and Co. LLC	10.4	see Sulzer Pumps
Drew Paints, Inc.	10.8	
Dura Industries	8.4	
Equilon Enterprises LLC	8.8	Shell Oil Products US, Texaco Refining/Marketing, Inc. (see Texaco Product Pipeline)
ESCO Landfill - Sauvie Island	Multnomah Channel	
ESCO Corp. - Willbridge Landfill	7	
ESCO Plant #3	10.4	
Evraz Oregon Steel Mills	2.4	Oregon Steel Mills, Inc.
ExxonMobil Oil Corp.	5	Mobil Oil Corporation, Shore Terminals LLC, ST Services (see Shore Terminals LLC)
Flowers by Victor	10.6	
Fred Meyer - Swan Island	9	
Freightliner Corp.	8.2, 9	Freighliner TMP (North), Freighliner TMP II (South)
Frevach Land Co.	3	
Front Ave. LP (LSD CMI NW)	8.2	CMI Northwest
Front Ave. LP (LSD Tube Frdgs.)	8	Tube Forgings

Table 3.2-2. Property Name Index (RM 1.9 - 11.8).

Property Owner (as shown in Map 3.2-1a-e)	River Mile	Other Site Names
Front Ave. LP (LSD Glacier NW)	8	Glacier Northwest, Lone Star Northwest
Front Avenue MP	9.8	
Galvanizers Co.	9.6	
General Electric Co.	9.6	General Electric Decommissioning Facility
Genstar Roofing Co., Inc.	7.6	CertainTeed Corporation, GS Roofing Products
GI Trucking	9	
Glacier NW	11.3	
Guilds Lake	10	
Gunderson LLP	9	
GWC Properties LLC	7.8	Great Western Chemical Corporation, Quadra Chemicals Western, Brenntag Pacific
HAJ Inc.	8.8	Christenson Oil
Hendren Tow Boats	5.6	
Henry Wong	10.4	
Hercules Inc.	9.6	
Herman, Stan	11	
Hill Investment Co.	9.2	
Industrial Battery Building	10.8	
Irvjoy 3rd Generation Corp.	9.4	
Island Holdings Inc.	9	
Jacobson & Co. Inc.	11.1	
J R Simplot Company	2.6	
Kesef Development LLC et. al.	8.4	Calbag Metals - Front Ave.
Kinder Morgan	4.2	Kinder Morgan Liquids Terminal - Linnton Petroleum Terminal, GATX Terminals Corporation
Kinder Morgan (Willbridge)	7.6	Willbridge Terminal (Kinder Morgan Liquids Terminal), GATX Terminals
King-Ries Property	10	
Kittridge Distribution Center	8.4	
Koppers Industries Inc.	6.4	
Lakea Corp.	9.2	former Columbia American Plating
Lakeside Industries	8.4	
Lampros Properties LLC	4	Ryerson Steel
Langley-St. Johns Partnership	5.6	MarCom Shipyard, MarCom Holdings
Linnton Oil Fire Training Grounds	3.4	
Linnton Plywood Assn.	4.6	Linnton Plywood, Columbia Sand & Gravel
Longview City Laundry & Cleaners	9.8	
Magnus Co.	9	
McCall Oil Real Estate	8	McCall Oil Real Estate Company LLC
McCormick & Baxter Creosoting Co.	7.2	
McCormick Pier Properties	11.8	
Metco, Inc.	2.8	Consolidated Metco, Inc.
Metro	6.6	Willamette Cove - West, Central, and East Parcels
Metro Central Transfer Station	7.2	
Mill Hot	11.1	
Millican Properties LLC	3.8	Portland Container
Mogul Corp.	9.6	
Knife River Corp.	3.6	Morse Bros. Inc., Georgia-Pacific, Inc. - Linnton Fiber Terminal
Mt Hood Chemical Corp.	8.5	
Mt. Hood Chemical Property	8.4	
Multnomah County - St. Johns Site	5.8	
Nikko Materials USA, Inc.	7.2	Gould Electronics, Inc., NL Industries
Northwest Natural Gas Co.	6.4	Gasco
Northwest Pipe Co.	4	
Nudelman & Son Inc.	9.8	
Nurnberg Scientific Co.	11.2	

Table 3.2-2. Property Name Index (RM 1.9 - 11.8).

Property Owner (as shown in Map 3.2-1a-e)	River Mile	Other Site Names
ODOT - Surplus Property	10.6	
Olympic Pipe Line Portland Delivery Facility	5	
Olympic Pipeline Company	4.2	
Oregon Washington Railroad & Navigation Co. (UPRR Albina Yard)	10	United Pacific Railroad (UPRR) - Albina Yard
Owens-Corning Fiberglas Corp.	3.8	
Owens-Corning Fiberglas Corp.	9	Trumball Asphalt Plant
Paramount of Oregon, Inc.	7.8	Chevron USA Asphalt Refinery
Pacific Power & Light - Mason Substation	10.4	
PacificCorp Albina Riverlots	11.3	
Paco Pumps	9.6	
Port of Portland (P.O.P.)	10, 4.2-5.5, 1-2	Terminal 2, Terminal 4, Terminal 5
P.O.P. (leased)	1-9.8	Lessees are located at Terminal 5, South Rivergate, Terminal 4, Willbridge Terminal, Swan Island
P.O.P. (leased) (Willbridge)	7.6	Willbridge Terminal (Chevron - North, ConocoPhillips Company - South)
PGE - Forest Park Property	8.4	
PGE Station E	10.4	
Portland General Electric Co.	3.2	
Portland Shipyard LLC	8.4	Cascade General Ship Repair Yard, Vigor Industrial
Portland Terminal RR Co.(Guilds Lake Yard)	8.8	Burlington Northern Santa Fe (BNSF) Railroad, Portland Terminal
R K Storage & Warehousing, Inc.	4.4	RK Storage
R L R Investments LLC	3.8	Romar Transportation Company
Ralston, Tim (Ralston, TR)	10.8-11	Timothy R Ralston (former Terminal 1 South)
Riverscape LLC	10.8	former Terminal 1 South
Roadway Express	8.8	
RoMar Realty of OR Inc.	3.6	
Sakrete of Pacific Northwest	11	
Sause Bros., Inc.	9.6	
Schmitt Forge	10	
Schnitzer Investment Corp.	7.2	Schnitzer Doane Lake - Air Liquide
Schnitzer Investment Corp.	3.6	Burgard lessees: former Premier Edible Oils, Boydstun Metal Works, Western Machine Works, Morgan
Schnitzer Steel Industries, Inc.	4	International Terminals, Burgard lessees: Portland Blast Media, Cal Bag Metals, Northwest Pipe (storage)
Shaver Transportation Co.	8.4	
Shore Terminals LLC	5.4	ExxonMobil Oil Company, ST Services (See ExxonMobil), Nustar, Valero
Siltronic Corp.	6.6	Wacker Siltronic Corporation
Smurfit-Stone Container	3.8	Jefferson Smurfit
Southern Pacific Pipe Lines	7	
Starlink Logistics, Inc.	7.6	Rhone-Poulenc, Bayer CropScience, Aventis CropScience, Chipman Chemical
States Battery Co.	10.4	
Columbia River Forge & Machine	6.2	Crawford Street Corporation, Steel Hammer Properties LLC
Steelmill Warehouse LLC	2.6	Union Chemical Division of Union Oil Company and H.B. Fuller Company
Sulzer Pumps (US), Inc.	10.4	Sulzer Bingham Pumps
Sunny's Dry Cleaners - Portland	10	
Tanker Basin LLC	8	McCall Oil & Chemical Corporation
Texaco Product Pipeline	8.8	
TFA Inc.	10.9	
The Marine Salvage Consortium	8.4	Fred Devine Diving and Salvage, Inc.
TOC Holdings	3.4	Time Oil NW Terminal, Bell Oil Terminal, Koppers Company/Beazer East

Table 3.2-2. Property Name Index (RM 1.9 - 11.8).

Property Owner (as shown in Map 3.2-1a-e)	River Mile	Other Site Names
Transloader International	5.6	
Triangle Park LLC	7.4	Reidel, Zidell Triangle Park
United States of America, Moorings	6	U.S. Moorings, US Army Corps of Engineers (adjacent to Northwest Natural)
US Coast Guard	8.2	US Coast Guard Marine Safety Office/Group Portland (Swan Island Lagoon)
U.S. Navy Reserve Center	7.6	
University of Portland	7.8	
UPRR - St. Johns Tank Farm	4.6	
UPRR Albina Yard	10	
V&K Service	7.6	
Van Waters & Rogers, Inc.	9	Univar Corporation, Vopak USA, Inc.
Walters, Douglas J.	3.4	
Westlink Packaging	11.2	
Willbridge Switching Yard	7.9	
Willamette River Westside CSO Construction	10.6	
Williams, Cindy	9.6	
Windsor-Allen LLC	7.8	
Wirfs, Don	9.2	Chase Bag, Chase Packaging Corp., Schnitzer Investment Company - NW Yeon
Zehrung Corp. (Former)	10.8	
Zidell, Emery	8, 8.6	

Table 3.2-3. Status of Combined Sewer Overflow Systems Control within Study Area.

Outfall Number	Pipe Size	Location	River Mile	Construction Date	Interceptor Diversion Date	Control Date[a]	Future CSO Potential	Notes	Status of Outfall
Outfalls Controlled Before the City's 20-Year Abatement Program									
OF-42	10-inch	East Side	11.7	~1910	1954	1954	No	Combined basin served residential properties	Previously combined, stormwater-only outfall since 1954
OF-44	72-inch	East Side	11.2	<1907	1954	1954	No	Combined basin served industrial properties	Previously combined, stormwater-only outfall since 1954
OF-51	18-inch	East Side	5.8	1906[b]	1952	NA	No	Drainage basin was diverted to OF-52 and the outfall was abandoned in mid-1970s. Industrial area closer to the river separated in 1952. From 1952 to mid-1970s, only residential area included in the CSO basin	Previously CSO, abandoned in mid-1970s
OF-16	36-inch	West Side	9.7	1930	1970	1970	No	Designated as combined system in industrial area but uncertain if any sanitary or wastewater discharged to combined system	Previously combined, stormwater-only outfall from 1930 to 1948 and from 1970 to current
OF-18	72-inch	West Side	8.8	<1945[b]	1970	1970	No	Combined area served industrial and open space. According to Stevens & Thompson (1964), many sewers were constructed by private parties and sewer connections were unknown.	Previously combined, stormwater-only outfall since 1970
OF-19/20	42-inch	West Side	8.4	1944[b]	1970	1970	No	Combined area served industrial and open space. According to Stevens & Thompson (1964), many sewers were constructed by private parties and sewer connections were unknown.	Previously combined, stormwater-only outfall since 1970. OF-20 flows redirected to OF-19 in 1949.
OF-22/21	60-inch	West Side	7.8	<1928[b]	1970	1970	No	OF22 combined area served industrial and open space. According to Stevens & Thompson (1964), many sewers were constructed by private parties and sewer connections were unknown. OF21 served only one site, an asphalt plant.	Previously combined, stormwater-only outfall since 1970. Flow from OF-21 redirected to OF-22 in 1969.
OF-45	27-inch	East Side	11	1907	1954	1974	No	Industrial area closer to the river separated in 1954. From 1954 to 1974, only residential area included in the CSO basin	Previously CSO, stormwater-only outfall since 1974
Outfalls Controlled as Part of the City's 20-Year Abatement Program									
OF-14	30-inch	West Side	10.8	1905	1953	<1986	No	Combined basin served industrial properties	Previously CSO, stormwater-only outfall since before 1986
OF-23	27-inch	West Side	5.2	<1915[b]	1972	1992	No	Combined area served primarily residential with some commercial and industrial. Combined flow diverted to local treatment plant in 1945 for primary treatment (solids removal). Controlled by sealing off diversion structure in 1992.	Previously CSO, currently abandoned
OF-52	30-inch	East Side	5.7	1920	1952	1995	Yes	Combined area served residential area. Controlled via Expanded Separation and Downspout Disconnection. Monitoring to confirm compliance of 3-year summer/4-per-winter storms by Dec. 2011.	Controlled CSO, with separated stormwater downstream of diversion

Table 3.2-3. Status of Combined Sewer Overflow Systems Control within Study Area.

Outfall Number	Pipe Size	Location	River Mile	Construction Date	Interceptor Diversion Date	Control Date[a]	Future CSO Potential	Notes	Status of Outfall
OF-50	30-inch	East Side	5.9	1906	1952	1995	No	In 1954, industrial area closer to the river separated; remaining CSO basin served predominately residential areas. Controlled via Expanded Separation and Downspout Disconnection. System converted to stormwater-only in 1995.	Previously CSO, now stormwater only
OF-49	15-inch	East Side	6.5	1945	1952	1995	No	Combined basin drained predominately residential areas and no industrial properties. Controlled via Expanded Separation and Downspout Disconnection. Diversion sealed as of Dec. 2001.	Previously CSO, now stormwater only with end-of-pipe treatment
OF-53	48-inch	East Side	5.2	<1916	1952	1995	Yes	Combined area served residential area. Controlled via Expanded Separation and Downspout Disconnection to 3-year summer/4-per-winter storms.	Controlled CSO, with separated stormwater downstream of diversion
OF-48	30-inch	East Side	7.3	1948	1952	1996	No	Combined basin drained predominately residential areas and no industrial properties. Controlled via Expanded Separation and Downspout Disconnection. Diversion sealed as of Dec. 2001.	Previously CSO, now stormwater only with end-of-pipe treatment
OF-24	12-inch	West Side	4.3	<1915[b]	1973	2000	SSO Only	Combined area served primarily residential with some commercial and industrial. Combined flow diverted to local treatment plant in 1945 for primary treatment (solids removal). Controlled via Partial Separation & Pump Station Improvements to 3-year summer/4-per-winter storms.	Previously CSO, now emergency pump station relief point only. Only discharges to river if there is a pump station failure.
OF-47	48-inch	East Side	9.9	1910	1954	2006	Yes	Combined basin is primarily residential with some commercial. Controlled by 3-year summer/4-per-winter storms via West Side CSO Facilities.	Controlled CSO, with separated stormwater downstream of diversion
OF-13	24-inch	West Side	11.1	1890	1953	2006	No	Combined area served primarily industrial land. Controlled via West Side CSO Facilities. Diversions sealed.	Previously CSO, now stormwater only
OF-12/12A	16-inch/48-inch	West Side	11.2	1888	1953	2006	No	Combined area served primarily industrial land. Controlled via West Side CSO Facilities. Diversions sealed. OF12A not a City outfall.	Previously CSO, now stormwater only
OF-11	78-inch	West Side	11.4	1888	1953	2006	No	Combined area served mixed land uses (open space, industrial, residential and commercial). Controlled via West Side CSO Facilities, Stream Separation. CSO pipe to outfall sealed in 2006.	Previously CSO, now stormwater only
OF-15	102-inch	West Side	10.4	1899	1953	2006	Yes	Combined based served open space, residential, industrial and commercial. A portion of the industrial area was separated in 1975. Controlled via West Side CSO Facilities to 3-year summer/4-per-winter storms (CSO outfall only).	Controlled CSO, with separated stormwater downstream of diversion

Table 3.2-3. Status of Combined Sewer Overflow Systems Control within Study Area.

Outfall Number	Pipe Size	Location	River Mile	Construction Date	Interceptor Diversion Date	Control Date[a]	Future CSO Potential	Notes	Status of Outfall
OF-46	80-inch	East Side	10.5	1901	1954	2011	Yes	Combined basin is primarily residential with some commercial. Controlled via Cornerstone and Eastside CSO facilities to 3-year summer/4-per-winter storms.	Controlled CSO
OF-44A	72-inch	East Side	11.2	1974	1974	2011	No	Combined basin is primarily residential with some commercial. Controlled via Eastside CSO facility.	Sealed, no CSO
OF-43	56-inch	East Side	11.4	1906	1954	2011	Yes	Industrial area closer to the river separated in 1954. Primarily residential area remained CSO basin Controlled via the Cornerstone and Eastside CSO facilities to 3-year summer/4-per-winter storms.	Controlled CSO
OF-17	90-inch	West Side	9.8	1921	1953	2011	Yes	Combined area served mixed land uses (open space, industrial and residential). About half of the industrial area was separated in 1950s-1970s. Controlled via the Balch Consolidation Conduit and West Side CSO Facilities to 10-year summer/emergency storms.	Controlled CSO

Sources:
Long-Term Solids and Floatables Control Plan (City of Portland 2008b) and Demonstration of AFSO Compliance Final Report (City of Portland 2012).

Notes:
CSOs listed in order of year controlled.
[a] Separate sanitary and stormwater constructed and all wastewaters required to connect to City sanitary system.
[b] Outfall not originally constructed by the City.

CSO - combined sewer overflow
OF - outfall
SSO - sanitary sewer overflow

Table 3.2-4. City Outfall Status 1977.[a,b]

Outfall(s) ID	Diverted Area[c] (Acres)	Combined (Acres)	Sanitary-Only (Acres)	Storm-Only (Acres)
OF1, OF1B, OF2	1424	220	1175	29
OF3	1007	977	--	30
OF4	6	6	--	--
OF5	39	39	--	--
OF6	285	285	--	--
OF7	696	696	--	--
OF8A	39	39	--	--
OF8	101	2	100	36
OF9	389	389	--	--
OF11	1500	1500	--	--
OF12	46	46	--	--
OF13	33	33	--	--
OF15	1335	1320	15	--
OF17	423	293	70	60
OF23	43	43	--	--
OF24	78	78	--	--
OF26A	45	45	--	--
OF26	28	28	--	--
OF27	3107	2317	790	--
OF28	1820	1820	--	--
OF29	12	12	--	--
OF30	3934	3934	--	--
OF31	61	61	--	--
OF32	26	26	--	--
OF33	30	30	--	--
OF34	10	10	--	--
OF35	14	14	--	--
OF36	900	894	6	--
OF37	2589	2589	--	--
OF38	298	298	--	--
OF40	1905	1905	--	--
OF41	280	271	--	9
OF43	1076	1076	--	--
OF44A	159	81	78	--
OF46	670	658	--	12
OF47	297	297	--	--
OF48	102	102	--	--
OF49	46	46	--	--
OF50	35	35	--	--
OF52	33	33	--	--
OF53	94	94	--	--

Notes:

[a] CRAG 1977

[b] 1977 is significant because it is the year the Columbia River Association of Governments (CRAG) undertook a study of the greater Portland area to evaluate municipal and industrial wastewater and urban stormwater, including the quality of the overflows from the City of Portland combined sewer overflow (CSO) system. The study provided a baseline for reevaluating Portland's CSO system and provided a status of the outfalls that were current at that time.

[c] Diverted Area is the total area of the diversion basins within each combined sewer basin.

Table 3.2-5. Average Annual Pollutant Loads Resulting from CSOs in 1975.[a]

Outfall(s) ID	River Mile	Suspended Solids (10^3 lb)	Suspended Solids (mg/L)
OF12-15	10.5	87	33.5
OF43	11.4	233.9	70.4
OF11	11.4	70.2	24.5
OF40	12.2	464.6	81.5
OF8-10	12.5	0.4	74.5
OF37	12.6	355.6	60.9
OF38	12.6	354.4	116.2
OF36	12.7	97.1	55.6
OF5-7	13.6, 14.0	30.7	31.2
OF30	14	446.8	70.5
OF30	14	216.3	60.3
OF28	15.3	180.1	57.0
OF3, OF4	15.5	46.5	30.2
OF1, OF1A, OF2	15.8	14.1	52.0
OF27	16.8	416.9	72.0

Notes:

[a] CRAG 1977

CSO - combined sewer overflow

Table 3.2-6. LWR Dredging Projects in and Adjacent to the Study Area (1997-2010).

Description	Fiscal Year Dredged	Dredge Location: River Mile or Channel Station Positioning	Dredge Location: Terminal	Dredge Location: Berth	Purpose	Quantity (cubic yards)
FY 97 Corps by Great Lakes #53 Clam	1997	8.5 to 10	--	--	Maintenance	346,000
POP Willamette River Dredging	1997	4.5	4	410, 411	Maintenance	5,454
Goldendale Aluminum (former)	2000[a]	10 to 10.1	--	Goldendale Dock	Maintenance	unknown
POP Willamette River Dredging	2001	1	5	503	Maintenance	1,750
POP Willamette River Dredging	2001	1 to 1.5	5	501, 503, Barge Slip	Maintenance	3,435
Chevron Products Company	2001	7.5 to 7.8	Willbridge	Chevron Dock	Maintenance	15,000
Cargill, Incorporated	2001	11.6	Irving Elevator	Irving Elevator	Maintenance	5,556
POP Willamette River Dredging	2002	10	2	204 - 206	Maintenance	8,330
POP Willamette River Dredging	2002	4.5	4	410, 411	Maintenance	2,250
POP Willamette River Dredging	2003	4.5	4	410, 411	Maintenance	500
POP Willamette River Dredging	2004	4.5	4	410, 411	Maintenance	750
Schnitzer Steel Industries	2004	3.8 to 4	International Terminals	1, 2, 3, 4, 5	Maintenance	138,000
City of Portland Fire Bureau Station 6 Dock	2005	9.7	--	Fire Boat Dock	Maintenance	4,130
POP Willamette River Dredging	2005	4.5	4	410, 411	Maintenance	4,329
POP Willamette River Grading	2005	1 to 1.5	5	501, 503	Maintenance	282
NW Natural (Gasco)	2005	6.5	--	--	Remediation	15,300
Evraz Oregon Steel Mills	*pending*	*1.9 to 2.5*	--	--	*Remediation*	*29,000*
Vigor Industrial, Inc.	*NA*	*8.2*	*Portland Shipyard*	*Pier C*	*Maintenance*	*1,100*
CLD Pacific Grain, Inc.	2009	11.6	Irving Elevator	Grain O Dock	Maintenance	1,430
CLD Pacific Grain, Inc.	2009	11.8	Irving Elevator	--	Maintenance	
Glacier Northwest	*2004*	*11.3*	*Portland Cement Terminal*	*Main Dock & Barge Dock*	*Maintenance*	*3,000*
Ash Grove Cement	*NA*	*10*	--	--	*Maintenance*	*22,400*
Ash Grove Cement	*2005*	*2.9*	*Rivergate Lime Plant*	--	*Maintenance*	*2,000*
Waverly Marina Association	*pending*	*17*	*Waverly Marina*	--	*Maintenance*	*105,838*
Gunderson, Inc.	pending	8.9	--	--	Maintenance	10,000
BP West Coast Products LLC	2008	4.9	22T	--	Remediation	13,293
POP Willamette River Dredging	2008	10	2	205, 206	Maintenance	12,242
POP Willamette River Dredging	2008	1	5	501, 503	Maintenance	1,997
POP Willamette River Dredging	2008	4.5	4	Slip 3, 410, 411	Remediation	12,800
POP Willamette River Dredging	planned for 2011	4.5	4	Slip 3, 410, 411, Wheeler Bay	Remediation	unknown
POP Willamette River Dredging	2010	1 to 1.5	5	501	Maintenance	12,246
POP Willamette River Dredging	2010	1 to 1.5	5	503	Maintenance	11,712
USACE Post Office Bar	planned for 2011		2	--	Maintenance	unknown

Table 3.2-6. LWR Dredging Projects in and Adjacent to the Study Area (1997-2010).

		Dredge Location				
Description	**Fiscal Year Dredged**	**River Mile or Channel Station Positioning**	**Terminal**	**Berth**	**Purpose**	**Quantity (cubic yards)**
ConocoPhilips	planned for 2011	7.5 to 7.8	Willbridge	ConocoPhilips Dock	Maintenance	NA
Chevron Products Company	planned for 2011	7.5 to 7.8	Willbridge	Chevron Dock	Maintenance	~20,000

Notes:

Italicized projects were obtained from USACE Public Notices.

[a] Permit authorized dredging of up to 1,500 cubic yards of material annually between September 8, 1999 to August 31, 2004.

FY - fiscal year
LWR - lower Willamette River
POP - Port of Portland
USACE - U.S. Army Corps of Engineers

Table 4.2-1. DEQ ECSI Sites, DEQ Status, and Date of Site Summary.

ECSI[a]	Site	Site Status[b]	Site Summary (and Addendum)	Date of Site Summary (and Addendum)[c]
794	ACF Industries	CNFA	Site Summary Addendum	4/26/2005 2/28/2007
2446	Alder Creek Lumber Company	Site screening recommended	Site Summary	4/26/2005
2261	American Machine & Gear	NFA	No Site Summary	NA
970	Anderson Brothers Property	NFA	Site Summary	5/31/2005
1528	ARCO Bulk Terminal	RI complete, RA	Site Summary Addendum	9/17/2004 2/28/2007
398	Arkema	Consent Decree	Site Summary	2/28/2007
1430	Automatic Vending	PA recommended	No Site Summary	NA
2361	Babcock Land Company	Not in DEQ CUP	Site Summary	3/8/2005
1026	Brazil & Co.	SI recommended	No Site Summary	NA
2362	Burgard Industrial Park - Boydstun Metals	RI	Site Summary	3/8/2005
	Burgard Industrial Park - Noncontiguous	RI	Site Summary	3/8/2005
2375	Burgard Industrial Park - Portland Container Repair	RI	Site Summary	3/8/2005
2355	Burgard Industrial Park - Schnitzer Steel	RI	Site Summary	3/8/2005
138	Burgard Industrial Park - NW Pipe	RI	Site Summary	3/8/2005
2454	Calbag Metals - Front Avenue	NFA, stormwater reopened	Site Summary Addendum	3/8/2005 2/28/2007
271	Cascade General/Portland Shipyard (OU1, OU2, Swan Island Upland Fac. - OU3)	RI	Site Summary	2/28/2007
5136	Centennial Mills	DEQ SI	No Site Summary	NA
4920	Chapel Steel	Other remedial action recommended	No Site Summary	NA
2424	Chase Bag	Not in DEQ CUP	Site Summary	3/8/2005
1281	Chevron Asphalt Refinery	Source control decision	Site Summary	2/28/2007
2426	Christenson Oil	XPA	Site Summary	4/26/2005
2452	City of Portland - BES WPCL	MOA, NFA	Site Summary	5/31/2005
2425	City of Portland Outfalls (RM 2.7 to 9.8)	SE	No Site Summary	NA
29	Columbia American Plating	Consent Decree	Site Summary	4/26/2005
3295	Consolidated Metco	XPA	Site Summary	3/8/2005
2363	Crawford Street Corp	XPA	Site Summary	3/8/2005
877	Crosby & Overton	SI recommended	No Site Summary	NA
36	Doane Lake Study Area	Other remedial action recommended	No Site Summary	NA
111	Dura Industries	SI recommended	No Site Summary	NA
3901	End of Swan Island Lagoon	Site screening recommended	No Site Summary	NA
397	ESCO Corp. - Willbridge Landfill	SI recommended	No Site Summary	NA
4409	ESCO Landfill - Sauvie Island	PA	No Site Summary	NA
112	ESCO Plant #3	SI recommended	No Site Summary	NA
141	Evraz Oregon Steel Mills	RI	Site Summary	2/28/2007
137	ExxonMobil Oil Terminal	RD/RA	Site Summary Addendum	10/10/2005 2/28/2007
2364	Foss Maritime/Brix Marine	Source control decision	Site Summary	10/10/2005
2365	Fred Devine Diving and Salvage	Source control decision	Site Summary	4/26/2005
44	Fred Meyer - Swan Island	NFA	No Site Summary	NA
2366	Freightliner TMP	RI	Site Summary	5/31/2005
115	Freightliner TMP2 (Parts Plant)	RI	Site Summary	4/26/2005
1239	Front Avenue LP Properties	XPA	Site Summary Addendum	9/1/2005 2/28/2007
84	Gasco (NW Natural, Koppers, Pacific Northern Oil)	RI	Site Summary	2/28/2007
4003	GE Decommissioning	XPA	Site Summary	2/28/2007
2370	Georgia Pacific - Linnton (Morse Bros.)	NFA	Site Summary	3/8/2005
1840	GI Trucking	Site screening recommended	No Site Summary	NA
2378	Glacier NW	Other recommendation	No Site Summary	NA
2440	Goldendale Aluminum	NFA	Site Summary	2/28/2007
49	Gould Electronics, Inc./ NL Industries	Remedy implemented, NFA	Site Summary	9/1/2005
117	GS Roofing Products (Genstar)	Other remedial action recommended	Site Summary	4/26/2005
404	Guilds Lake	Operations & Maintenance	No Site Summary	NA
1155	Gunderson	RI	Site Summary Addendum	10/10/2005 2/28/2007

Table 4.2-1. DEQ ECSI Sites, DEQ Status, and Date of Site Summary.

ECSI[a]	Site	Site Status[b]	Site Summary (and Addendum)	Date of Site Summary (and Addendum)[c]
988	Hercules, Inc.	SI recommended	No Site Summary	NA
935	Industrial Battery Building	NFA	No Site Summary	NA
260	Island Holdings	NFA	No Site Summary	NA
2371	Jefferson-Smurfit	NFA	Site Summary	3/8/2005
2441	Joseph T. Ryerson & Son	Not in DEQ CUP	Site Summary	5/31/2005
1096	Kinder Morgan Linnton Terminal (GATX)	RI complete, remedial action	Site Summary	9/17/2004
2442	Kittridge Distribution Ctr.	CNFA	Site Summary	9/1/2005
2372	Lakeside Industries	XPA	Site Summary	4/26/2005
1189	Linnton Oil Fire Training Grounds	NFA	Site Summary	9/1/2005
2373	Linnton Plywood	NFA proposed	Site Summary	3/8/2005
4461	Lynden Farms	SI recommended	No Site Summary	NA
4797	Mar Com North	NFA	Site Summary Addendum	10/10/05 2/28/2007
2350	Mar Com South	RI	Site Summary Addendum	10/10/2005 2/28/2007
2352	Marine Finance Corporation (Hendren Tow Boats)	CNFA	Site Summary Addendum	9/15/2004 2/28/2007
134	McCall Oil	Source control decision	Site Summary	9/15/2004
74	McCormick & Baxter Creosoting	NFA	Site Summary	9/15/2004
135	McWhorter Inc.	NFA	Site Summary	4/26/2005
1390	Metro Central Transfer Station	XPA recommended	No Site Summary	NA
1307	Mogul Corp.	NFA	No Site Summary	NA
81	Mt. Hood Chemical Corp.	RA	No Site Summary	NA
1328	Mt. Hood Chemical Property	NFA	No Site Summary	NA
966	Nudelman & Son	SI recommended	No Site Summary	NA
2374	Olympic Pipeline Co.	Not in DEQ CUP	Site Summary	5/31/2005
3342	Olympic Pipeline Portland Delivery Facility	Independent Cleanup Program	Site Summary	5/31/2005
1036	Owens Corning - Linnton	Source control decision	Site Summary	3/8/2005
5055	Penske Truck Leasing - NW Yeon	NFA	No Site Summary	NA
1345	Petroleum Release - N Edgewater St.	SI recommended	No Site Summary	NA
3377	Port of Portland - Terminal 1 North	RI	Site Summary	2/28/2007
2642	Port of Portland - Terminal 1 South	CNFA	Site Summary	2/28/2007
2769	Port of Portland - Terminal 2	XPA recommended	Site Summary	2/28/2007
2356	Port of Portland - Terminal 4, Slip 1	RI	Site Summary	2/28/2007
272	Port of Portland - Terminal 4, Slip 3	RD/RA	Site Summary	2/28/2007
172	Port of Portland - Terminal 4, Toyota Auto Storage	NFA	Site Summary	2/28/2007
100	Portland Terminal Railroad Co.	Source control decision	No Site Summary	NA
2353	PGE - Harborton	Source control decision	Site Summary	5/31/2005
3976	Portland General Electric - Substation E	NFA	No Site Summary	NA
2013	Premier Edible Oils (Schnitzer Investment)	RI	Site Summary	9/15/2004
155	Rhone Poulenc (SLLI)	RI	Site Summary	2/28/2007
5307	Rivergate Industrial Park Tract O Property	Site investigation	No Site Summary	NA
2376	RK Storage and Warehousing	Not in DEQ CUP	Site Summary	9/1/2005
2437	RoMar Realty of Oregon	NFA	Site Summary	5/31/2005
2104	Santa Fe Pacific Pipeline	Not in DEQ CUP	Site Summary	9/1/2005
1347	Schmitt Forge	NFA	No Site Summary	NA
5324	Schnitzer Burgard Industrial Park	Source control decision	No Site Summary	NA
395	Schnitzer Investment - Doane Lake (Air Liquide America Corp.)	NFA under CERCLIS, XPA	Site Summary	5/31/2005
2377	Shaver Transportation	NFA	Site Summary	9/1/2005
183	Siltronics	RI, Unilateral Order	Site Summary	2/28/2007
2980 3343 4696	South Rivergate Industrial Park JR Simplot Ash Grove Cement	Other remedial action recommended	Site Summary	5/31/2005
2630	St. Helens Road Petroleum Contamination	Site screening recommended	No Site Summary	NA
1067	St. Johns - Keeler #2 Right-of-Way	Further investigation of area facilities recommended	No Site Summary	NA
1989, 5130	ST Services/Shore Terminal	Source control decision	Site Summary	9/1/2005
1235	Sulzer Bingham Pumps	XPA	Site Summary Addendum	5/31/2005 2/28/2007
2117	Texaco/Equilon Enterprises - Pipeline	RI	Site Summary	3/8/2005

Table 4.2-1. DEQ ECSI Sites, DEQ Status, and Date of Site Summary.

ECSI[a]	Site	Site Status[b]	Site Summary (and Addendum)	Date of Site Summary (and Addendum)[c]
169	Texaco/Equilon Enterprises - Bulk Terminal	RI	Site Summary	3/8/2005
170	Time Oil	BRA	Site Summary	2/28/2007
2367	Transloader International (General Construction)	Not in DEQ CUP	Site Summary	9/1/2005
277	Triangle Park (Riedel Environmental)	RI	Site Summary	10/10/2005
1160	Trumbull Asphalt Plant	DEQ SE	Site Summary	4/26/2005
176	Union Carbide	Operations & Maintenance	No Site Summary	NA
178	UPRR Albina Yard	RI	Site Summary	2/28/2007
2017	UPRR St. Johns Tank Farm	CNFA	No Site Summary	NA
1641	USACE - Portland Moorings	FFA	Site Summary	3/8/2005
1338	U.S. Coast Guard - Marine Safety Station	Source control decision	Site Summary	4/26/2005
5109	U.S. Navy and Marine Reserve Center	SI recommended	No Site Summary	NA
330	Van Waters and Rogers	RCRA Corrective Action Implemented	Site Summary	5/31/2005
2423	V&K Service	Site screening recommended	No Site Summary	NA
333	West Coast Adhesive Co.	RA recommended	No Site Summary	NA
2066	Willamette Cove	RI	Site Summary	2/28/2007
3172	Willamette River Westside CSO Construction	Negotiations	No Site Summary	NA
1549	Willbridge Terminal	RI/FS	Site Summary Addendum	9/17/2004 2/28/2007
3395	Willbridge Switching Yard	XPA	Site Summary	2/28/2007
RM 11 to 11.8				
No ECSI #	Former Albina Engine and Machine Works Shipyard	See #3036, #5117, #5449, #5561and #4497 below	Site Summary	11/20/2007
5328	Abandoned Tanner Creek Sewer	SI recommended	No Site Summary	NA
4590	Albers Mill	RI recommended	No Site Summary	NA
4775	Boxer NW Building	Not in DEQ CUP	No Site Summary	NA
1019	Cascade Brake Products	Not in DEQ CUP	No Site Summary	NA
5561	CDL Pacific Grain/Cargill		Site Summary	11/20/2007, with Albina site summary
2500	Courtyard Hotel	NFA	No Site Summary	NA
2313	Gender Machine Works, Inc.	CNFA	No Site Summary	NA
5449	Glacier NW	DEQ SI	No Site Summary	11/20/2007, with Albina site summary
1080 1624 4960	Hoyt Street Railyard (former) Hoyt Street Railyard - Pearl Court Pearl Building	RD/RA	No Site Summary	NA
5443	HSRY - Blocks 19,21,22,25 - The Fields	Engineering control	No Site Summary	NA
1301	Mammal Survey & Control Service	Not in DEQ CUP	No Site Summary	NA
1302	Master Chemical Inc.	NFA	No Site Summary	NA
5117	PacifiCorp Albina Riverlots	Source control decision	Site Summary	11/20/2007, with Albina site summary
5117	PacifiCorp Knott Substation	Source control decision	No Site Summary	NA
3067	RiverTec Property	Not in DEQ CUP	No Site Summary	NA
1139	Tarr Inc.	RI	No Site Summary	NA
3036	Tucker Building	CNFA	Site Summary	11/20/2007, with Albina site summary
1962	Union Station Agricultural Marketing Center Site	RD/RA	No Site Summary	NA
2407	Union Station Horse Barn	PNFA	No Site Summary	NA
1885	Union Station - Parcel B South	RD/RA	No Site Summary	NA
1414	Union Station - Track #5	CNFA	No Site Summary	NA
2183	US Postal Service Processing & Distribution Center	ROD	No Site Summary	NA
3215	Valvoline	NFA	No Site Summary	NA
2761	Vermiculite Northwest, Inc (former)	CERCLIS-led	No Site Summary	NA
4535	Waterfront Pearl Condominiums Construction Site	NFA	No Site Summary	NA
4497	Westinghouse	Cleanup occurring under TSCA	Site Summary	11/20/2007, with Albina site summary
1331	Wilbur-Ellis Co. - Portland	NFA	No Site Summary	NA
776	Williamson & Bleid	Not in DEQ CUP	No Site Summary	NA
ECSI Sites within Shared Conveyance Systems[d]				
1820	ANRFS	RI recommended	No Site Summary	NA
1076	Ashland Chemical	XPA recommended	No Site Summary	NA
5059	Calbag-Nicolai	Source control decision	No Site Summary	NA
1405	Carson Oil	RI recommended	No Site Summary	NA
4784	Container Management	Source control decision	No Site Summary	NA

Table 4.2-1. DEQ ECSI Sites, DEQ Status, and Date of Site Summary.

ECSI[a]	Site	Site Status[b]	Site Summary (and Addendum)	Date of Site Summary (and Addendum)[c]
4015	Container Recovery	CNFA	No Site Summary	NA
4008	Front Avenue MP	NFA	No Site Summary	NA
TSCA site, no ECSI #	GE - NW 28th	Cleanup occurring under TSCA	No Site Summary	NA
4655	Greenway Recycling	CNFA	No Site Summary	NA
2406	PGE - Forest Park	Source control decision	No Site Summary	NA
5103	SFI	NFA	No Site Summary	NA
1196	Galvanizers	Source control decision	No Site Summary	NA
146	Paco Pumps	NFA	No Site Summary	NA
69	Wilhelm Trucking	Source control decision	No Site Summary	NA

Notes:

[a] ECSI sites that are shown on this table but are outside the boundary shown on Map 4.2-1 include ECSI #87 (Nurnberg Scientific Co.), #1306 (Mocks Bottom Concrete and Debris Landfill), #1897 (Sylvan Cleaners), #3301 (Forest Park Drainage Tunnel), #3807 (Roadway Express). In addition, the individual terminals that are a part of Willbridge Bulk Fuel Facility (i.e., ECSI #25 - Chevron, #160 - Shell Oil, and #177 - Unocal) are not depicted on this map.

[b] Obtained from http://www.oregondeq.com/lq/ECSI/ecsiquery.asp?listtype=lis&listtitle=Environmental+Cleanup+Site%20Information+Database

[c] Information on sites with site summaries was updated on the basis of USEPA/DEQ comments on the Round 2 Report (USEPA 2008b) in November 2008. Information on sites with no site summary was obtained from the above website between December 2008 and June 2009, and updated July 2011.

[d] Based on independent investigations performed in 2007-2008, as documented in Table 4.4-3.

BRA - baseline risk assessment
CERCLIS - Comprehensive Environmental Response, Compensation and Liability Act
CNFA - Conditional No Further Action
CUP - Cleanup Program
DEQ - Oregon Department of Environmental Quality
ECSI - Environmental Cleanup Site Information
FFA - Federal Facilities Agreement
FS - feasibility study
MOA - memorandum of agreement
NA - not applicable
NFA - No Further Action
PA - preliminary assessment
PNFA - Partial No Further Action
RCRA - Resource Conservation and Recovery Act
RD/RA - Record of Decision/Remedial Action
RI - remedial investigation
ROD - Record of Decision
SE - site evaluation
SI - site investigation
TSCA - Toxic Substances Control Act
XPA - expanded preliminary assessment

Table 4.2-2. Upland Site Pathway Assessment Summary.[a]

Site Name	ECSI #	River Mile	River Bank	Potential Upland and Overwater Sources	Industrial Sector (Historical and Current)	Pathway Summary										
						Groundwater			Direct Discharge				Overland Transport		Riverbank Erosion	
									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
ECSI Sites within Study Area																
ACF Industries	794	3.7	West	Former UST area, sandblasting, painting, adjacent rail tracks	Electrical Production, Metals	4,7	H-c, C-d	?	1,4,7 (Stormwater Ditch)	H-b, C-d		N/A		H-d, C-d		N/A
Alder Creek Lumber Co.	2446	2.7	West	Wood waste leachate, private outfalls, overwater dock, potentially contaminated dredge material	Wood Products	NS	H-c, C-c	?	11	H-c, C-d		H-b, C-b	11	H-c, C-c	11	H-c, C-c
Anderson Brothers	970	8	West	Former UST, paint spill area, historic waste disposal system	Bulk Fuel		H-d, C-d	?	1,3,4,5,6,7,9	H-a, C-d		N/A		N/A		N/A
ARCO	1528	4.9	West	Truck-loading rack area, remanufacturing warehouse, tank farms, historical spill areas, groundwater plume, seepage from interceptor well and seawall, dock operations	Bulk Fuel, Shipbuilding, Wood Products	1,3,4,7	H-a, C-b	Y	1,3,4,7	H-b, C-c	3,4,7	H-a, C-a		N/A		N/A
Arkema	398	7.3	West	Former unlined MPR pond and trench, historic discharge through pipe, unpaved areas with contaminated soils, historic spill areas, stormwater outfalls, contaminated groundwater plume	Chemical Manufacturing	1,2,5,7,10	H-a, C-a	Y	5	H-a, C[b]-a	4,10	H-a, C-d	NS	H-c, C-d	5,7,10	H-a, C-a
Babcock Land Co.	2361	4.4	West	Foundry sand, historic dock operations	Wood Products	NS	H-c, C-c	?	NS	H-c, C-c	NS	H-c, C-d	NS	H-c, C-c	NS	H-c, C-c
Burgard Ind. Park - Boydstun Metals, Portland Blast Media	2362	4.1	East	Oil storage area, contaminated soils, stormwater outfall, unknown source	Metals, Shipbuilding	1	H-c, C-c	N	3,6,7	H-c, C-c		N/A		N/A		H-d, C-d
Burgard Ind. Park - Noncontiguous Properties	N/A	4.1	East	Former shipyard sewer and stormwater discharges, groundwater contamination on NW Pipe leased property (2)	Metals, Shipbuilding	1,2,4	H-c, C-c	N	11	H-c, C-c		N/A	NS	H-c, C-c	NS	H-c, C-c
Burgard Ind. Park - NW Pipe	138	4	East	ASTs and 55-gallon drums, pipe lining and coating building, transformer storage area, asphalt dipper tank, industrial well, dust suppressant use, alleged solvent and petroleum dumping areas, catch basins and storm drains	Metals, Shipbuilding	1,3,4	H-c, C-d	N	1,3,4,6,7	H-b, C-b[c]		N/A		N/A		N/A
Burgard Ind. Park - Portland Container Repair	2375	4	East	PCE groundwater contamination (source unknown), PCB-contaminated soil (since removed), fuel truck parking area, wash pad area	Metals, Shipbuilding	1	H-c, C-c	N	4(?)	H-c, C-c		N/A		N/A		N/A
Burgard Ind. Park - Schnitzer Steel, Calbag Metals	2355	4	East	Former NW Oil Co. tanks, former sanitary sewer and stormwater discharges, former shipyard shipways, ASR on ground surface, storm drains and outfalls, over-water activities	Bulk Fuel, Metals, Commodities, Shipbuilding	1,4,7	H-a, C-c	N	1,4,6,7	H-a, C-b[c]	1,3,4,7	H-a, C-a	NS	H-c, C-c	3,4,6,7	H-c, C-c
Calbag Metals - Front Ave.	2454	8.5	West	Metal recycling operations, incinerator ash, stormwater runoff to Outfall 19	Metals		H-d, C-d	N	6,7,9	H-a, C-a[c]		N/A		N/A		N/A
Cascade General (Portland Shipyard /Vigor Industrial) (OU1)	271	8.5	East	Paint shed and blast booth area; BWTP; Buildings 43,50, and 80 areas; Building 73, 4, and 58; WSI storage area; substations; USTs; N. Channel Ave. fabrication site; drydocks and berths	Metals, Shipbuilding, Wood Products	1,7	H-c, C-c	N	1,3,4,6,7,8,9	H-b, C-a[c,b]	3,4,7,8,9	H-a, C-a	NS	H-c, C-c	NS	H-c, C-c
Chase Bag	2424	9.2	West	Subsurface groundwater VOC plume, former UST, observed leaking drums along east and south boundaries, observed pool of petroleum substance	Chemical Manufacturing	1	H-c, C-c	?	1,2,7	H-c, C-c		N/A		N/A		N/A
Chevron Asphalt Refinery	1281	8	West	Historic spills and boilovers	Asphalt	3,4,7	H-c, C-d	Y	3,4,7	H-a, C-d[c,1]		N/A		N/A		N/A
Christenson Oil	2426	8.8	West	Historic spills, stormwater conveyance, unnamed creek	Bulk Fuel	NS (1)[d]	H-c, C-c	?	1,3,4,7	H-a, C-c[c]		N/A		N/A		N/A
City of Portland - BES WPCL	2452	6.1	East	Historic operations (lumber mill, fruit box manufacturing), fill and debris material, subsurface electrical conduit, historic lumber mill deck. Currently, WPCL.	Wood Products	11	H-c, C-d	N	11	H-c, C-d	NS	H-c, C-d	4,7	H-c, C-d	NS	H-c, C-d

Table 4.2-2. Upland Site Pathway Assessment Summary.[a]

Site Name	ECSI #	River Mile	River Bank	Potential Upland and Overwater Sources	Industrial Sector (Historical and Current)	Pathway Summary										
						Groundwater			Direct Discharge				Overland Transport		Riverbank Erosion	
									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
City of Portland Outfalls	2425	2.7 to 9.8	East/ West	Stormwater and/or combined sewer outfalls draining multiple properties	NA				Detailed Information provided for Specific Outfalls in Table 4.4-1	H-a[j], C-a[j]						
Columbia American Plating	29	9.5	West	Metal plating operations, spills and releases	Metals	1,2,7,10	H-c, C-d	N	1,2,3,6,7,9,10	H-a, C-a		N/A		N/A		N/A
Consolidated Metco	3295	2.8	East	PAH-contaminated fill material, cutting fluid spills, catch basins and storm drains	Steel Manufacturing	3,4	H-c, C-c	N	3,4,6,7,9	H-b, C-a[c,1]		N/A		N/A		N/A
Crawford Street Corp.	2363	6.5	East	Historic and current manufacturing operations, historic and current site runoff, sandblast fill material, former UST, electrical transformer, railroad right-of-way, historic dock operations, historic private outfalls, beach metal debris	Steel Manufacturing, Wood Products	11	H-c, C-d	N	1,3,4,6,7	H-b, C-c	1,3,4,7	H-b, C-d	1,3,4,6,7	H-b, C-c	1,3,4,6,7,9	H-b, C-c
ESCO Landfill - Sauvie Island	4409	2.6	West	Repository of non-hazardous waste from ESCO steel foundries. Permitted solid wastes include bag house dust, refractory bricks, and spent mold sands (zircon-rich and other suitable sands)	Steel Manufacturing	7,9,10	H-c, C-c	N	NS	H-c, C-c[c]		N/A		N/A		N/A
Evraz Oregon Steel Mills	141	2.4	East	Former Ramsey Lake sump, riverbank fill area, stormwater collection system, historic overwater spills from oil sump transfers	Steel Manufacturing	4	H-c, C-d	Y (H)	3,4,6,7	H-a, C[b,c,g]-c	1,2,4	H-a, C-d		N/A	6,7	H-a, C-a
						7	H-c, C-c	N								
ExxonMobil Oil Terminal	137	5	West	North and Center tank farms, fuel loading rack, over-water fuel transfer spills	Bulk Fuel	1,3,4,7	H-a, C-b	Y	1,3,4,7	H-b, C-c[c]	1,3,4	H-a, C-a		H-d, C-d		H-c, C-d
Foss Maritime/Brix Maritime	2364	5.7	West	Former gasoline and lube oil UST and pipelines, former gasoline dispenser area, former 30-weight oil pipeline area, current lube oil and diesel UST and pipelines, catch basins, transformers, overwater activities (vessel servicing and emissions)	Bulk Fuel	1,3,4,7	H-b, C-d	N	1,3,4	H-c, C-d	1,2,3,4,7	H-a, C-a	NS	H-c, C-d	NS	H-c, C-c
Fred Devine Diving and Salvage	2365	8.4	East	Maintenance operations, former USTs, ASTs, PGE transformers, catch basins, overwater spills, vessel emissions, storage area NE of warehouse	Other	NS	H-c, C-d	?	2,3,4,7,9	H-b, C-d	4	H-a, C-b	4,7,8,9	H-c, C-d	NS	H-c, C-d
Freightliner TMP	2366	8.5	East	Former USTs, former wheel paint booth, stormwater discharges	Other	1,2,4	H-c, C-c	Y?	3,6,7	H-b, C-c[c]		N/A		N/A		N/A
Freightliner TMP2 (Parts Plant)	115	9.3	East	Former UST, former wet filter paint booths, stormwater discharges	Metals	1,2,4	H-c, C-c	Y?	7	H-b, C-c[c]		N/A		N/A		N/A
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West	Slag fill material, Parcels 1, 2, and 3 former and current operations, caustic-lube oil and graphic lube oil discharges to storm drain, overwater activities	Metals	1,2,3,4,6,7	H-c, C-c	N	1,2,3,4,6,7,9	H-b, C-c[c]	4	H-b, C-b	1,2,3,4,7	H-c, C-d	7	H-c C-c
Gasco (NW Natural, Koppers, Pacific Northern Oil)	84, 2348	6.5	West	Former retort area, former tar processing area, former light oil plant Kopper Co. Plan/Current KI tank farm, former naphthalene plant, former coke oven area, former pitch plant/tar loading area, former tar settling ponds, former Kopper Co./Current KI pencil pitch storage area	Bulk Fuel, Manufactured Gas, Commodities	1[e],2[f],3,4,7,10	H-a, C-a	Y	1[e],2[f],3,4,7, 10	H-a, C[b]-a	3,4	H-a, C-b	1[e],2[f],3,4,7,10	H-a, C-b	1[e],2[f],3,4,7	H-a, C-a
GE Decommissioning	4003	9.5	West	Former equipment handling and pressure washing areas, report of subsurface oil in storage yard, former transformer pit outlet drain, catch basins and storm drains	Electrical Production	4,6,7	H-c, C-c	N	3,4,6,7	H-a, C-a[l]		N/A		N/A		N/A
Georgia Pacific - Linnton	2370	3.6	West	Gasoline UST and soil remediation pile, ASTs, former ACF site, former wood-treating plant, former Linnton Oil fire training grounds, dock and former overwater fueling	Bulk Fuel, Commodities, Wood Products	1,3	H-c, C-d	N	1,3,4	H-c, C-d	NS	H-b, C-b		H-d, C-d	NS	H-c, C-c

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									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
Goldendale Aluminum	2440	10	East	Former alumina and pitch handling operations, ASTs, former USTs, storage buildings, transformers, outfalls, overland runoff areas, historic grain shipment facility, dock operations and spills	Commodities		H-d, C-d	N	3,4,7	H-b, C-d[c]	3,4,7	H-a, C-b	1,2,3,4,7	H-c, C-d		N/A
Gould Electronics/NL Industries	49	7.2	West	Former smelter and other site operations, historical landfilling operations, surface and subsurface soil contamination, former East Doane Lake sediment, current onsite containment facility	Steel Manufacturing, Metals		H-d, C-d	N	1,3,5,7,10	H-a, C-d[l]		N/A		N/A		N/A
GS Roofing	117	7.5	West	Facility operations, former USTs, storm sewer catch basins/drains, and overwater separators, former wastewater discharge, landfilled materials, railroad spur, finished products storage area	Asphalt	1,2,4,7	H-c, C-c	Y(H)	1,3,4,7	H-b, C-c[b]		N/A	NS	H-c, C-c	NS	H-c, C-c
Gunderson	1155	8.8	West	Former TCA tank, marine paint and blast areas, launchways, former salvage yard, hazardous materials storage areas, marine barge launchways, railcar storage on outfitting dock, fill material in Area 3	Metals, Shipbuilding	1,3,4,7	H-a, C-a	N	4,6,7,8,9	H-a, C-a	1,7	H-a, C-b	1,3,6,7	H-a, C-a	1,3,6,7	H-b, C-a
Jefferson Smurfit	2371	4	East	Former fuel ASTs and USTs, stormwater outfalls	Wood Products		H-d, C-d	?	4,7	H-c, C-d[c]		N/A		N/A		N/A
Kinder Morgan Linnton Terminal (GATX)	1096	4.1	West	Petroleum fuel storage areas, dock operations	Bulk Fuel	1,3,4,7	H-a, C-b	Y	1,3,4,7	H-c, C[b]-c	1,2,4	H-a, C-a		H-d, C-d	NS	H-c, C-c
Kittridge Distribution Center	2442	8.4	West	Historic acetylene plant and lime recovery	Metals		H-d, C-d	N	1,4,6,7,10	H-a, C-d		N/A		H-c-C-d		N/A
Lakeside Industries	2372	8.5	West	Former dry wells, Gunderson VOC groundwater plume, dock operations	Bulk Fuel	1	H-c, C-c	N	NS	H-c, C-c		H-a, C-b	NS	H-c, C-d	NS	H-c, C-d
Linnton Oil Fire Training Grounds	1189	3.5	West	Residual contaminated soil pockets (remaining after remediation), historical main training area, upper and lower ponds, historical north drainage system (direct discharge to river)	Electrical Production		H-d, C-d	N	3,10	H-a, C-d		N/A		H-d, C-d		N/A
Linnton Plywood (Columbia River Sand and Gravel)	2373, 2351	4.7	West	Eroded bank at maintenance shop area; private outfalls, tug and barge operations at CRSG and historic log operations	Wood Products	4,7,9	H-c, C-d	N	1,2,3,4,6,7,9	H-b, C[b,c]-d	4,7	H-a, C-b	3,4,6,7	H-b, C-d	4,7	H-c, C-d
Mar Com - North Parcel	4797	5.6	East	Stained soils, sandblast grit piles, contaminated riverbank soil	Metals, Shipbuilding		H-d, C-d	N		H-d, C-d		N/A	4,6,7	H-b, C-d	1,2,3,4,7,8,9	H-c, C-d
Mar Com - South Parcel	2350	5.6	East	Former sawmill, Building C, steel fabrication building, former warehouse, machine shop, compressor shed, paint booth, contaminated soil in knoll and SW corner	Wood Products, Shipbuilding	1,2,3,4,7,8,10	H-c, C-d	N	1,2,3,4,6,7,8,9	H-b, C-d[c]	1,2,3,4,7,8,9	H-a, C-d	1,2,3,4,6,7,8,9	H-b, C-d	1,2,3,4,7,8,9	H-b, C-c
Marine Finance (Hendren Tow Boats)	2352	5.8	West	Former metal salvage operation, former USTs, former drum storage area, former warehouse, pooled water below storm drain, overwater dock, stormwater pipe, barge/tug moorage	Metals, Shipbuilding		H-d, C-d	N	1,3,4,7,8	H-b, C-d	1,2,3,4,7	H-a, C-b	1,3,4,7,8	H-b, C-d	1,2,3,4,7,8,10	H-b, C-d
McCall Oil	134	7.9	West	Bulk fuel storage, marine fuel transfers, rail fuel transfers, former CCA and solvent storage, drum storage, underground pipeline corridor, catch basins, upgradient facilities (Chevron, TFA), dock operations	Chemical Manufacturing, Bulk Fuel	1,2,3,4,7	H-c, C-d	Y	1,2,3,4,6,7,9	H-b, C-c	1,2,3,4	H-a, C-a		H-d, C-c	2,3,7	H-c, C-c
McCormick & Baxter Creosoting	74	7	East	Former onsite waste disposal area, former central processing area, former tank farm area, former small waste disposal areas and trench, former dock operations	Wood Products	3,7,10	H-a, C-d	Y	3,7,10	H-a, C-d	3,7,10	H-a, C-d	3,7,10	H-a, C-d	3,7,10	H-a, C-d
McWhorter Inc.	135	8.8	West	Historic spills or releases from tanks and pipelines, former creek	Chemical Manufacturing	NS (1,3,4)[d]	H-c, C-d	?	1,2,3,4,9	H-a, C-c		N/A		N/A		N/A

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									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
Metro Central Transfer Station	1398	7.2	West	Former steel warehouses, household hazardous waste drop-off site	Steel Manufacturing	1,5,7	H-c, C-c	?	1,2,5,6,7,10	H-c, C-a[l]		N/A		N/A		N/A
Mt. Hood Chemical Corp.	81	8.5	West	Former commercial cleaning product packaging and distribution, chlorinated VOC plume	Chemical Manufacturing	1	H-c, C-c	?	1	H-c, C-c[l]		N/A		N/A		N/A
Olympic Pipeline	2374	3.5-7.9	West	Pipeline pump station (area of 1995 spill), AST farm, soil stockpile area, injection pump area	Bulk Fuel	1,3,4,7	H-c, C-d	N	11	H-c, C-c		N/A		N/A		N/A
Owens Corning - Linnton	1036	3.8	West	Historic releases in pole barn storage area, former wood-processing area, former UST, process area releases in northern portion, historic releases during product unloading at dock	Bulk Fuel, Wood Products		H-d, C-d	N	11	H-c, C-c[c]	3,4	H-b, C-d	3,4	H-c, C-d	3,4	H-c, C-d
PGE Substation E	3976	10.4	West	Former UST	Electrical Production	NS	H-c, C-d	?	H-c, C-d	N/A		N/A		N/A		N/A
POP - Terminal 1 South (Riverscape)	2642	11	West	B-5 area, B-37 (dry well area), B-38 area, B-102 area, B-3, B-11, B-97, berths	Commodities		H-c, C-d	N	11	H-c, C-d	NS	H-b, C-d		N/A	NS	H-c, C-d
POP - Terminal 1 North	3377	10.6	West	Suspected former UST, former wood-filled ravine, soil beneath Warehouse No. 101	Commodities, Shipbuilding, Wood Products	1,3,4,7	H-c, C-d	N	11	H-c, C-c	NS	H-b, C-d		N/A		H-d, C-d
POP - Terminal 2	2769	10	West	Gearlocker, former Buildings 3060 and 3070, former USTs, berths 201, 202, and 203	Commodities, Shipbuilding, Wood Products		H-d, C-d	N	3,4	H-c, C-c	NS	H-a, C-a		N/A	NS	H-c, C-d
POP - Terminal 4, Auto Storage	172	4.8 to 5.6	East	Completely paved storage yard	Commodities		H-d, C-d	N	11	H-c, C-d[c]		H-d, C-b		N/A		H-d, C-d
POP - Terminal 4, Slip 1	2356	4.3	East	Railroad tracks in western portion of OU1, former paint storage area in OU2, riverbank of Wheeler Bay	Bulk Fuel, Commodities		H-d, C-d	N	3,4,5,6,7,9	H-b, C-c	3,10	H-a, C-b		H-d, C-d	3,7	H-a, C-d
POP - Terminal 4, Slip 3	272	4.7	East	East end of Slip 3, pencil pitch in limited area of riverbank and Slip 3 bank	Bulk Fuel, Commodities	3,4	H-a, C-d	Y	3,5,7,9	H-a, C-a	3,4	H-a, C-d		H-d, C-d	3	H-a, C-a
Portland General Electric - Harborton	2353	3.3	West	Pockets of subsurface contaminated soils near monitoring wells	Electrical Production, Bulk Fuel		H-d, C-d	N		H-d, C-d		N/A		N/A	?	H-d, C-d
Portland Terminal Railroad Co. (aka Guilds Lake)	100	9.5	West	Railroad switching yard	Rail Yard	1,2,3,4,6,7,9	H-c, C-d	?	1,2,3,4,6,7,9	H-c, C-c		NA		NA		NA
Premier Edible Oils	2013	3.6	East	Near-surface and smear zone contaminated soil in the following areas: 1) former NW Oil Company tank farm, 2) southern shoreline, 3) vicinity of former PEO diesel USTs, 4) WWTP, 5) former process buildings and truck-loading area; historic outfalls	Chemical Manufacturing, Bulk Fuel, Commodities	1,2,3,4,7,9	H-c, C-a	Y	1,3,4,7	H-a, C-a	4,7	H-a, C-d	1,3,4	H-b, C-c	1,3,4	H-b, C-c
Rhone Poulenc (Starlink)	155	7.2	West	Former insecticide and herbicide areas, former lake area, former East Doane Lake	Chemical Manufacturing	1,5	H-a, C-a	Y	1,2,5,7,10	H-a, C-d[b,l]		N/A		N/A		N/A
RK Storage and Warehousing	2376	4.5	West	Former UST, former stockpiled oily sludge, former stockpiled sandblast grit	Wood Products, Chemical Manufacturing		H-d, C-d	N	NS	H-c, C-d	NS	H-a, C-d	NS	H-c, C-c	NS	H-c, C-c
RoMarRealty of Oregon	2437	3.8	East	Historic releases from stored scrap metal equipment and parts	Commodities, Wood Products		H-d, C-d	N	4,6,7	H-c, C-d		N/A		N/A		N/A
Ryerson and Son	2441	4.1	East	Historic stormwater trench to slip, USTs	Metals	NS	H-c, C-c	N	NS	H-c, C-c		N/A		N/A		N/A

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									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
Santa Fe Pacific Pipeline	2104	7	West	Containment area at the SFPP site	Bulk Fuel		H-d, C-d	Y		H-d, C-d		N/A		N/A		N/A
Schnitzer Investment - Doane Lake (Air Liquide)	395	7.3	West	Former discharge of calcium hydroxide into Doane Lake, former acetone UST, unknown source of subsurface contamination, compressor oil spill	Metals	6,7,10	H-c, C-c	N	1,2,6,7,10	H-a, C-a[l]		N/A		N/A		N/A
Shaver Transportation	2377	8.4	West	Diesel fuel AST, former diesel fuel USTs, storage building, overwater activities	Bulk Fuel		H-d, C-d	N		H-d, C-d	4	H-a, C-a		H-d, C-d		H-d, C-d
Siltronic	183, 84, 155	6.6	West	Gasco disposal ponds and adjacent lowland areas, Gasco disposal piles, potential Gasco waste product fill (WWTP area and Fab 1 and parking lot), potential disposal area, Koppers via north drainage ditch and City Outfall 22C, former Western Transportation tanks, Olympic pipeline, TCE release and associated plume	Manufactured Gas	1,2,3,4,7,10	H-a, C-a	Y	1,2,3,4,7,9,10	H-b, C[b,c]-a	3,4	H-b, C-d	1[h],2,3,4,7, 10	H-b, C-d	2,3,4,7,10	H-b, C-c
South Rivergate Ind. Park	2980	2.5 to 3.4	East	**JR Simplot:** warehouse storage and transfer of urea, truck storage and transfer of anhydrous ammonia, tank storage and transfer of diesel fuel, overwater transfer of urea, anhydrous ammonia, and diesel fuel. **Ash Grove Cement**: storage tanks and manufacturing	Commodities	NS	H-c, C-c	N	10	H-c, C[b]-c	10	H-a, C-a	NS	H-c, C-c	NS	H-c, C-c
ST Services/Shore Terminal (aka NuStar and Valero)	1989, 5130	5.4	West	Terminal tank farm, dock operations	Bulk Fuel	1,3,4	H-c, C-d	N	11	H-c, C-d	NS	H-a, C-a	NS	H-c, C-c	NS	H-c, C-d
Sulzer Bingham Pumps	1235	10.3	West	Former and existing USTs, historic sandblasting areas, hazardous waste storage area (including radioisotopes), electrical substations, historic welding and machine operations on piers, metal slag along riverbank	Metals, Steel Manufacturing, Shipbuilding	1,3,4,7,9,10	H-c, C-c	?	3,4,7	H-a, C-c	7	H-b, C-b	6	H-c, C-d	7	H-b, C-c
Swan Island Upland Facility (OU2)	271	8.4	East	Impacts to soil/riverbank from historical operations such as electrical substations, module fabrication/painting, and sandblast grit storage	Shipbuilding	1,3,7	H-c, C-c	N	3,4,7,9	H-c, C-c		N/A	NS	H-c, C-c	NS	H-c, C-c
Swan Island Upland Facility (OU3)	271	8.4	East	No current or historical sources are known to be present on the facility (which is almost entirely paved with asphalt-concrete)	Shipbuilding	NS	H-c, C-c	N	3,6,7,9	H-b, C-c[b]		N/A	NS	H-c, C-c	NS	H-c, C-c
Texaco/Equilon - Bulk Terminal	169	8.8	West	Pipe containment, ASTs, foundry sand, historic wooden flume and utilities (possibly a preferential GW pathway)	Bulk Fuel	1,3,4	H-c, C-c	Y	1,3,4,7	H-c, C-c[l]		N/A		N/A		N/A
Texaco/Equilon - Pipeline	2117	8.8	West	Dock and overwater fueling activities	Bulk Fuel	1,3,4	H-c, C-c	Y	1,3,4	H-c, C-d	1,3,4	H-a, C-d	NS	H-c, C-d	NS	H-c, C-d
Time Oil	170	3.5	East	Former wood treatment formulation and storage area, former Main Terminal tank farm, former Bell Terminal tank farm, dock operations	Bulk Fuel	1,2,3,4,7,10	H-c, C-d	Y	3,4,7,10	H-a, C-d[c]	NS	H-b, C-d	1,3,4,7,10	H-c, C-d	3,7	H-c, C-d
Transloader International	2367	5.6	West	Dolphin and floating walkway, outfall (ownership unknown)	Wood Products	NS (3,4)[d]	H-c, C-c	?	NS	H-c, C-d	NS	N/A	NS	H-c, C-c	NS	H-c, C-c
Triangle Park (Riedel Env.)	277	7.4	East	Former lumber mills, wood processing, rail car servicing, oil and fuel storage, former concrete plant, former sludge disposal pond, former ASTs and USTs, former power plant, possible underground fuel storage vault, former chemical storage areas, oil spill	Shipbuilding, Wood Products, Electrical Production	1,2,3,4,5,6,7,9, 10	H-c, C-a	N	1,2,3,4,5,6,7,10	H-b, C-a	3,4	H-b, C-d	1,2,3,4,5,6,7,10	H-b, C-a	1,2,3,4,5,6,7,10	H-b, C-a
Trumbull Asphalt Plant (Owens Corning Fiberglass)	1160	9.1	West	Asphalt tank farm, roofing production line (historic wastewater discharge to Outfall 18), boiler lines and fuel tank, fume line	Asphalt	1,4	H-c, C-c	Y	3,6,7,9	H-b, C-c		N/A		N/A		N/A
Union Carbide	176	4	East	Former calcium carbide and ferroalloy processing facility, electrical substation, portion of stormwater runoff directed to Willamette	Metals, Steel Manufacturing		N/A		1,3,4,5,6,7,9,10	H-c, C-c		N/A		N/A		N/A

Table 4.2-2. Upland Site Pathway Assessment Summary.[a]

Site Name	ECSI #	River Mile	River Bank	Potential Upland and Overwater Sources	Industrial Sector (Historical and Current)	Pathway Summary										
						Groundwater			Direct Discharge				Overland Transport		Riverbank Erosion	
									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
UPRR Albina Yard	178	10 to 11	East	Existing and former fueling areas, locomotive washing area, wastewater treatment plant, freight car repair shop (former paint stripper area, former UST)	Rail Yard	2,3,4,7,9	H-c, C-d	N	2,3,4,6,7,9	H-a, C-a	NS	H-b, C-d		H-d, C-d	6	H-c, C-d
UPRR St. Johns Tank Farm	2017	4.6	East	Petroleum-contaminated soil	Rail Yard	3,4,7	H-c, C-d	N	3,4,7	H-c, C-d		N/A		N/A		N/A
US Coast Guard - Marine Safety Station	1338	8	East	Dock and overwater maintenance operations, fuel storage and buried product lines, garage, buoy storage yard, former drum storage area, Mt. Jefferson building, catch basins	Wood Products		H-d, C-d	N	3,7	H-b, C-c[c]	1,2,3,4,7	H-b, C-a	NS	H-c, C-d	NS	H-c, C-d
USACE - Portland Moorings	1641	6	West	Former sandblasting area, oil-stained soil at west end of property, historic sunken barge	Shipbuilding	1,3,7,10	H-c, C-c	?	3,4,7,8	H-c, C-c	4	H-a, C-a	3,4,7,8	H-c, C-c	NS	H-c, C-c
U.S. Navy and Marine Reserve Center	5109	8.2	West	UST cleanup site	Other	NS	H-c, C-c	?	4	H-c, C-c		N/A		N/A		N/A
Van Waters and Rogers (Univar)	330	8.9	West	Former recycling area, loading dock area, spill areas	Chemical Manufacturing	1	H-d, C-c	Y	1,4,5,7	H-c, C-c[b,l]		N/A		N/A		N/A
Willamette Cove	2066	6.8	East	Spills and historic waste disposal practices on the west, central, and east parcels, slag and beach debris, contaminated groundwater and seeps, riverbank soil, historic drydock activities	Shipbuilding, Wood Products	1,3,4,7	H-c, C-c	N	NS	H-b, C-d	NS	H-b, C-d	NS	H-c, C-c	3,6,7	H-b, C-c
Willbridge Bulk Fuel Facility (Kinder Morgan, Chevron, ConocoPhilips)	1549	7.5	West	ConocoPhillips, Chevron, and Kinder Morgan bulk terminals and dock operations	Bulk Fuel	1,3,4,7,9	H-a, C-b	Y	1,3,4,5,7,9	H-b, C-b[c,l]	1,3,4,7	H-a, C-a	NS	H-c, C-c	3,5,7	H-b, C-c
Willbridge Switching Yard	3395	8	West	Railroad switching yard; train assembly and breakdown only. No fueling or railcar/locomotive maintenance. One 300-gallon AST removed.	Rail Yard		H-d, C-d	N	~~7~~	H-d, C-d		N/A		N/A		N/A
ECSI Sites between RM 11-11.8																
CDL Pacific Grain/Cargill	5561	11.4E	East	Grain exporting terminal	Commodities	NS	H-c, C-c	?	NS	H-c, C-c	NS	H-c, C-a	NS	H-c, C-c	NS	H-c, C-c
Glacier NW	5449	11.3E	E	Historical shipyard. Currently, aggregate loading and unloading.	Commodities, Shipbuilding	NS	H-c, C-c	?	NS	H-c, C-c	NS	H-c, C-b	NS	H-c, C-c	NS	H-c, C-c
Ross Island/KF Jacobson	TBD	11.1E	East	Sand and gravel loading and unloading	Commodities	NS	H-c, C-c	?	NS	H-c, C-c	NS	H-c, C-b	NS	H-c, C-c	NS	H-c, C-c
Tucker Building	3036	11.3	East	Former electrical transformer and other equipment repair facility. Served as PP&L's district office, storage, and warehouse space	Electrical Production	1,3,4,7	H-c, C-c	N	3,4,6,7	H-b, C-d		N/A		N/A		N/A
Westinghouse	4497	11.5	East	Former electrical transformer repair facility	Electrical Production		H-c, C-c	?	6	H-b, C-d		N/A		N/A		N/A
PacifiCorp Albina Riverlots	5117	11.3 to 11.5	East	Former shipyard and machine works property, former electrical transformer storage	Electrical Production, Shipbuilding		H-c, C-c	?	4,6	H-b, C-b[l]		N/A		N/A		N/A
PacifiCorp Knott Substation	5117	11.4	E	Active substation	Electrical Production	NS	H-c, C-c	?	11	H-c, C-c		N/A		N/A		N/A
Vermiculite Northwest, Inc. (former)	2761	11.2	East	Former vermiculite processing/handling area, possibly containing asbestos	Other	NS	H-c, C-c	?	NS	H-c, C-c		N/A		N/A		N/A

Table 4.2-2. Upland Site Pathway Assessment Summary.[a]

Site Name	ECSI #	River Mile	River Bank	Potential Upland and Overwater Sources	Industrial Sector (Historical and Current)	Pathway Summary										
						Groundwater			Direct Discharge				Overland Transport		Riverbank Erosion	
									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
Boxer NW Building	4775	11.8	West	Former heating oil tank (now filled), diesel soil contamination	Other	NS (4)[d]	H-c, C-c	?		H-d, C-d		N/A		N/A		N/A
Albers Mill	4590	11.6	West	Possible contaminated fill material (Liberty Ship debris); former fuel oil storage tank (now filled) and associated contaminated soil; six former USTs (removed) and associated soil contamination, historic docks	Commodities	3,4,7	H-c, C-c	?	3,4,7	H-c, C-d	3,4,7	H-c, C-d	7	H-c, C-c	7	H-c, C-c
Waterfront Pearl Condominiums Construction Site	4535	11.7	West	Historic flour mill, contaminated fill material (Liberty Ship debris), contaminated subsurface soil (74,000 tons removed), former overwater activities	Commodities	7	H-c, C-d	?	3,4,7	H-c, C-d	3,4,7	H-c, C-d	7	H-c, C-d	7	H-c, C-d
Hoyt Street Railroad (former) **Hoyt Street Railroad - Pearl Court** **Pearl Building**	1080 1624 4960	11.6	West	Former railyard and fueling facilities, former ASTs and USTs	Rail Yard		H-d, C-d	Y(H)		H-d, C-d		N/A		N/A		N/A
US Postal Service Processing & Distribution Center	2183	11.7	West	Former railyard and fueling facilities, former ASTs and USTs	Rail Yard, Bulk Fuel, Manufactured Gas	1,3,4,7	H-c, C-d	?	1,3,4,7	H-c, C-d		N/A		N/A		N/A
Union Station - Track #5	1414	11.6	West	Former train diesel refueling area	Rail Yard, Bulk Fuel		H-d, C-d	N	3,4	H-c, C-d		N/A		N/A		N/A
Union Station Agricultural Marketing Center Site	1962	11.6	West	Former rail yard, contaminated dredge fill	Rail Yard		H-d, C-d	N	3,4,7	H-c, C-d		N/A		N/A		N/A
Union Station - Parcel B South	1885	11.6	West	Rail yard and rail station, contaminated dredge fill	Rail Yard		H-d, C-d	N	3,4,7	H-c, C-d		N/A		N/A		N/A
Union Station Horse Barn	2407	11.6	West	Former rail yard, manufactured gas plant (south)	Rail Yard, Manufactured Gas	1,3,4	H-c, C-d	N	3,4,7	H-c, C-d		N/A		N/A		N/A
Gender Machine Works, Inc.	2313	11.4	West	Former foundry and machine shop, soil contamination	Steel Manufacturing		H-d, C-d	N	3,4,7	H-c, C-c		N/A		N/A		N/A
Cascade Brake Products	1019	11.3	East	Potential improper disposal of solvent and waste brake fluid	Other	NS	H-c, C-c	?	NS	H-c, C-c		N/A		N/A		N/A
Master Chemical Inc.	1302	11.5	East	Chemical manufacturing facility	Chemical Manufacturing		H-d, C-d	N		H-d, C-d		N/A		N/A		N/A
Valvoline	3215	11.2	East	Former foundry, bulk fuel tank spills and associated contaminated soil (removed)	Metals	NS	H-c, C-d	?	1,3,4,7	H-c, C-d		N/A		N/A		N/A
Williamson & Bleid	776	11.5	East	Hazardous waste generator, improper storage and disposal	Other	NS (1,4)[d]	H-c, C-c	?	NS	H-c, C-c		N/A		N/A		N/A
Wilbur-Ellis Co. - Portland	1331	11.6	West	Former warehouse and distribution center for agricultural chemicals and fertilizer, some pesticide formulation	Chemical Manufacturing	NS (4)[d]	H-c, C-d	?	1,2,3,4,5,6,7	H-c, C-d		N/A		N/A		N/A
Mammal Survey & Control Service	1301	11.6	East	Former pesticide manufacturing facility	Chemical Manufacturing	NS	H-c, C-c	?	NS	H-c, C-d		N/A		N/A		N/A
Tarr Inc.	1139	11.3	East	Bulk fuel and chemical storage, former USTs (decommissioned) and associated soil contamination (4,000 yd^3 removed), oil spill on nearby gravel lot, possible dry well	Bulk Fuel	1,3,4	H-c, C-c	?	1,3,4	H-c, C-d		N/A		N/A		N/A
RiverTec Property	3067	11.6	West	Former lead-smelting operations	Metals	NS	H-c, C-c	?	NS	H-c, C-d		N/A		N/A		N/A
Courtyard Hotel	2500	11.8	East	Contaminated soil from unknown source (removed)	Other	NS	H-c, C-d	?		H-d, C-d		N/A		N/A		N/A

Table 4.2-2. Upland Site Pathway Assessment Summary.[a]

Site Name	ECSI #	River Mile	River Bank	Potential Upland and Overwater Sources	Industrial Sector (Historical and Current)	Pathway Summary										
						Groundwater			Direct Discharge				Overland Transport		Riverbank Erosion	
									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status
ECSI Sites within Shared Conveyance Systems [i]																
ANRFS (aka ABF)	1820	9.5	West	Freight terminal and truck maintenance shop, USTs	Other				3,6,7,9	H-b, C-d						
Ashland Chemical	1076	9.5	West	Former food processing facility, currently a chemical storage facility, stormwater discharges to COP storm sewer pipe	Chemical Manufacturing				3,6,7,9	H-b, C-c						
Calbag-Nicolai	5059	10.3	West	Nonferrous scrap metal facility	Metals				3,4,6,7,9	H-b, C-a						
Carson Oil	1405	9.7	West	Historic pipe leaks and spills, LUSTs, vehicle maintenance activities involving fuels, oil & grease, petroleum-based solvents, surface water discharges to COP storm sewer	Bulk Fuel				1,3,4,6,7,9	H-b, C-c						
Container Management	4784	9.5	West	Container reconditioning facility, water from oil/water separator discharged to COP storm sewer	Metals				3,4,5,6,7,9	H-b, C-c						
Container Recovery	4015	9.3	West	Truck fabricating activities, furnace manufacturing, sheet metal fabrication, stormwater discharges to COP storm sewer	Metals				3,6,7,9	H-b, C-c						
Front Avenue MP	4008	9.9	West	Former truck, crane, and rigging operations center; historical releases to soil, catch basins and sump	Other				1,3,4,6,7	H-b, C-d						
GE - NW 28th	No ECSI#	10	West	Former commercial PCB storage facility	Electrical Production				6	H-b, C-b						
Greenway Recycling	4655	8.4	West	Former automobile wrecking yard, vehicle towing and storage, garbage hauling, current construction debris transfer station	Metals				1,4,6,7	H-b, C-d						
Galvanizers	1196	9.4	West	Zinc galvanizing operation since 1940s; some storage of process chemicals, and hazardous and non-hazardous wastes	Metals				3,4,7,9	H-b, C-b[l]						
PGE - Forest Park	2406	8.3	West	Electrical equipment storage	Electrical Production				6	H-c, C-d						
Paco Pumps	146	9.1	West	Pump manufacturing and refurbishing facility	Metals				4,6	H-c, C-d						
Wilhelm Trucking (aka Magnus/Wilhelm)	69	9.6	West	Former lead bearing rehabilitation plant (lead molting operations). Currently, trucking terminal with main shop, wash pads, fuel tanks, and mobile fueling.	Metals				6,7	H-c, C-c						
SFI	5103	10	West	Former metal working and forge hammering operations	Steel Manufacturing				1,3,4,6,7	H-a, C-c						
Additional ECSI Sites Identified by USEPA in the March 2010 General Notice Letters																
Hercules, Inc.	988	9.8	West	Manufacturer of water-soluble polymers for paper, emulsions and defoamers	Chemical Manufacturing	NS	H-c, C-c	?	NS	H-c, C-c		N/A		N/A		N/A
Island Holdings (Cenex Ag Inc., Watumul Properties)	260	9	East	Dumping of waste materials and pesticides into storm drain	Other	NS	H-c, C-d	?	NS	H-c, C-d		H-c, C-d	NS	H-c, C-c	NS	H-c, C-c
Lynden Farms (Foster Poultry Farms, Samuelson Properties, ATC Leasing)	4461	8.9	East	UST release, PCBs detected in soil during UST removal. Site redeveloped with stormwater treatment	Other	NS	H-c, C-c	?	NS	H-c, C-d		H-c, C-d	NS	H-c, C-d	NS	H-c, C-c

Table 4.2-2. Upland Site Pathway Assessment Summary.[a]

Site Name	ECSI #	River Mile	River Bank	Potential Upland and Overwater Sources	Industrial Sector (Historical and Current)	Pathway Summary										
						Groundwater			Direct Discharge				Overland Transport		Riverbank Erosion	
									Stormwater		Overwater					
						COIs	Pathway Status	NAPL	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status	COIs	Pathway Status

Notes:

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI. This table is not an exhaustive list of current or historical sources of contamination. Identification and evaluation of potential sources is ongoing.

[b] This site has an active NPDES permit with a direct discharge to the river. See Table 4.3-1 for additional information.

[c] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[d] COIs identified based on review of LUST files and confirmed release records on the ECSI database.

[e] VOC COIs include only BTEX for the Gasco site.

[f] Non-PAH SVOCs include only carbazole, dibenzofuran, 2,4-dimethylphenol, 1- and 2-methylnaphthalene, 2- and 4-methylphenol, and phenol for the Gasco site.

[g] EOSM's permitted discharge from their wastewater plant was not a complete pathway.

[h] VOCs characteristic of Gasco are likely to have been transported overland.

[i] Stormwater COIs at these ECSI sites were identified based on independent investigations, see Table 4.4-3.

[j] DEQ identified the COP outfalls as a group. Not all outfalls are known current or historical sources.

[k] The overwater pathway is designated H-a or C-a when a release has been documented in the DEQ ERIS database, USCG records, or other similar documentation. If no spills have been recorded for a facility that had or has overwater pathways, the pathway is H-b, C-b.

[l] These sites have or had groundwater infiltration into the City storm sewer.

ECSI number: DEQ Environmental Cleanup Site Information database number

COI: A chemical is listed as a pathway COI if it was detected in sampled media, identified as having been released to site media, or documented to have been released directly to the river from site operations.

1: VOCs
2: SVOCs
3: PAHs
4: TPHs
5: Pesticides/Herbicides (e.g., DDT, chlordanes, aldrin)
6: PCB Aroclors and congeners
7: Metals
8: Butyltins
9: Phthalates
10: Other (e.g., PCDD/Fs, cyanide)
11: None reported

Pathway: The potential for impacting in-water media rated as follows:

a: The pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are contaminants of interest (COIs) associated with the pathway.
b: Likely a complete pathway.
c: Insufficient data to make determination.
d: The pathway is either not complete or has been determined by DEQ to be insignificant (DEQ 2010a)
N/A: Pathway does not exist at site.

Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).
NAPL: Available information indicates the presence of historic or current NAPL (Y/N).
N/A = Not applicable, pathway is not present at site (e.g., riverbank at an inland site).
NS = No sampling of upland COIs reported. For stormwater/wastewater, no sampling beyond permit requirements reported.
? = Unknown, typically due to lack of sampling information.

ASR - automobile shredder residue
AST - aboveground storage tank
BTEX - benzene, toluene, ethylbenzene, and xylenes
BWTP - ballast water treatment plant
CCA - chromium copper arsenate
COI - contaminant of interest
COP - City of Portland
CRSG - Columbia River Sand and Gravel
DEQ - Oregon Department of Environmental Quality
DSL - Oregon Division of State Lands
DTL - direct to locomotive
ECSI - Environmental Cleanup Site Information
EOSM - Evraz Oregon Steel Mills
USEPA - U.S. Environmental Protection Agency
GW - groundwater
KI - Koppers International
LUST - leaking underground storage tank
LWG - Lower Willamette Group
MPR - manufacturing process residue
NAPL - non-aqueous phase liquid
NPDES - National Pollutant Discharge Elimination System
PAH - polycyclic aromatic hydrocarbon
PCE - tetrachloroethene
PCB - polychlorinated biphenyl
PEO - Premier Edible Oils
PGE - Portland General Electric
RM - river mile
SFPP - Santa Fe Pacific Pipeline
SWPCP - stormwater pollution control plan
SVOC - semivolatile organic compound
TCA - trichloroethylene
TFA - tank farm area
TPH - total petroleum hydrocarbon
UST - underground storage tank
VOC - volatile organic compound
WPCL - Water Pollution Control Laboratory
WWTP - wastewater treatment plant

Table 4.2-3. Shoreline or Nearshore Facilities Upstream of RM 11.8 Listed in DEQ's ECSI Database.[a]

ECSI #	Facility or Site Name/Status	Address	Type(s) of Operation	Hazardous Substances/Waste Types	Detected Chemicals in Upland Samples[b]	Potential Pathways to River[c]
71	Martin Electric (aka. Warren Oliver Co.)/ NFA - 1993	91 Foothills Rd. Lake Oswego, OR 97034	Electrical equipment firm	PCBs from transformer waste oils	PCB 1221(S)	Unknown
123	Huntington Rubber Corp. (combined with Willamette Oaks Building -ECSI #883)/ O&M 6/08	7030 SW Macadam Ave. Portland, OR 97219	Rubber products manufacturer	Petroleum	Petroleum-contaminated wastewater	WW
129	(b) (6) Residence (aka. (b) (6) Residence, (b) (6) Residence, The Barlow House [1887], (b) (6) Property)/FA 8/01	1206 Washington St. Oregon City, OR 97045	Private home	PCBs, oil	Oil- or fuel- related compounds(S), PCBs(S)	Unknown
151	Portland General Electric Station L/ NFA 1994 sediment cap	1841 SE Water Ave. Portland, OR 97214	Steam electric plant, electrical equipment maintenance and warehousing	PCBs, heavy metals, BTEX, PAHs	PCB(S)	DR, GW
263	West Linn Paper Company (aka. Crown Zellerbach, James River Corp. - West Linn Mill, Simpson Paper Co. Evergreen Mill, West Linn Paper Co. Willamette Falls Mill, Simpson Hog Fuel Site)/ No further remedial action under federal program 10/09	4800 Mill St. West Linn, OR 97068	Wood pulping and specialty paper mill in operation since 1888	Oil, PCBs, PCDD/Fs	Oil- or fuel- related compounds(S), PCB 1221(S)	DR, GW
283	Willamette Falls Locks (COE Civil Willamette Falls Locks, US Army Corps of Engineers)/ XPA recommended 1992	Between lock gates 4 & 5, west side of West Linn, OR 97068	Water transportation, freight	Heavy metals, ammonia, methylene chloride, oils, latex, clarified white water	Ammonia(S), arsenic(S), chromium(S), lead(S), methylene chloride (surface water)	DR
334	I-5/I-84 pesticide spill/DEQ spill response initiated cleanup, site screening recommended 2/94	I-5 & I-84 interchange Portland, OR 97232	450 lbs. CAPTAN (endosulfan) spilled from overturned truck on 2/86	Endosulfan	No information in ECSI	Unknown
383	Old Town Parking-Helistop Structure/ RA 1992	33 NW Davis St. Portland, OR 97209	Broadway Cab Co. service center (mid-1950s-1985)	PAHs, ammonia, heavy metals, PAHs, BTEX	VOCs (GW), PAHs (GW)	GW
602	South Waterfront Redevelopment Area - now Strand Condominium Towers (aka. Lincoln Steam Plant, Pacific Power & Light)/ Remedial action 10/05	SW River Dr. Portland, OR 97201	Parcel 3A - site of former Lincoln Steam Plant	PAHs, lead, arsenic, asbestos, PCBs	Lead(B), oil(S)	DR, GW, SW
689	Zidell Marine Corporation(aka. North Macadam Project, Zidell Explorations)/ROD 2/05, consent decree 6/06, remedial design 9/06	3121 SW Moody Ave. Portland, OR 97201	Ship dismantling, barge construction, tube forging; numerous oil spills reported; fire pits for burning debris and insulation; ballast water discharged onsite	Metals, petroleum hydrocarbons, asbestos, PCBs	Antimony(B), arsenic(S), benzene(GW), chromium(S), lead(S), nickel(B), oil(B), PCBs(B), PAHs(S), tributyltin(S). Metals, PAHs, PCBs, and butyltins also present in sediments.	DR, GW, SW
812	BLE Inc. (aka. BLE Inc. Jeepers Its Ericksons, Ericksons Automotive, Groundwater - Foothills Road Industrial Area, Lake Oswego Area Groundwater Contamination, Lake Oswego Public Water Supply RPN)/ Remedial action recommended 6/00	Eastern end of Lake Oswego; impacted city well at 101 Foothills Rd. Lake Oswego 97034	Inactive public water supply wells	PCE, TCE, cis-1,2-DCE	VOCs(GW)	GW

Table 4.2-3. Shoreline or Nearshore Facilities Upstream of RM 11.8 Listed in DEQ's ECSI Database.[a]

ECSI #	Facility or Site Name/Status	Address	Type(s) of Operation	Hazardous Substances/Waste Types	Detected Chemicals in Upland Samples[b]	Potential Pathways to River[c]
875	Schnitzer - SW Moody Ave. (also #1401 SW Moody Right-of-way)/ Unit B: NFA, Units A & C: Phase I RA done 12/95, Phase II RA incorporates development	Units A, B, & C Moody Ave. Portland, OR 97201	Former metals salvaging, processing, & pesticides formulation; property transferred to OHSU	Unit A soils: DDTs, hexachloropentadiene, PCBs, TCE, 1,2 DCE, acetone; Unit A groundwater: barium, lead, cadmium, chromium, lead, zinc, acetone, carbon disulfide, benzene, toluene, 4- methyl-2-pentanone, ethylbenzene, cineole, cyanide; Unit C soils: lead, PCBs, cPAHs	Unit A soils: DDTs, hexachloropentadiene, PCBs, TCE, 1,2-DCE, acetone; Unit A groundwater: barium, lead, cadmium, chromium, lead, zinc, acetone, carbon disulfide, benzene, toluene, 4- methyl-2-pentanone, ethylbenzene, cineole, cyanide; Unit C soils: lead, PCBs, cPAHs	SW, GW
876	North Waterfront Park/ PA recommended 7/92	NW Front Ave. Portland, OR 97209		Benzene, toluene, xylene, ethylbenzene	Benzene(GW), ethylbenzene(B), toluene(B), xylenes(B)	SW, GW
985	Grunbaum Property (aka. Winter Products [former], North Macadam District Project, Konell Construction & Demolition Corp.)/Confirmed Release List 4/04	3604 SW Macadam Ave. Portland, OR 97201	Winter manufactured die-cast zinc furniture hardware with finishes used in the die-cast process; treated wastewater discharged to City sewer. Winter Products relocated in mid-1980s. Currently being redeveloped by Dane Development.	Electroplating wastes - zinc, copper, nickel, cyanide; petroleum products, PCE, TCE	Arsenic (GW), lead (S), petroleum (S), PCE (B), TCE (GW)	SW, GW
986	Winkler Scrap Metal Inc./ Confirmatory sampling recommended 10/96	1737 SE Rhine St. Portland, OR	Scrap metal recycling, including transformers	PCBs, solvents, phenols, BEHP, dioxin/furans	No information in ECSI	Unknown
1006	Oaks Bottom Landfill (aka. Sellwood Disposal Site)/ NFA 1996	1S/1E/S23 Portland, OR 97202	Closed solid waste landfill	Former demolition debris and brush landfill	No information in ECSI	Unknown
1066	Gross Property Disposal Site/ NFA 1992	3S/1E/S2 West Linn, OR 97068	Vacant farm land	PCBs	PCBs(S)	Unknown
1135	NW Cast Metal Products, Broad Spectrum Electronics Lab (aka. Auric Ent., H & M Electronics, Pacific Meats, NW Cast Metal Products, Ross Electric)/ Site confirmatory sampling required 3/96	79 SE Taylor St. Portland, OR 97214	Former Southern Pacific Railroad warehouse, 1912 International Harvester Building, warehouse for several other parties over the years, lab located on 3rd floor in corner of building	Alleged dumping of PCBs, solvents, lead, arsenic, mercury, zinc, cyanide compounds, phenols, acids	PAHs (S)	Unknown
1138	Portland Gas Manufacturing Site (aka Portland Gas & Coke Co.,MGP, Portland Gas Light Co.)/ RI 10/08	NW 1st and Everett Portland, OR 97209	Former coal/gas manufacturing (Portland Gas and Coke) (1860-1913)	Coal and oil tars, BTEX, spent iron oxide, process wastewaters	VOCs, PAHs (GW); VOCs, PAHs, and cyanide present in sediment	SW, WW, DR?, GW
1258	Abes Main St. Cleaners (aka. Chris & Jessies Main St. Cleaners, ODEQ Abes Main St. Cleaners, Parker J Former Abes Main St. Cleaners)/Remedial action	10863 SE Main St. Milwaukie, OR 97222	Laundry/dry cleaner	Perchloroethylene, trichloroethylene, Stoddard solvent	Tetrachloroethylene(B)	GW, WW
1292	Gibson-Homans Co./USEPA SI 1985, site screening recommended in 1994	3419 SW Moody Ave. Portland, OR 97201	Manufactures protective coatings, including asphaltic roof coatings, aluminum roof coatings, putty, caulk, sealants, wood preservatives, adhesives	No noticeable discharges	No information in ECSI	Unknown
1394	Louis Dreyfus Facility/ Placed on Confirmed Release List 3/97 (low priority)	(foot of) N Holladay St. Dock & Elevator Portland, OR 97227		Petroleum	TPH(S)	DR, GW (unknown)

Table 4.2-3. Shoreline or Nearshore Facilities Upstream of RM 11.8 Listed in DEQ's ECSI Database.[a]

ECSI #	Facility or Site Name/Status	Address	Type(s) of Operation	Hazardous Substances/Waste Types	Detected Chemicals in Upland Samples[b]	Potential Pathways to River[c]
1923	Westwood Corp.(aka. Swinterton Builders)/ FS 2000, NFA 2000	3030 SW Moody Ave., Ste. 250 Portland, OR 97201	Foundry & scrap business (1930s-1984)	Diesel-range petroleum, metals, possibly PCBs and PAHs	Diesel, kerosene, lead (S)	SW, GW
1925	Mackenzie/Saito Property (North Macadam District Project)/ PA recommended 11/96	690 SW Bancroft St. Portland, OR 97201	Lumber mill (former)	Oil-range hydrocarbons, PAHs	Benzene(GW), PAHs(GW), ethylbenzene(GW), oil(S), toluene(GW), xylenes(GW)	GW
1973	PECO Mfg. Co., Inc./ RA 1/09	4707 and 4720 SE 17th Ave. Portland, OR	Manufacturer of specialty cast and machine parts	PCBs, PCE, TCE	PCBs(S), PCE and TCE(GW)	GW
2114	Sullivan Electrical Substation/ Site screening recommended	5600 Willamette Falls Dr. West Linn, OR 97068	Electrical substation	No information in ECSI	No information in ECSI	Unknown
2232	Innventures (aka. CM Company Inc. a corp. of Id., Marriott Residence Inn, Portland Development Commission - lot 5)/ Hotspot cleanup, site effectively capped, delisted 2002	2115 SW River Pkwy. Portland, OR 97201	Lumber storage (~1900-1950) for the Portland Lumber Company; scrap steel storage (1950s-1970s); 1994-1995 storage for PAH-contaminated soil	Diesel & heavy oil, petroleum hydrocarbons, metals	PAHs, gasoline, oil or fuel-related compounds (S)	Unknown
2247	Heath Oregon Sign Company/ Placed on confirmed release list 9/02	4644 SE 17th Ave. Portland, OR	Sign manufacturing	Metals, PCBs, TCE, PCE	Arsenic(S), berylium(S), PCBs(S), TCE and PCE(GW)	GW
2301	Clackamette Cove Area (aka. City of Gladstone, Clackamas County Sheriff's Office, Dakota Minerals, Klineline Sand & Gravel, Portland Traction Railroad, City of Oregon, Jack Parker Property, Northwest Aggregates Co., Western Pacific Construction Materials Co.)/ RA 1/04	16288 Main St. Oregon City, OR 97045	No information in ECSI	Gasoline (BTEX, PAHs), heavy metals, asphalt, diesel & lube oil-range TPH, PAHs, chlorinated hydrocarbons	Arsenic(B), chlorobenzene(GW), chromium(S), dichlorobenzene(GW), iron(GW), lead(B), TPH(S)	GW
2409	Ross Island Sand & Gravel Co. (Hardtack Island Plant)/RA 11/05 & land-use assessment 3/06	Hardtack Island-Willamette River Milepost 15, 4315 SE McLoughlin Blvd Portland, OR 97201	No information in ECSI	PCBs, PAHs, petroleum, metals, pesticides/herbicides	Copper(S), PCBs(S), PAHs(S), tributyltin(S)	GW
2414	Eastbank Riverfront Project (aka. Eastbank Esplanade, Portland Development Commission)/ Partial NFA 1999	Portland, OR 97214	No information in ECSI	Lead, petroleum	Lead(S), petroleum(S)	Unknown
2492	South Waterfront Redevelopment Area 3/ ROD 1/04, RA 2/04, Inventory 4/04	SW River Pkwy. & SW Harbor Dr. Portland, OR 97201	Portland Lumber Company (former)	PAHs, metals, diesel, lead, oil	PAHs(B), cadmium(GW), chromium(GW), diesel(S), lead(GW), oil(S)	GW
2613	Willamette View Inc. (aka. Spears, Willie Hot, Willamette View Manor, Willamette View Retirement Home,)/ Site screening recommended 2001	12705 SE River Rd. Portland, OR 97222	Retirement home	diesel-range TPH, lead (offsite source suspected)	TPH(B)	GW
2616	Erickson's Automotive (aka. BLE Inc. Jeepers Its Ericksons, Ericksons Automotive, Groundwater - Foothills Road Industrial Area, Lake Oswego Area Groundwater Contamination, Lake Oswego Public Water Supply RPN)/ NFA 3/04	101 Foothills Rd. Lake Oswego, OR 97034	No information in ECSI	Petroleum, PAHs, VOCs (benzene, toluene, ethylbenzene, xylenes, and chlorinated hydrocarbons)	Dichloroethylene(GW), naphthalene(GW), tetrachloroethylene(GW), trichloroethylene(GW)	GW

Table 4.2-3. Shoreline or Nearshore Facilities Upstream of RM 11.8 Listed in DEQ's ECSI Database.[a]

ECSI #	Facility or Site Name/Status	Address	Type(s) of Operation	Hazardous Substances/Waste Types	Detected Chemicals in Upland Samples[b]	Potential Pathways to River[c]
3104	Rodda Paint Building (former)/ Placed on Inventory 4/02	6932 SW Macadam Ave. Portland, OR 97219	Paint-making operation (former)	Toluene, xylene-based solvents, mineral spirits, paint wastes containing metals, water-based resins, petroleum hydrocarbons, chlorinated VOCs	Acetone(S), butylbenzenes(S), chloroform(GW), cumene(B), dichloroethane(GW), dichloroethylenes(GW), ethylbenzene(S), propylbenzene(B), tetrachloroethylene(GW), toluene(GW), trichloroethane(GW), trichloroethylene(GW), trichloromonofluoromethane(GW), trimethylbenzene (GW), vinyl chloride (GW), xylenes (GW)	GW, SW, WW, DR
3993	Pacific Richfield - South Waterfront (aka. North Macadam Investors, North Macadam Central district, Rosebud Holdings, Waterfront South)/ Cleanup 1/04 & partial NFA 4/06	3305-3401, 3500 SW Bond St. Portland, OR 97239	Previously used for sand & gravel operations (1930-1989); small welding shop operated for short period afterward.	Petroleum hydrocarbons, SVOCs, PAHs in localized areas	TPH (S), arsenic (S), low levels of PAHs (GW)	Unknown
4007	Prometheus Property (aka. Lakeside Industries [circa 1989], North Landing, The Landing at Macadam, LLC)/ Placed on Confirmed Release List 11/05	Bond & Lowell St. T1S/R1E/S10 Portland, OR 97201	Undeveloped, former asphalt manufacturing plant (formerly Lakeside); 6-8 USTs with leakage	PAHs, diesel, PCBs, metals	Diesel (S), HPAH (S)	GW, SW
4026	Lake Oswego Chip Facility (Crown Zellerback, Georgia Pacific Wood Chip Facility, Foothills Park, James River Paper Company, City of Lake Oswego)/ RA 2/05 & NFA 10/05	199 Foothills Rd. Lake Oswego, OR 97034	Chip processing, rail lines, barge loading, wood chip loading	PAHs, metals, herbicides	Gasoline (GW), PAHs (S)	GW, SW
4036	US Bank/Blocks 25 & 29 excavated in 2004, partial NFA 5/05	3505-3439 & 3400-3500 SW Bond Ave. Portland, OR 97239	Currently being redeveloped for mixed urban res./comm.; past uses include shipbuilding (1943-1945), steel and metal fabricating, electrical products manufacturing. Blocks 25/29 used for storage of logging and surplus Zidell equipment. Recently used for warehouse/office space with parking/loading dock.	Localized areas of petroleum hydrocarbon contamination	TPH (S)	SW
4085	Two Main Place/ quick cleanup performed for redevelopment/ Conditional NFA 2009	101 SW Main St. Portland, OR 97204	Parking lot for approximately past 20 years; gas stations and laundries in the past	Gasoline and chlorinated hydrocarbons	Petroleum (S, GW), PCE (GW)	Unknown
4416	Oak Tower Redevelopment/ RA 4/06 & proposed for inventory 10/06	225 Oak St. Portland, OR 97204	Heating oil spill	TPH, PAHs, TCE	Diesel (S), TCE (GW)	Unknown
4420	South Waterfront at River Place - Stanford's Rest., RiverPlace Square Apts (Trammel Crow)/ Added to database 5/05	Parcel 2 Areas B&C SW River Dr. Portland, OR 97201	No information in ECSI	No information in ECSI	No information in ECSI	Unknown
4421	South Waterfront at River Place - SW River Drive & SW River Parkway w/ storm drains/ Consent decree 1989	Parcel 2 Area A, SW River Dr. and SW River Pkwy., Portland, OR 97201	No information in ECSI	No information in ECSI	No information in ECSI	Unknown
4422	South Waterfront Park - on the river (aka. South Waterfront Redevelopment Area, Parcel 3A/3B)/ RA (capped PAH-contaminated soil, bank stabilization) 10/05	Parcel 3A & 3B, Area D Foot of SW Montgomery St., Portland, OR 97201	Parcel 3A - site of former Lincoln Steam Plant	No information in ECSI	No information in ECSI	Unknown

Table 4.2-3. Shoreline or Nearshore Facilities Upstream of RM 11.8 Listed in DEQ's ECSI Database.[a]

ECSI #	Facility or Site Name/Status	Address	Type(s) of Operation	Hazardous Substances/Waste Types	Detected Chemicals in Upland Samples[b]	Potential Pathways to River[c]
4423	South Waterfront Park- PGT Building(aka. South Waterfront Parcel 3B)/ NFA 1994, added to database 5/05	Parcel 3B SW River Pkwy. Portland, OR 97201	No information in ECSI	No information in ECSI	No information in ECSI	Unknown
4424	South Waterfront River Place Lot 108- NE corner SW River Dr/SW River Pkwy/ FS 2/05, asbestos removal alternatives 5/05	Parcel 3B, Area D SW River Pkwy./SW River Dr. (NE Corner) Portland, OR 97201	No information in ECSI	Buried asbestos	No information in ECSI	Unknown
4426	East Portland Gas Works (former)/ Site screening recommended 6/05	110 SE 2nd Ave. & 5 SE Martin Luther King Ave. Portland, OR 97214	Former gas plant	PAHs	No testing has been completed	Unknown
4527	Neighborhood Park (public Storage)/ NFA 2007	3508 SW Moody Ave. Portland, OR 97239	Machine shop and door manufacturer (1950's-1960's), now storage units	PAHs, VOCs, metals	Diesel-range petroleum hydrocarbons (GW), VOCs (B), metals (B), PAHs (S)	Unknown
4578	Everett Street Building/site screening recommended 1/06 (Kronke, Trutz)	509 NW Everett St. Portland, OR 97209	No information in ECSI	PAHs and lead, unknown source	PAHs (S), lead (S)	Unknown
4597	Traschel Property (aka. American Cleaners)/Independent cleanup 3/06	502/503 Main St. Oregon City, OR 97045	Former dry cleaner, auto sales, auto repair	Gas, diesel, VOCs	Diesel (B), PCE (GW), gas (S), waste oil (S)	Unknown
4612	Waterside Development Project/ Site screening recommended 2006	4850 SW Macadam Ave. Portland, OR 97201	No information in ECSI	No information in ECSI	Barium (B), diesel-range petroleum hydrocarbons (S), heavy-oil total petroleum hydrocarbons (S), naphthalene (GW), lead (S)	Unknown
4621	King Crusher/ Added to Independent Cleanup Program 2006	1306 NE 2nd Ave. Portland OR 97323	This is a heavy equipment manufacturer (rock crushing equipment).	Petroleum Hydrocarbons	No information in ECSI	Unknown
4629	South Waterfront Central District Blocks 46 and 49/ Recommended for Confirmed Release List 2009	601 SW Abernathy St. Portland, OR 97201	Past use: warehouse (furniture, doors, lumber), road construction equipment storage, asphalt storage, and gravel storage. Current use: vacant land and temporary parking area. Three USTs formerly onsite; operational practices.	TPH, PAHs, VOCs, and metals	No information in ECSI	GW
4825	South Waterfront Central District Blocks 46 and 49 Was originally a subset of ECSI # 4629/ Remedial Action 2006	601 SW Abernathy St. Portland, OR 97201	No information in ECSI	Oil-range petroleum hydrocarbons and polynuclear aromatic hydrocarbons.	No information in ECSI	Unknown
4632	Rexel/Taylor Electric Warehouse/ PPA and closeout 2010	1709 SE 3rd St. Portland, OR	No information in ECSI	Estimated 10 gallons of oil released during an onsite fire	PCBs	SW, GW
4723	Pacific Pride/ Site evaluation 2008	6230 SW Macadam Ave. Portland, OR 97239	The site is the former location of an auto wrecking yard (Mesher/Union Auto Wrecking Co.; 1930-35), a former boat building facility (Willamette Boat & Manufacturing Co.; 1936-41), and a bulk fuel storage facility	TPH, PAHs, VOCs, and metals	PAHs (GW), VOCs (GW), TPH-diesel (GW), TPH-gas (B)	GW

Table 4.2-3. Shoreline or Nearshore Facilities Upstream of RM 11.8 Listed in DEQ's ECSI Database.[a]

ECSI #	Facility or Site Name/Status	Address	Type(s) of Operation	Hazardous Substances/Waste Types	Detected Chemicals in Upland Samples[b]	Potential Pathways to River[c]
4772	Macadam Sunset Fuel - Pacific Pride Site 2/ Site evaluation 2008	6230 SW Macadam Ave.	The site is the former location of an auto wrecking yard (Mesher/Union Auto Wrecking Co.; 1930-35), a former boat building facility (Willamette Boat & Manufacturing Co.; 1936-41), and a bulk fuel storage facility	TPH, PAHs, VOCs, and metals	PAHs (GW), VOCs (GW), TPH-diesel (GW), TPH-gas (B)	GW
4724	JC Cleaners/ NFA 2009	6141 SW Macadam Ave. Ste. 101 Portland, OR 97239	Dry cleaning facility, former metal fabrication	PCE and TCE	No information in ECSI	GW
4789	Lake Texaco Service/ Site screening recommended 2007	496 N State St. Lake Oswego, 97034	The property has been an operating service station since 1939.	Gasoline and heavy oil and grease	No information in ECSI	GW
4811	Blue Heron Paper Mill/ Site investigation 2008	419 Main St. Oregon City, 97045	Wood pulping and paper manufacturing activities since 1908	PCBs, metals, TPH, PCDD/Fs	No information in ECSI	Unknown
4824	Pollock Building/ Site screening recommended 2007	406 A Avenue Lake Oswego, OR 97034	Former dry cleaning operation	PCE	No information in ECSI	GW
4914	ODOT Right-of-Way, SW Harbor Dr. below I-405 RAMP/ Site screening recommended 2007	East edge of SW Harbor Drive, below westbound I-5 exit ramp onto I-405 Portland, OR 97201	No information in ECSI	No information in ECSI	No information in ECSI	Unknown
4925	Oregon Plating Company/ Site evaluation 2009	436 SE 6th Ave Portland, OR 97214	Electroplating activities for the past 75 years	Acids, bases, toxic metals (chromium, copper, nickel, silver, zinc, lead, cadmium), cyanide salts, ammonium salts, and chlorinated solvents (methylene chloride)	No information in ECSI	SW, GW
4956	Downtown Portland Sediment Areawide Investigation/ Site investigation 2008	Willamette River, from Ross Island to downtown Portland	No information in ECSI	No information in ECSI	No information in ECSI	Unknown
5249	PGE Willamette River Sediment Investigation/ Negotiations 2009	River Mile 13.1 E to 13.5 E and upland sources	No information in ECSI	PCBs, chlordanes, DDTs, and dioxins	PCBs, chlordanes, DDTs, and dioxins (S)	Unknown
5258	Westmoreland Cleaners/ NFA 2010	6701/6717 SE Milwaukie Ave., Portland, OR 97202	Dry cleaning facility	TCE, PCE	TCE, PCE (GW)	GW
5277	South Waterfront Central District Greenway/ Site investigation 2009	South Waterfront Central District, Portland, OR 97329	Former cement manufacturing debris, possible shipbuilding or shipbreaking activities	Lead, PCBs	No information in ECSI	Unknown
5327	Macadam Landing/ Conditional NFA 2010	6633-6639 SW Macadam Ave. Portland, OR 97329	Former roofing activities, housing development, USTs	TPH-Diesel, VOCs, PAHs	TPH-Diesel (S)	Unknown
5392	BENT 3-Portland Streetcar Extension/ Site screening recommended 2010	SE MLK Blvd & SE Taylor, Portland, OR 97214	No information in ECSI	PAHs	PAHs (S)	Unknown
No ECSI#	Portland General Electric Company	301 SE Morrison St. Portland, OR	Spill from pole transformer	PCBs	No information in ECSI	DR

Table 4.2-3. Shoreline or Nearshore Facilities Upstream of RM 11.8 Listed in DEQ's ECSI Database.[a]

ECSI #	Facility or Site Name/Status	Address	Type(s) of Operation	Hazardous Substances/Waste Types	Detected Chemicals in Upland Samples[b]	Potential Pathways to River[c]

Notes:

[a] Source: http://www.deq.state.or.us/lq/ecsi/ecsi.htm

[b] S=soil or sediment, GW=groundwater, B=both

[c] Pathways Identified in ECSI Site Summary Reports: GW = groundwater, SW = stormwater/surface runoff, WW = wastewater discharge, DR = direct release, spill

BEHP - bis-2(ethylhexyl) phthalate
BTEX - benzene, toluene, ethylbenzene, and xylenes
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DCE - dichloroethene
DEQ - Oregon Department of Environmental Quality
ECSI - Environmental Cleanup Site Information
FS - feasibility study
HPAH - high molecular weight polycyclic aromatic hydrocarbon
NFA - No Further Action
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
PCE - tetrachloroethene
PPA - prospective purchaser agreement
RA - risk assessment
RI - remedial investigation
ROD - Record of Decision
SI - site investigation
SVOC - semivolatile organic compound
TCE - trichloroethene
TPH - total petroleum hydrocarbons
UST - underground storage tank
VOC - volatile organic compound

Table 4.3-1. Discharge Monitoring Requirements for Individual NPDES Permits within the Study Area.[a]

Facility File No.	Permit No.	Facility Name	Conventional Monitoring Parameters [b]	Chemical Monitoring Requirements [b]	Mixing Zone (RMZ)	Zone of Immediate Dilution (ZID)
68471	100752	Arkema, Inc.	**Outfalls 001, 002, 003, and 004:** Flow - N/A Oil & grease - 10.0 mg/L pH - 5.5-9.0 TSS - 130 mg/L Floating solids - No visible discharge Oil & grease sheen - No visible sheen	**Outfalls 001, 002, 003, and 004:** Lead - 0.4 mg/L Zinc - 0.6 mg/L Copper - 0.1 mg/L	**Outfalls 001, 002, 003, and 004:** The mixing zone is that portion of the Willamette River within a 25-foot radius from the point of discharge. The Zone of Immediate Dilution (ZID) is that portion of the Willamette River within a radius of 2.5 feet from the point of discharge.	**Outfalls 001, 002, 003, and 004:** The ZID is that portion of the Willamette River within a radius of 2.5 feet from the point of discharge.
108460	102452	Columbia River Sand & Gravel - Linnton Dist. Facility	**Outfall 001:** Suspended solids - 40 mg/L (daily), 20 mg/L (monthly avg.) Turbidity - 90 NTU (daily), 60 NTU (monthly avg.)		The regulatory mixing zone will be a strip 15 meters wide and 100 meters long going downstream of the effluent pipe.	N/A
64905	101007	Evraz Oregon Steel Mills, Inc.	**Outfall 001:** Flow - 0.79 MGD TSS - 1,420 lb/day (daily), 532 lb/day (monthly avg.) TDS - 1136 mg/L (monthly avg.) Turbidity - 25 NTU (above stream background levels) Oil & grease - 15 mg/L pH - 6.0-9.0 Total residual chlorine - 0.34 mg/L (daily), 0.17 mg/L (monthly avg.) Excess thermal load (May-Oct) - 30 x 10^6 Kcal/day (7-day moving avg. of daily max) Temperature - N/A Whole effluent toxicity testing - N/A	**Outfall 001:** Copper - 34 µg/L Zinc - 243 µg/L Total arsenic - 24 µg/L (quarterly avg.) Inorganic arsenic - N/A Cyanide - N/A Total phenols - N/A	**Outfall 001:** The mixing zone is that portion of the Willamette River within a 30.5-meter radius from the point of discharge.	**Outfall 001:** The ZID is that portion of the Willamette River within a radius of 3 meters from the point of discharge.
			Outfall 002: Flow - N/A Turbidity - No visually discernible plume at a radius of 10 meters from the discharge point		**Outfall 002:** The mixing zone is that portion of the Willamette River within a 10-meter radius from the point of discharge.	**Outfall 002:** The ZID is that portion of the Willamette River within a radius of 1 meter from the point of discharge.
			Internal monitoring point: Flow - N/A	**Internal monitoring point:** Lead (total recoverable) - 0.23 lb/day (daily), 0.078 lb/day (monthly avg.) Zinc (total recoverable) - 0.35 lb/day (daily), 0.117 lb/day (monthly avg.)	N/A	N/A
			Intake water monitoring: Turbidity - N/A		N/A	N/A
3690	102465	Ash Grove Cement	**Outfall 001:** Flow - 2,000 L/hr TSS - 50 mg/L (daily), 25 mg/L (monthly avg.) pH - 6.5-8.5 Temperature - N/A		**Outfall 001:** The allowable mixing zone shall not exceed a strip of the river 1 meter wide extending from the riverbank.	N/A
70725	994109	Columbia Boulevard Wastewater Treatment Plant (CBWTP)	The CBWTP discharges its effluent to the Columbia River; discharge monitoring requirements are applicable to the Columbia River only.	This permit covers CBWTP effluent discharged to the Columbia River and CSO and SSO discharges to the Willamette River; discharge monitoring requirements are applicable to the Columbia River only.	N/A	N/A

Table 4.3-1. Discharge Monitoring Requirements for Individual NPDES Permits within the Study Area.[a]

Facility File No.	Permit No.	Facility Name	Conventional Monitoring Parameters [b]	Chemical Monitoring Requirements [b]	Mixing Zone (RMZ)	Zone of Immediate Dilution (ZID)
93450	101128	Wacker Siltronic Corporation	**Outfall 001:** Flow - N/A TSS - 61 mg/L (daily), 23 mg/L (monthly avg.) BOD - 30 mg/L (daily), 15 mg/L (monthly avg.) Fluoride - 32 mg/L (daily), 17.4 mg/L (monthly avg.) Total phosphate - 15 mg/L (daily), 10 mg/L (monthly avg.) Turbidity - N/A pH - 6.0-9.0	**Outfall 001:** Total chromium - 0.05 mg/L (daily), 0.02 mg/L (monthly avg.) Total toxic organics - 1.37 mg/L	N/A	N/A
			Outfall 002: Flow - N/A Total phosphate - 15 mg/L (daily), 10 mg/L (monthly avg.) TSS - N/A		N/A	N/A
			Outfall 003: Free available chlorine - 0.5 mg/L (daily), 0.2 mg/L (monthly avg.) Total bromine - 0.5 mg/L (daily), 0.2 mg/L (monthly avg.) pH - 6.0-9.0 Temperature - N/A Excess thermal load (June-Sep) - 22 x 10^6 Kcal/day (7-day moving avg. of daily max)	**Outfall 003:** Bioassays - N/A	**Outfall 003:** The mixing zone shall consist of that portion of the Willamette River which forms a trapezoid set at right angle to the end of the outfall pipe at Outfall 003. The narrow end is 20 feet wide with the end of the outfall pipe centered on it. The wide end is 55 feet wide and is 200 feet from the outfall. The mixing zone changes with the daily tides from pointing upstream to pointing downstream and back.	**Outfall 003:** The ZID shall consist of that portion of the Willamette River which forms a trapezoid within the RMZ with the same orientation as the RMZ. It has a narrow end 2 feet wide centered on the end of the outfall pipe. The wide end is about 23 feet wide and is 20 feet from the outfall.
70596	101393	Vigor Industrial LLC (aka Cascade General, Inc.)	**Outfall 001:** Flow - 1.0 MGD pH - 6.0-9.0 TSS - 50 mg/L TDS - N/A Oil & grease - 10 mg/L	**Outfall 001:** Copper (total recoverable) - 0.34 mg/L Zinc (total recoverable) - 2.6 mg/L	**Outfalls 001 and 002:** The allowable mixing zone is that portion of the Willamette River within a 10-meter radius from the points of discharge (i.e., the multi-port outfall diffuser).	**Outfalls 001 and 002:** The ZID is that portion of the Willamette River within a 3-meter radius from the outfall diffuser.
			Outfall 002: Flow - N/A TSS - 10 mg/L Oil & grease - 10 mg/L pH - 6.0-9.0	**Outfall 002:** Copper (total recoverable) - 0.23 mg/L Lead (total recoverable) - 0.15 mg/L Zinc (total recoverable) - 1.0 mg/L Tributyltin (total recoverable) - 0.02 mg/L Iron - N/A Manganese - N/A Whole effluent toxicity testing - N/A Priority pollutant scan - N/A		
			Outfalls 005, 006, 007, and 008: Flow - N/A Temperature - 184 x 10^6 Kcal/day Excess thermal load - N/A		**Outfalls 005, 006, 007, and 008:** The allowable mixing zone is that portion of the Willamette River within a 10-meter radius from the points of discharge.	N/A
108015	101314	City of Portland, Port of Portland, Multnomah County - Municipal Stormwater Permit	MS4 Discharge and Ambient monitoring: TSS, hardness, pH, conductivity, DO, temperature, nitrate-nitrogen, total phosphorous, oil and grease (non-polar and total)	MS4 Discharge and Ambient monitoring: total and dissolved metals - copper, lead, zinc; biological - E.coli	N/A	N/A

Table 4.3-1. Discharge Monitoring Requirements for Individual NPDES Permits within the Study Area.[a]

Facility File No.	Permit No.	Facility Name	Conventional Monitoring Parameters [b]	Chemical Monitoring Requirements [b]	Mixing Zone (RMZ)	Zone of Immediate Dilution (ZID)
47430	101642	Koppers, Inc.	**Outfall 001:** Flow - N/A Temperature - 25°C pH - 6.5-8.5 Oil & grease - 15.0 mg/L (daily), 10.0 mg/L (monthly avg.) Turbidity - N/A	**Outfall 001:** Phenols - 0.7 mg/L (daily), 0.5 mg/L (monthly avg.) Cyanide - 8.5 µg/L (daily), 4.9 µg/L (monthly avg.) PAHs (total) - 250 µg/L Benz(a)anthracene - 0.032 µg/L Benzo(a)pyrene - 0.032 µg/L Benzo(b)fluoranthene - 0.032 µg/L Benzo(k)fluoranthene - 0.032 µg/L Chrysene - 0.032 µg/L Dibenz(a,h)anthracene - 0.032 µg/L Benzene - 25 µg/L BTEX - 250 µg/L Silver - N/A Pentavalent arsenic - N/A Cadmium - N/A Copper - N/A Mercury - N/A Lead - N/A Tin - N/A Selenium - N/A Zinc - N/A	N/A	N/A
74995	101180	Starlink Logistics (aka Rhone Poulenc)	**Outfall 001:** TSS - 30 mg/L Temperature - 73.5°F (7-day moving avg. of daily max) pH - 6.5-8.5 **Internal Monitoring Point 101:** Flow - 1 L/sec TSS - 20 mg/L	**Outfall 001:** Chlorinated phenols - 1.0 mg/L (daily), 0.5 mg/L (monthly) Phenol - 1.0 mg/L (daily), 0.5 mg/L (monthly) Arsenic - 0.36 mg/L Lead - 0.017 mg/L Mercury - 0.0004 mg/L Bromoxynil - 1.2 mg/L DDT - 0.1 µg/L 2,3,7,8-TCDD - 10 pg/L OCDD - N/A 2,3,7,8-TCDF - N/A Total TCDF - N/A Total PeCDF - N/A OCDF - N/A Bioassay - N/A **Internal Monitoring Point 101:** Lead - 0.082 mg/L Arsenic (trivalent) - 0.36 mg/L	The mixing zone is that portion of the Willamette River within a 25-foot radius from the point of discharge.	The ZID is that portion of the Willamette River within a 2.5-foot radius from the point of discharge.
100025	102446	Kinder Morgan/Portland Bulk Terminal 4	**Outfall 001:** pH - 6.5-11 TSS - 130 mg/L Oil & grease - 10 mg/L Floating solids - No visible discharge Oil & grease sheen - No visible sheen	**Outfall 001:** Total copper - 0.100 mg/L Total lead - 0.120 mg/L Total zinc - 0.300 mg/L	The mixing zone is a strip 3 meters wide extending downstream for 3 meters from the point of discharge.	N/A

Table 4.3-1. Discharge Monitoring Requirements for Individual NPDES Permits within the Study Area.[a]

Facility File No.	Permit No.	Facility Name	Conventional Monitoring Parameters [b]	Chemical Monitoring Requirements [b]	Mixing Zone (RMZ)	Zone of Immediate Dilution (ZID)
100517	101613	Univar USA	**Outfall 001:** pH - 6.5-8.5 Oil & grease - 15 mg/L (daily), 10 mg/L (monthly avg.) Flow (June-Sep) - 14 gpm (monthly avg.) Flow (Oct-May) - 23 gpm (monthly avg.)	**Outfall 001:** Benzene - 8 µg/L (daily), 5 µg/L (monthly avg.) Chloroethane - 8 µg/L (daily), 5 µg/L (monthly avg.) 1,2-Dichloroethane - 8 µg/L (daily), 5 µg/L (monthly avg.) 1,2-Dichloroethene - 40 µg/L (daily), 25 µg/L (monthly avg.) 1,1,1-TCA - 21 µg/L (daily), 13 µg/L (monthly avg.) 1,1,2-TCA - 8 µg/L (daily), 5 µg/L (monthly avg.) Trichloroethene - 77 µg/L (daily), 53 µg/L (monthly avg.) Tetrachloroethene - 21 µg/L (daily), 15 µg/L (monthly avg.) Vinyl chloride - 18 µg/L (daily), 11 µg/L (monthly avg.) Cyanide - 65 µg/L (daily), 50 µg/L (monthly avg.) Iron (total/dissolved) - N/A Manganese (total/dissolved) - N/A Total phenols - N/A Arsenic (total) - 105 µg/L Arsenic (inorganic) - N/A	**Outfall 001:** That portion of the Willamette River extending across the river, 10 meters downstream, and 5 meters upstream.	**Outfall 001:** That portion of the Willamette River extending 1 meter across the river, 1 meter downstream, and 0.5 meter upstream.
115018	102880	The Pinnacle Condominium Owners' Association	**Outfall 001:** pH - 6.5-8.5	**Outfall 001:** Copper - 82.8 µg/L Lead - 22.9 µg/L Mercury - 0.7 µg/L Silver - 7.2 µg/L Zinc - 721 µg/L Iron (total/dissolved) - N/A TPH - 1,000 µg/L BTEX - 250 µg/L Benzene - 25 µg/L Arsenic (total) - 27.7 µg/L Arsenic (inorganic) - N/A Manganese (total/dissolved) - N/A Cyanide - N/A Total phenols - N/A	**Outfall 001:** The mixing zone will be a strip measuring 2 meters out from the end of the discharge pipe and 2 meters downstream.	**Outfall 001:** The ZID will be a strip measuring 0.4 meter out from the end of the discharge pipe and 0.4 meter downstream.

Notes:

[a] DEQ Wastewater permits database accessed 5/20/2009 (http://www.deq.state.or.us/wq/sisdata/facilitycriteria.asp)
[b] Values listed are daily maximums unless stated otherwise.

BOD - biological oxygen demand
BTEX - benzene, toluene, ethylbenzene, and total xylenes
CBWTP - Columbia Boulevard Wastewater Treatment Plant
CSO - combined sewer overflow
DO - dissolved oxygen
N/A - information not available
NPDES - National Pollutant Discharge Elimination System
PAH - polycyclic aromatic hydrocarbon
RMZ - Regulatory Mixing Zone
SSO - sanitary sewer overflow
TDS - total dissolved solids
TSS - total suspended solids
ZID - Zone of Immediate Dilution

Table 4.3-2. 1974 City Identification of Industrial Users in Portland Harbor and Wastewater Discharge Location.

Facility/Address	RM[a]	Pretreatment	Wastewater Characteristics					Discharge 1,000 gal/day	CSO Outfall
			pH	mg/L					
				BOD	SS	n-hex	Chemical		
Facilities Discharging Industrial Wastewater to a Municipal Sanitary System in 1974									
H.B. FullerCo 10425 N Rivergate	2.6E		8	988	1842			9	NA
Consolidated Metco Inc. 13940 N Rivergate	2.8E	Chem treatment	6.5				Zn = 5.0	27	NA
Palmco 12025 N Burgard	3.6E	Closed system except gravity separator for truck wash area	7.2	1920	279			10	NA
Container Corp of America 12005 N Burgard	4.0E		6.8	760	590			35	NA
Borden Chemical 10915 N Lombard	4.5E		9.8	810	860			6	NA
Port of Portland 11000 N Lombard	4.9E							143	NA
Koppers Co 7540 NW St Helens Rd	6.3W							58	NA
Bird and Son, Inc. 6350 NW Front	7.5W		7.1	400	457			111	NA
Shell Oil Co 5800 NW St. Helens Rd	7.6W	Oil-water separation						129	NA
Standard Oil Co 5570 NW St. Helens Rd	7.7W	Oil-water separation				266		167	NA
Union Oil Co 5300 NW St Helens	7.8W	Oil-water separator						250	NA
Flint Kote 5700 NW Front	8.0W		7.8	100	40			25	NA
Chevron Asphalt 5501 NW Front	8.1W	Oil-water separation						177	NA

Table 4.3-2. 1974 City Identification of Industrial Users in Portland Harbor and Wastewater Discharge Location.

			Wastewater Characteristics						
				mg/L					
Facility/Address	**RM[a]**	**Pretreatment**	**pH**	**BOD**	**SS**	**n-hex**	**Chemical**	**Discharge 1,000 gal/day**	**CSO Outfall**
Freightliner Corp. 6936 N Fathom Ave	8.3E							97	NA
Port of Portland 5200 N Lagoon Ave	8.5E	Ballast water treatment chem/ settling						203	NA
Port of Portland 6005 N Channel Ave	8.5E							187	NA
Pacific Chain 4200 NW Yeon	8.7W							143	NA
Western Farm Assoc. 6135 N Basin Ave	8.8E	Settling, vibrating screens	7.4	660	165			383	NA
McCloskey Varnish 4155 NW Yeon	8.8W		6.7	7600	20			<<1	NA
Gunderson Bros 4700 NW Front	9.1W							188	NA
Volney Felt Co 3750 NW Yeon	9.1W	Gravity separator	6.6	750	766			112	NA
Columbia-American Plating 3003 NW 35th Ave	9.2W	New point source completion Jan. 1975							NA
Reimann and McKenney 3000 NW St Helens	9.2W	Air flotation w/chemical feed	9.2	880	510	695		25	NA
Canteen Company 2001 N Lagoon	9.5E		7.6	528	128			5	NA
Hercules Powder 3366 NW Yeon	9.5W	Oil-water separation air flotation, pH adjust	7.6	360	186	126		92	NA

Table 4.3-2. 1974 City Identification of Industrial Users in Portland Harbor and Wastewater Discharge Location.

			Wastewater Characteristics						
				mg/L					
Facility/Address	**RM[a]**	**Pretreatment**	**pH**	**BOD**	**SS**	**n-hex**	**Chemical**	**Discharge 1,000 gal/day**	**CSO Outfall**
Fred Meyer (Dairy) 4950 N Basin	9.6E		6.4	1190	323			205	NA
Glidden - General Paint 2800 NW 31st	9.6W	Chem. precipitation Batch process	6.9	1580	420			2	NA
Richardson Ink Co 3529 NW Yeon Ave (address should be 3259)	9.7W		9	420	110			3	NA
Industrial Air Products 3255 NW 26th	9.8W		12.4					58	NA
Industrial Battery and Charge Inc. 3166 N Greeley	10.6E	none	3					0.1	NA
ZEHRUNG 2201 NW 20th	10.7W		7.1	192	48			20	NA
City Galvanizers Co 820 N Russell	11.2E	Proposed chemical treatment	5		31		Zn = 30.0	2	NA
Facilities Discharging Industrial Wastewater to a Municipal CSO System (That Could Overflow to River) in 1974									
Galvanizers Co 2406 NW 30th Ave	9.8W	Proposed chemical treatment	7		456		Zn = 10.0 Ni = 0.5	7	17
Schmitt Steel 2407 NW 28th Ave	9.8W							50	17
Boysen Paint 2100 NW 22nd	10.4W		8	100	156			3	15
Chase Bag Co 2550 NW Nicolai	10.4W		8.9	536	84			2	15
Electric Steel Foundry 2141 NW 25th Ave	10.4W							1020	15
Electric Steel Foundry 2760 NW Yeon	10.4W							215	15

Table 4.3-2. 1974 City Identification of Industrial Users in Portland Harbor and Wastewater Discharge Location.

			Wastewater Characteristics						
				mg/L				Discharge	CSO
Facility/Address	**RM[a]**	**Pretreatment**	**pH**	**BOD**	**SS**	**n-hex**	**Chemical**	**1,000 gal/day**	**Outfall**
Griffith Rubber Mills 2439 NW 22nd Ave	10.4W							108	15
Imperial Paint 2315 NW Yeon (address should be 2526)	10.4W		8.2	250	4240			1	15
Rentex NW Industrial 1848 NW 23rd Ave	10.4W	Screening gravity separation	10.5	1014	725	632		83	15
Willamette Iron and Steel 2840 NW Front	10.4W						Pb = 4.0	598	15
Consolidated Freightway 2028 NW Quimby St	11.1W	Oil-water separator under design				154		100	12
Pacific Steel Foundry 1979 NW Vaughn Street	11.2W							92	13
American Plating Co 2751 N Williams Ave	11.4E		3.6		17		Ci = 1.0 Cu < 1.0 Cn = 3.3 Zn = 0.8	15	44A
Crawford and Doherty 2531 NW 28th Ave	11.4W							90	11
Opera House Laundry 1804 NW Northrop	11.4W		10.7	300	32			1	11
Pancich Fish Company 300 NW 13th Ave	11.4W		7.0	80	92			6	11
Portland Bolt and Manufacturing 930 NW 14th Ave	11.4W	None	6		50		Zn = 20.0 Cr = 10.0	4	11
Centennial Mills 1362 NW Front Ave	12.4W		6.0	7942	7342			196	9

Table 4.3-2. 1974 City Identification of Industrial Users in Portland Harbor and Wastewater Discharge Location.

Facility/Address	RM[a]	Pretreatment	Wastewater Characteristics					Discharge 1,000 gal/day	CSO Outfall
				mg/L					
			pH	BOD	SS	n-hex	Chemical		
Facilities Not Discharging Industrial Wastewater to a Municipal System in 1974									
Oregon Steel Mills 14400 N Rivergate Blvd	2.3E	Domestic only to sewer						168 (water use)	NA
NW Natural Gas Co 7900 NW St Helens Rd	6.2W	Domestic only to sewer						336	NA
Pennwalt Chemical Co 6400 NW Yeon	7.3W	Domestic only to sewer	8.3	200	320				NA
Rhodia, Inc 6200 NW St. Helens	7.4W	Industrial waste not discharged to City system							NA
Oregon Steel Mills 5250 NW Front	8.2W	Domestic only to sewer						144 (water use)	NA
Precision Equipment Inc 1627 NW Savier	11.0W	Hauled to waste disposal site						3	NA
Wagstaff Batteries Mfg. Co. 2124 N Williams	11.5E	Use dry wells for industrial waste						0.4	NA

Source: City of Portland Columbia Blvd. WWTP NPDES Permit Report Condition G-7 - Industrial Users. September 30, 1974

Notes:

[a] River mile of site, except when facility discharges to a combined system, the river mile for outfall overflow is shown.

BOD - biological oxygen demand
CSO - combined sewer overflow
NA - not applicable
RM - river mile
SS - suspended sediment

Table 4.3-3. 1967 OSSA Identification of Major Sources of Industrial Wastes in Portland Harbor.

Source	RM	Type of Waste	Present Treatment	Sanitary Waste Disposal	Needed Action
Union Pacific Railway	11.1	Oily water	Oil -water flotation unit, discharge to river	City	Continued surveillance
Gunderson Bros. Engr. Corp.	8.6	Acetylene lime wastes	Lime retention in sump, thence to river	Septic tank, cesspools	Connect to city sewer when available
Reimann & McKenney	8.5	Caustic waste	Baffled sump (discharges via Guilds Lake sewer)	Discharge to river	Interception planned by city by December 1967
Chevron Asphalt Co.	8.0	Heavy oils and asphalts	Sedimentation tank (discharge via NW 54th Ave. sewer)	City	Interceptor sewer under construction
Standard Oil Co. [Willbridge]	7.7	Oil and caustic wastes	Sedimentation tank (discharges to Willamette River via Doane Avenue)	Doane Ave. sewer	To be intercepted by city sewer (under construction)
Union Oil Co. [Willbridge]	7.7	Oil wastes	Sedimentation tank (discharges to Willamette River via Doane Avenue)	Septic tank, drainfield	To be intercepted by city sewer (under construction)
Shell Oil Company [Willbridge]	7.6	Oil wastes	Oil water separation thence to river via Balboa Creek	Septic tank, cesspool	To be intercepted by city sewer (under construction)
Pabco	7.6	Felt paper wastes	Save all	Septic tank, drainfield	City constructing sewers in area
Pennsalt [Arkema]	7.4	Some salt waste in cooling water	Continuous monitoring	Septic tank, drainfield	Connect domestic wastes to city sewer when sewer is completed
McCormick & Baxter	7.2	Creosote	Discharge to river	Septic tank, drainfield	Connect domestic wastes to city sewer when sewer is completed
Air Reduction (Pacific) Company [Kittridge]	7.0	Carbide wastes	Discharge to Doane Lake, seepage to river	Septic tank, drainfield	Connect domestic wastes to city sewer when sewer is completed
Chipman Chemical Co. [Rhone Poulenc]	7.0	Chlorophenolic	In-plant control and treatment	Septic tank, drainfield	Treated effluent and sewage wastes to city sewer when sewer is completed
MP Kirk & Sons [Gould]	7.0	Battery acid	Discharge to Doane Lake, seepage to river	Septic tank, drainfield	Connection of domestic wastes to city sewer when completed

Table 4.3-3. 1967 OSSA Identification of Major Sources of Industrial Wastes in Portland Harbor.

Source	RM	Type of Waste	Present Treatment	Sanitary Waste Disposal	Needed Action
Cargill, Inc.	4.7	Grain wash water	Discharge to river	To the river	Connect to city sewer as soon as facilities available
Dulien Steel Complex	4.5	Domestic sewage	None	To the river	Connect domestic wastes to city in 1967-68
Mobil Oil Co. [ExxonMobil]	4.4	Oily water	Oil-water separator to storm sewer to river	Septic tank, storm sewer	Connect domestic wastes to city sewer when sewer is completed
Richfield Oil Co. [ARCO]	4.3	Oily water	Oil-water separator to river (occasional)	Septic tank to river	Connect domestic wastes to city sewer when sewer is completed
Linnton Plywood	4.2	Glue wastes	Discharge to river	Septic tank, effluent to river	Connect domestic waste and glue wastes to city sewer
Tidewater Oil Co.	4.0	Oily water and hot laundry wastes	Discharge to river	Septic tank, drainfield	Connect to city sewer

Source: OSSA. 1967. Implementation and Enforcement Plan for the Public Waters of the State of Oregon, Oregon State Sanitary Authority, Portland, OR. May 1967.

Notes:
OSSA - Oregon State Sanitary Authority

Table 4.3-4. Active NPDES Permitted Discharges to the Portland Harbor Study Area.[a]

File No.	Facility	Permit Category	Permit Type	River Mile[b]
Major NPDES - Individual Permit				
108015	City of Portland, Port of Portland, Multnomah County - Municipal Stormwater Permit	STM	NPDES-DOM-MS4-1	multiple
93450	Wacker Siltronic Corporation	IND	NPDES-IW-B14	6.5
70725	Columbia Boulevard Wastewater Treatment Plant (CBWTP)	STM	NPDES-DOM-A1	multiple[c]
Minor NPDES - Individual Permit				
64905	Evraz Oregon Steel Mills, Inc.	IND	NPDES-IW-B08	2.3
3690	Ash Grove Cement	IND	NPDES-IW-B16	2.8
100025	Kinder Morgan/Portland Bulk Terminal 4	IND	NPDES-IW-B15	4.6
108460	Columbia River Sand & Gravel - Linnton Dist. Facility	IND	NPDES-IW-B16	4.7
108460	Columbia River Sand & Gravel - Linnton Dist. Facility	IND	NPDES-IW-B15	4.8
47430	Koppers, Inc.	IND	NPDES-IW-B15	6.0
74995	Starlink Logistics	IND	NPDES-IW-B15	7.2
68471	Arkema, Inc. (closed, now stormwater only)	IND	NPDES-IW-B16	7.3
70596	Vigor Industrial LLC (aka Cascade General, Inc.)	IND	NPDES-IW-B15	8.3
100517	Univar USA	IND	NPDES-IW-B15	8.9
115018	The Pinnacle Condominiums Owners' Association	IND	NPDES-IW-B16	11.4
General Permits				
65589	Owens Corning (Corp.)	IND	GEN01	3.7
106458	Hexion Specialty (aka Borden Chemicals)	IND	GEN01	4.5
62231	Northwest Natural Gas Company	IND	GEN01	6.0
8550	GS Roofing Products Company, Inc.	IND	GEN01	7.4
110322	Oregon Transfer Co.	IND	GEN01	9.0
101321	Freightliner Truck Manufacturing Plant 2 (TMP2)	IND	GEN01	9.2
102334	Sulzer Pumps	IND	GEN01	10.2
44571	Glacier Northwest, Inc.	IND	GEN01	11.1
65589	Owens Corning (Corp.)	IND	GEN05	3.7
54175	McCall Oil And Chemical Corporation	IND	GEN05	7.9
64905	Oregon Steel Mills	STM	GEN12Z	2.3
100415	J. R. Simplot Company - Rivergate Terminal	STM	GEN12Z	2.6
108101	Alder Creek Lumber Co., Inc.	STM	GEN12Z	2.8
109186	Time Oil Co. - NW Terminal	STM	GEN12Z	3.4
32876	Morse Bros. Linnton Terminal	STM	GEN12Z	3.5
109845	Jefferson Smurfit Corporation (U.S.)	STM	GEN12Z	3.6
111236	Portland Container Repair Corporation	STM	GEN12Z	3.6
65589	Owens Corning (Corp.)	STM	GEN12Z	3.7
108103	Schnitzer Steel Industries, Inc. - DBA	STM	GEN12C	3.9
108103	Schnitzer Steel Industries, Inc. - DBA	STM	GEN12Z	3.9
6739	Northwest Pipe Company	STM	GEN12Z	4.2
108460	Columbia River Sand & Gravel - Linnton Dist. Facility	STM	GEN12Z	4.7
4248	BP West Coast Products (ARCO)	STM	GEN12Z	4.8
113672	Toyota Logistics Services, Inc.	STM	GEN12Z	4.8
112017	Exxon Mobil Oil Corporation	STM	GEN12Z	5.0
112103	Olympic Pipe Line Co.	IND	GEN12Z	5.1
109938	Shore Terminals LLC	STM	GEN12Z	5.3
108394	USACE - US Government Moorings	STM	GEN12Z	6.0
111157	Pacific Terminal Services	IND	GEN12Z	6.2
93450	Siltronic Corporation	STM	GEN12Z	6.5

Table 4.3-4. Active NPDES Permitted Discharges to the Portland Harbor Study Area.[a]

File No.	Facility	Permit Category	Permit Type	River Mile[b]
107922	Air Liquide (See Liquid Air File 50791)	STM	GEN12Z	7.3
110646	Metro Central Transfer Station	STM	GEN12Z	7.3
8550	GS Roofing Products Company, Inc.	STM	GEN12Z	7.4
107564	Chevron U.S.A. - Willbridge Transportation	STM	GEN12Z	7.6
100122	Chevron U.S.A. Inc. - Willbridge Distribution Center	IND	GEN12Z	7.7
107172	Brenntag Pacific Inc. (aka Quadra Chemicals Western Inc.)	STM	GEN12Z	7.8
90845	Conocophillips Company	STM	GEN12Z	7.8
54175	McCall Oil and Chemical Corporation	IND	GEN12Z	7.9
16055	Paramount Petroleum	STM	GEN12Z	8.0
104856	Tube Forgings of America, Inc.	STM	GEN12Z	8.1
100408	Western Star-Truck MFG (aka Freightliner TMP)	STM	GEN12Z	8.2
111878	RM Beverage Delaware, - Maletis Beverage	STM	GEN12Z	8.3
101536	United Parcel Service, Inc.	STM	GEN12Z	8.3
70596	Vigor Industrial LLC (aka Cascade General, Inc.)	STM	GEN12Z	8.3
104250	Columbia Distributing Company	STM	GEN12Z	8.5
114961	Greenway Recycling	STM	GEN12Z	8.6
107443	Roadway Express, Inc.	STM	GEN12Z	8.6
109872	Western Wire Works, Inc.	STM	GEN12Z	8.7
101620	Auto Truck Transport Corporation	STM	GEN12Z	8.7
87693	Equilon Enterprises L.L.C. (DBA)-Shell Oil Products	STM	GEN12Z	8.8
30386	Gunderson, Inc.	STM	GEN12Z	8.8
108730	HAJ DBA Christenson Oil	STM	GEN12Z	8.8
111845	Becker Trucking, Inc. See File #109849	STM	GEN12Z	8.9
113286	Environmental Fibers International	STM	GEN12Z	8.9
103380	Pacific Rail Services	STM	GEN12Z	8.9
110272	Container Recovery, Inc.	STM	GEN12Z	9.0
100721	Tarr Acquisition LLC (Rudie Wilhelm Warehouse Co.)	STM	GEN12Z	9.1
103803	Owens Corning Corp.	STM	GEN12Z	9.1
107658	ABF Freight System, Inc	STM	GEN12Z	9.1
100447	Carson Oil Co., Inc.	STM	GEN12Z	9.2
101321	Freightliner Truck Manufacturing Plant 2 (TMP)	STM	GEN12Z	9.2
111065	IMACC Corporation - Container Management Services	STM	GEN12Z	9.2
112482	Barrich, Inc. - MRP Services Inc.	STM	GEN12Z	9.2
109852	Portland Terminal Railroad Company	STM	GEN12Z	9.4
110778	Rose City Moving & Storage Company	STM	GEN12Z	9.5
108673	Fred Meyer Dairy Plant (Swan Island Dairy)	STM	GEN12Z	9.6
104892	Galvanizers Company	STM	GEN12Z	9.7
110199	Federal Express Corporation	STM	GEN12Z	9.8
109851	Peninsula Truck Lines, Inc.	STM	GEN12Z	9.9
107985	Stevedoring Services of America, Inc.	STM	GEN12Z	10.0
104836	ESCO Corporation	STM	GEN12Z	10.1
107213	Ash Grove Cement	STM	GEN12Z	10.1
110258	McCracken Motor Freight, Inc.	STM	GEN12Z	10.1
114024	Port of Portland Terminal 2	STM	GEN12Z	9.7
107179	Calbag Metals Co.	STM	GEN12Z	10.2
102334	Sulzer Pumps	STM	GEN12Z	10.2
107655	Savage Services Corp.	STM	GEN12Z	10.3
111331	Sakrete of the Pacific Northwest	STM	GEN12Z	10.9

Table 4.3-4. Active NPDES Permitted Discharges to the Portland Harbor Study Area.[a]

File No.	Facility	Permit Category	Permit Type	River Mile[b]
111356	CLD Pacific Grain, LLC	STM	GEN12Z	11.4
100571	Tarr Acquisition, LLC	STM	GEN12Z	11.2
109826	USDOT; National Railroad Passenger Corp. (AMTRAK)	STM	GEN12Z	11.6
119612	Harris Rebar Portland Facility	STM	GEN12Z	9.2
118681	IFCO Systems	STM	GEN12Z	4.6
118394	KBB Precast Plant	STM	GEN12Z	10.5
70613	Kinder Morgan Bulk Terminal 5	STM	GEN12Z	1.4
32300	Kinder Morgan Linnton Terminal	STM	GEN12Z	4.1
80841	Kinder Morgan Liquids Terminal LLC	STM	GEN12Z	7.5
119308	RB Recycling, Inc.	STM	GEN12Z	3.6
120521	SAIA Motor Freight	STM	GEN12Z	9.0
119241	SiC Processing USA LLC	STM	GEN12Z	8.4
	TENEX	STM	GEN12Z	1.2
120475	TP Freight	STM	GEN12Z	8.8
102121	Union Pacific Railroad Albina Yard	STM	GEN12Z	10.8
107609	United States Postal Service	STM	GEN12Z	11.6
109186	Time Oil Co. - NW Terminal	STM	GEN12C	3.4
105307	Jacobsen & Co. Inc., K.F.	STM	GEN12A	11.0
4248	BP West Coast Products (ARCO)	IND	GEN15A	4.8
32300	Kinder Morgan Linnton Terminal	IND	GEN15A	4.1
87693	Equilon Enterprises L.L.C. (DBA)-Shell Oil Products	IND	GEN15A	8.8
110908	Hoyt Street Properties, LLC	IND	GEN15A	11.6

Notes:

[a] River miles were determined by Integral GIS based on City-provided GIS layers.

[b] DEQ Wastewater permits database accessed February 2011 (http://www.deq.state.or.us/wq/sisdata/facilitycriteria.asp)

[c] Discharges from the CBWTP are directed to the Columbia River. The CBWTP also covers CSO and SSO discharges to the Willamette River

CBWTP - Columbia Boulevard Wastewater Treatment Plant
CSO - combined sewer overflow
DEQ - Oregon Department of Environmental Quality
GEN - general
GIS - geographical information system
IND - industrial
NPDES - National Pollutant Discharge Elimination System
ODOT - Oregon Department of Transportation
SSO - sanitary sewer overflow
STM - municipal stormwater
USACE - U.S. Army Corps of Engineers
USDOT - U.S. Department of Transportation

Definitions:

GEN01 - Cooling water/heat pumps
GEN05 - Boiler blowdown
GEN12Z - Industrial stormwater
GEN12A - Stormwater: Sand, gravel and other non-metallic mining
GEN12C - Stormwater: Construction activities - 1 acre or more
GEN15A - Tank cleanups and treated groundwater
NPDES MS4 - Municipal Stormwater Permit
NPDES-IW-B08 - Primary smelting and/or refining - Ferrous and non-ferrous metals not elsewhere classified above
NPDES-IW-B14 - Facilities not elsewhere classified which dispose of process wastewater (includes remediated groundwater) - Tier 1 sources
NPDES-IW-B15 - Facilities not elsewhere classified which dispose of process wastewater (includes remediated groundwater)
NPDES-IW-B16 - Facilities not elsewhere classified which dispose of non-process wastewaters

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
Evraz Oregon Steel Mills #141	2.2	E	Current: Manufacturing of carbon steel coils and plates. Pipe production capabilities are currently being held.	2/22/2007	Diesel oil	Unknown	Storm drain, then to river	Sheen observed on puddle of water. Absorbent materials used to clean up sheen and boomed nearby catch basin.
				11/22/2006	Unknown oil	Unknown	Storm drain/outfall	Sheen observed at outfall 001 that originated from vehicle drippings.
				12/28/2005	Lubricating oil	Unknown	Storm drain	Material released from several maintenance pick-up trucks leaking oil around parking log. Heavy rain later washed material into nearby storm drain.
				2/4/2000	Hydraulic fluid	1-2 gal	Storm drain, then to river	
				1/14/1998	Unknown oil	Unknown	Outfall to river	Unknown sheen coming from outfall, 10 ft x 800 ft.
				12/22/1997	Hydraulic fluid	Some of (~15 gal) 40-70 gal	Catch basin/river	
				7/1/1994 3/28/1994	Unknown oil Crude oil	Unknown Unknown	River River	Explosion in gas plant resulting in sheen in storm drain. M/V Overseas Chicago slopped oil off deck of the ship.
				4/29/1945	Oil	Unknown	River	Transfer pipe from vessels to sump was observed to be leaking badly (prior to EOSM ownership).
South Rivergate Industrial Park #2980	2.5	E	Current: JR Simplot - storage and distribution of urea and anhydrous ammonia; Union Chemical - manufacturer of adhesives and glues; Ash Grove Cement - manufacturer of calcium oxide; POP/Ft James - distribution of paper products; Douglas Walters/T&G Trucking.	12/6/2010	Unknown	Unknown	River	Leak from shaft of propeller of vessel Blue Water Shipping M/V B INDONESIA due to unknown reasons. Dock facility at Ash Grove facility is creating a sheen.
				4/10/2006	Unknown	Unknown	River	Occurred at JR Simplot
				1/12/2006	Hydraulic oil	1 quart	River	Occurred at JR Simplot
				4/18/2004	Tar	Unknown	River	Occurred at JR Simplot
				1/23/2004	Hydraulic oil	4 gal	River	During repairs of unmanned barge there was a spill of hydraulic oil into river at Ash Grove Rivergate.
				9/28/2002	Anhydrous ammonia	Unknown	River	Occurred at JR Simplot
				5/29/2001	Granular urea	500 lb	Dock, ship deck, river	Occurred at JR Simplot
				1/15/2001	Conveyor residual lube oil into river (during maintenance of conveyor)	Unknown	River	Occurred at JR Simplot
				12/28/2000	Urea	500 lbs	River	Urea spilled during offloading from a ship.
				5/5/1998	500- by 50-ft sheen	Unknown	River	Occurred at JR Simplot
				11/16/1999	Sheen on river	Not available	River	Occurred at JR Simplot
				4/13/1998	Urea	1,000-1,600 lb	River	Occurred at JR Simplot
Premier Edible Oils #2013	3.6	E	Current: None; Historical: Aboveground oil storage, manufacturing, packaging, and distribution of chemicals, metals, and metal products, edible oil processing and storage facility.	1/18/1994	Hydraulic oil	Unknown	River	M/V Shiokaze hydraulic value packing malfunctioned resulting in a release.
				1988	Edible oil	20-50 gal	GAL	No spills indicated in DEQ ERIS database, spill reported in CSM.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
Noncontiguous Burgard Industrial Park Properties #none	3.7	E	Current: Boydstun Metal Works - automotive trailer manufacturing and automotive parts storage; Morgan CFS - container unloaded (lumber and building materials); Northwest Pipe - no manufacturing, storage; Schnitzer Steel Remnant - storage; Historical: WWII shipyard.	9/2/2003	Diesel	10 gal	Barge deck and river	
				11/18/2003	Hydraulic fluid	<1 gal	International Slip Waterway	
				3/29/2001	Oily water	Unknown	International Slip Waterway	
				5/1/1981	Transformer fluids containing PCBs	Unknown	Upper and lower decks and bilge of ship	
Schnitzer-Calbag #2355	4	E	Current: Metals recycling, truck maintenance and repair, warehousing; Historical: Ship construction/shipyard activities (1945-1972, Oregon Shipbuilding), metals recycling, truck maintenance and repair, warehousing; upland log storage and log rafting.	2/22/2010	No. 2-D Fuel oil	Unknown	River	Personnel fueling a generator on the deck of small work barge spilled diesel fuel. A small amount was released to the water causing a sheen. PRP listed as Vigor Industrial.
				2/11/2010	Unknown oil sheen	Unknown	River	Unknown sheen in water near vessel at Berth 305.
				12/30/2009	Hydraulic oil	0.5 gal	River	Sheen in water caused by worker unplugging a scupper on the ITB BALTIMORE causing sheen in water. Vigor Industrial reported 0.5 gal to river. Booms and pads applied.
				12/15/2009	Hydraulic oil	Unknown	Storm drain	Hydraulic line burst on dirt sorter and discharge material into storm drain that leads to river.
				10/21/2009	Motor oil	Unknown	River	An air compressor on deck of M/V YUKON had a line fail causing a spill of motor oil at Berth 313.
				10/16/2009	Gasoline	2 gal	International Slip Waterway	Sinking of boom boat. 2 gallons released from motor into water. 20' boom boat got caught under the dock and sunk due to the tide coming in. Approximately 2 gallons of fuel was lost. Coast guard called. The boat was taken out of the Willamette by crane. Schnitzer says the fuel was non recoverable.
				1/8/2009	Hydraulic oil	Unknown	River	Release of oil from shiploading container crane due to hydraulic line bursting.
				11/12/2008	Unknown oil sheen	Unknown	River	Unknown sheen observed at dock at RM 3.4.
				8/8/2008	Motor oil	Unknown	River	Oil released from barge due to left over fuel in crushed cars leaking onto barge and into river.
				3/17/2008	Unknown oil	Unknown	River	Vehicle dropped in water due to crane grabbing loose piece of car, causing a small sheen.
				12/20/2007	Scrap car body residuals	2-5 gal	River	Scrap car on barge fell into river due to operator error and resulted in sheen on water. 2-5 gallons of oil released during scrap car transfer.
				11/11/2007	Oil	1 gal	International Slip Waterway	Discharged from crushed automobile mistakenly dropped in Slip.
				11/30/2004	Unknown oil	Unknown	River	Unknown sheen observed in river at International Terminal.
				11/18/2003	Hydraulic oil	<1 gal	River	
				9/2/2003	Diesel	10 gal	River	
				12/28/2002	Hydraulic oil	10-15 gal	River	Spill traced to Schnitzer facility, cause not indicated.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				
				Date	Materials Released	Volume Spilled	Spill Surface	Comments
Schnitzer-Calbag #2355				3/29/2001	Oily water	Unknown	International Slip Waterway	
				5/9/2000	No. 2-D Fuel oil	2 gal	River	Spill due to open valve on facility crane barge.
				2/15/2000	Unknown oil	Unknown	River	Unknown sheen observed within slip at the dock. Suspect sheen originated from M/V WATTE HELFA.
				10/13/1998	Hydraulic oil	Unknown	River	Heavy piece of equipment broke hydraulic hose on dock.
				2/17/1998	Unknown oil	Unknown	River	Unknown sheen milky in color, dark in spots observed 100 ft x 100 ft.
				10/28/1997	Unknown sheen	Unknown	River	Unknown rainbow sheen observed, 75 sq ft.
				7/9/1997	Oil/water mixture	Unknown	River	Released via storm drain during fire fighting activities to extinguish automobile bodies which caught fire.
				5/1/1981	Transformer fluids containing PCBs	Unknown	Upper and lower decks and bilge of ship	
Port of Portland Terminal 4, Slip 1 # 2356	4.3	E	Current: Bulk liquid storage, flour milling and soda ash handling. Historical: Grain storage, cold storage, liquid storage, flour milling, container food freight, break-bulk berth handling, fire boat moorage, and importing ore and ore concentrates.	10/3/2008	Unknown oil sheen	Unknown	River	Unknown sheen observed coming from Outfall #1.
				7/23/2007	Unknown oil sheen	Unknown	River	Unknown sheen observed at Berth 415.
				7/8/2005	Crude oil	Unknown	River	MSO PORTLAND reported release of crude oil from a barge due to unknown causes.
				9/24/2004	Unknown oil	Unknown	River	Unknown sheen observed in river at Terminal 4.
				6/24/2004	Unknown oil	Unknown	River	Unknown sheen observed in river at Terminal 4.
				8/10/2003	Unknown oil	Unknown	River	Unknown sheen observed in river at Terminal 4.
				4/8/2001	Industrial fuel oil, ship bunker or intermediate fuel oil	10 gal	River	Transversal shipping ship leaking intermediate fuel oil through cracks in hull at Terminal 4.
				9/25/1993	Hydraulic oil	0.5 gal	River	Hydraulic hose failure originating at Cargill facility. Cargill and Riedel Environmental conducted cleanup.
				10/8/1984	Oil	2-5 gal	River	On October 8, 1984, an oil spill was observed at Berth 405. Cargill reported that 2 to 5 gallons of gear grease had spilled out of a bucket by the grain hopper on Pier 1. Riedel Environmental responded to clean up the spill.
				3/20/1972	Grain	Unknown	River	On March 20, 1972, according to a Coast Guard report, Cargill released grain into the Willamette River at Pier 1.
				12/6/1971	Bauxite	Unknown	River	On December 6, 1971, according to a Coast Guard report, a release of bauxite occurred from Portland Stevedoring unloading operations at Pier 2.
Kinder Morgan Liquids Terminal - Linnton #1096	4.4	W	Bulk petroleum facility since installation of fuel ASTs in 1918.	10/8/2010	Gear oil	Unknown	River	Leak from fire pump on dock creating sheen on water.
				1/31/2008	Aer-o-lite 3% (fire fighting foam)	Unknown	River	Release of foam from oil water separator due to separator being overfilled due to rain.
				1/14/2002	Unknown oil	Unknown	River	Sheen of unknown origin observed.
				8/30/2001	Unknown oil	Unknown	River	Unknown sheen observed in river at Kinder Morgan facility.
				6/14/1999	Potash	5-7 tons	River	
				10/3/1998	Unleaded gasoline	200 gal	River	Dock line broke on In-City VOYAGER barge.
				3/3/1998	Potash	<200 lbs	Vessel-Barge	
				2/12/1991	Diesel Oil	Unknown	River	Operator error (overfilling).

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				
				Date	Materials Released	Volume Spilled	Spill Surface	Comments
Port of Portland Terminal 4, Slip 3 # 272	4.6	E	Current: Loading soda ash at docks; Historical: Loading soda ash, unloading pencil pitch, storage and unloading of bulk oil, import and export of ore and concentrate, unloading diesel, No. 6 fuel, and Bunker C oil and transferring via pipeline.	1/23/2005	2-D Fuel oil	10 gal	River	Approximately 10 gallons of 2-D fuel oil was released from a crane barge due to an overfill with a piece of equipment; cleanup was initiated with booms and absorbents.
				8/28/1997	Oil	Unknown	Unknown	While dismantling the dock at Berth 412, an oil pipe line was cut and some product in the line spilled out. Foss Environmental cleaned up the spill.
				6/18/1997	Pencil pitch	200-1,000 lb	River	Approximately 200-1,000 lb of pencil pitch entered Slip 3 after an operator error on the Dravo.
				9/25/1996	Pencil pitch	Unknown	River	Pencil pitch is an identified contaminant source in the upland soils and in-water sediments of Slip 3, and Hall-Buck has been cited by DEQ for numerous violations for pencil pitch handling. This is one of the documented releases of pencil pitch into the air, into the terminal, and/or into the river.
				7/30/1996	Pencil pitch	Unknown	River	
				5/13/1996	Oil	Unknown	River	On May 13, 1996, a thin sheen was observed in the river near Berth 411 by Port and Hall-Buck employees. It appeared that the source was from one of two operations: a broken-down crane the Port had on the dock may have leaked oil during servicing, or Hall-Buck operations. It is unclear who was the responsible party. Both the DEQ and the U.S. Coast Guard were notified.
				5/28/1993	Pencil pitch	Unknown	River	
				4/16/1993	Oil	Unknown	River	Oil was observed on the water in Slip 3. The oil was being discharged with the treated water from the oil/water separator. Foss Environmental Services responded to clean up the oil in the boom area.
				12/25/1992	Fuel and lube oils	10 gal	River	Approximately 10 gallons of a mixture of weathered light fuel and lube oils seeped into the Willamette River from soil at the east end of Berth 411. Floating booms were placed to contain further discharge.
				12/00/1992	Oil	Minor amount	River	The U.S. Coast Guard observed a minor oil release to the Willamette River at Slip 3. The Port contracted Century West to initiate the abatement of the migrating oil seep.
				3/2/1992	Pencil pitch	Unknown	River	
				2/25/1992	Pencil pitch	Unknown	River	Jones Oregon Stevedoring Co. complained of uncontrolled pencil pitch dust generated by unloading of MV Agness on February 25.
				7/2/1991	Oil	Unknown	River	The U.S. Coast Guard observed a slight sheen at the head of slip that appeared to be related to the seep at Berth 412.
				6/2/1991	Oil	Unknown	River	Jones Oregon Stevedoring reported oil leaking out of bank at Slip 3.
				1/5/1990	Pencil pitch	Unknown	River	
				3/15/1988	Pencil pitch	Unknown	River	

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
Port of Portland Terminal 4, Slip 3 # 272				10/16/1987	Pencil pitch	Unknown	River	October 16, 1987, when pencil pitch was spilled into the Willamette while Jones was unloading the vessel PARKGRACHT.
				12/28/1971	Oil	Unknown	River	Portland Harbor Police observed slightly colored to brightly colored oil slick on the water between Piers 4 and 5. The slick covered an area approximately 500 ft wide and 1,000 ft long. The oil was heaviest under the southeast end of Pier 5. Employees of Union Pacific Railroad were attempting to clean up the oil with booms and other absorbent materials.
				12/19/1971	Grain	Unknown	River	On December 19, 1971, according to a Coast Guard report, Jones Stevedoring and Cargill released grain into the Willamette River at Pier 1.
				1971	Oil seep	Unknown	River	1971, month/day unknown. Oil seep into Willamette River from southern bank of Slip 3.
				12/15/1970	Oil	Unknown	River	Five oil leaks discovered in original Union Pacific pipeline. December 15, 1970, leak occurred during Union Pacific's pipeline repairs when oil flowed through the sand and escaped into the water.
Linnton Plywood Association #2373	4.7	W	Linnton Plywood - sawmill and lumber company, plywood manufacturing, and warehousing in plywood building. CRSG - sand barging and distribution.	2/17/1995	Pale oil	20-55 gal	Storm drain, sheen on river	
ARCO #1528	4.9	W	Current: Petroleum storage and distribution; Historical: Petroleum storage and distribution, foamite plant, toy manufacturing lumber company.	1/16/2006	Unknown	Unknown	River	Orphan sheen discovered around docks of BP ARCO, 900-ft containment boom deployed to contain sheen.
				10/31/2005	Diesel	15,000 spilled (at least 1,000 gal to river)	Ground/river	
				1995, 2003, 2004	Reported sheen on water inside boomed area (multiple separate incidences)			
				5/14/2000	Crude oil	Sheen	Released from ship, created sheen on river	
				6/9/2000	Hydraulic oil	1 barrel	Release from ship to river	
				8/13/1997	#2 Diesel	25,000 gal, unknown total amount to river	Ground/river	
				5/4/1995	Automotive gasoline	Unknown (up to 20 gal)	Released from leaking gasket onto soil then flowed to river	
				8/9/1995	Gasoline	2 gal	Discharge to river (equipment failure on dock)	
				4/23/1986	Crude oil	1 cup from ballast pipeline	From ballast pipeline to river	

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
POP - Terminal 4 (Auto Storage Facility) #172 #2642	5	E	Current: Unloading, storing and processing of new automobiles; Historical: Unloading, storing and processing of new automobiles, unloading of steel and export of lumber products on the northern third of the facility.	3/18/1985	Unknown oil	Unknown	Unknown	
Exxon Mobil #137	5.1	W	Petroleum storage and distribution.	1/20/2004	Oil residue	4 gal	River via outfall	25 ft out into the river spanning 50 ft on either side of the outfall. Cleanup conducted.
				5/4/2004	Oil	Not reported	River	
				3/20/1999	Gasoline	2 gal	River	Occurred from loading arm at Mobil dock.
ST Services/Shore Terminals #1989	5.3	W	Bulk petroleum storage and marine terminal.	6/15/2010	Hydraulic oil	1 gal	River	Removal of hydraulic cylinder cause release of oil into river. PRP listed as Nustar Energy.
				6/5/2010	3M Foam	Unknown	River	Discharge of material to river.
				1/20/2004	Other oil	Unknown	Fixed	Heavy film sheen in water coming from leaking oil water separator.
				8/11/2003	JP8 fuel	50-100 gal	River	SEA COAST barge off-loading JP-8, boomed.
				9/15/1999	Diesel fuel	50-100 gal	River	Release of fuel due to work on piping system.
Foss Maritime/Brix Marine #2364	5.5	W	Current: Marine vessel transportation services and maintenance; Historical: Above and tugboat service and fueling.	7/22/2010	Diesel oil	Unknown	River	Release of diesel fuel from vessel due to equipment failure
				7/21/2008	Unknown oil	1 gal	River	
				7/13/2008	Clarity oil	0.5 cup	River	Equipment failure.
				7/3/2008	Clarity oil	0.5 cup	River	Release from vessel to water due to overboard discharge turning on during maintenance.
				9/9/2004	Lube oil	Unknown	River	
				1995 - 2004	Fuel	<25 gal at a time	River	Small amounts of fuel (<25 gallons at a time) released into Willamette from maintenance activities, periodically from 1995 - 2004.
				6/7/2003	Diesel oil	1 pint	River	Tug JON BRIX released small amount of oil.
				4/21/2003	Hydraulic oil	Unknown	River	Pump failure at Foss facility.
				7/8/2002	No.2 Diesel fuel	5 gal	River	During refueling, glass valve not open all the way.
				7/8/2002	Fuel	5 gal	River	
				10/18/2000	Diesel oil	Unknown	River	M/V FIRE BOAT WILLIAM developed leak in diesel tank due to unknown causes. Spill occurred during refueling due to hole in gas tank - previous weld had failed.
				5/29/2000	Gear oil	2-3 cups	River	Discharged from tug JOSEPH T's bilge pump.
				2/7/2000	Diesel oil	Unknown	River	The material was released from the sounding tube on the tug LEWISTON due to unknown causes. Area was boomed and pads applied.
				12/15/1999	Fuel oil	17 gal	River	During refueling.
				11/11/1999	Diesel fuel	15-20 gal	River	During refueling.
				11/2/1999	Diesel fuel	1 gal	River	During refueling - result of improperly aligned valve.
				1/23/1999	Diesel fuel	1 gal	River	Discharged from tug SARA BRIX.
				12/23/1998	Bilge slop	5 gal	River	
				9/30/1998	Unknown oil	Unknown	River	Sheen observed. Sheen was 75 yds x 10 yds, blue in color.
				9/18/1998	Residual oil	Unknown	River	Released from Foss Barge 208 - washed overboard as result of heavy rains and clogged scuppers.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				
				Date	Materials Released	Volume Spilled	Spill Surface	Comments
				5/31/1998	Diesel fuel	5 gal	River	Released from tug HOWARD OLSEN at Union Docks (Wilbridge Area to NW St. Helens Rd and NW Kittridge). 15 gallons recovered on deck, 5 gallons released to river.
				3/21/1998	Oil	5 gal	River	Released from tug FAIR WIND.
				1/12/1998	Oil	25 gal	River	Vessel bilge.
				1/12/1998	Diesel oil	5 gal	River	Separator line broke on a marine vessel.
				10/14/1997	Diesel oil	Unknown	River	Sheen observed around tug JIM MOORE
				9/2/1996	Diesel oil sheen	Unknown	River	Observed sheen around tug JIM MOORE.
				4/23/1996	Cable lube grease	Unknown	Storm drain	Released from dumpster. Two 5-gal drums thrown into dumpster, rain washed material from dumpster into nearby storm drain then to river.
				3/27/1996	Fuel oil	1 gal	River	Released from ship due to overfilling.
				1/24/1996	Oily waste	2.5 gal	River	Released from two separate incidents.
				10/16/1995	Diesel oil	Unknown	River	Crack in weld of hull of oil barge.
				7/15/1995	Oil	7 gal	River	
				6/19/1995	Oil	7 gal	River	
				1/18/1995	Diesel oil	Unknown	River	Material released from tugboat shaft.
Foss Maritime/Brix Marine #2364				8/8/1994	Oil	3 gal	River	Released at Pacific Northern Terminal.
				8/6/1994	Lubricating oil	Unknown	River	Material leaked from barge deck to river.
				2/19/1994	Oil	Unknown	River	Released at Union Dock.
				1/20/1994	No 2-D fuel oil	Unknown	River	Soft patch failure on tugboat Clarkston.
				12/30/1993	Oil	Unknown	River	Sheen observed around tug.
				12/2/1993	Unknown oil	Unknown	River	Sheen observed, 50 ft x 200 ft silvery color.
				9/23/1993	Waste oil	1 gal	River	Tugboat T.J. Brix leaked while offloading. Equipment failure.
				4/21/1993	Diesel oil	Unknown	River	Small amount of product spilled into water when changing out fuel line on dock. Operator error.
				2/19/1993	Diesel	1 gal	River	
				2/18/1993	Black oil	1.5 gal	River	
				10/30/1992	Oil	Unknown	Not given	Willamette River - Columbia River. Sheen 75 ft x 10 ft.
				7/22/1992	Diesel Oil	Unknown	River	Material spilled when valve was being replaced. Operator error.
				7/10/1992	Diesel	1 gal	Not given	
				5/10/1992	Diesel Oil	50 gal	River	Released from hole in vessel.
				9/12/1991	Waste lubricating oil	3 gal	River	Released from tug to river. Tugboat, sump system overflowed.
Mar Com #2350	5.6	E	Current: None; Historical: shipbuilding and repair, sandblasting and painting, moorage.	2/23/2006	Unknown oil - air compressor	1 gal	River	
				2/23/2006	Discharge from pipe onto ground and subsequently to river	Unknown	River	
				7/11/2000	Diesel fuel	10-15 gal	River	Hose rupture.
				6/6/2000	Lanolite	Unknown, 50 x 100 ft sheen	River	
				10/15/1997	Oily/water materials	50 gal	River	Release from vessel.
				4/2/1997	Sandblasting paint/dust	Unknown	River	

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
Mar Com #2350				4/1/1997	Oil-contaminated bilge water	20 gal	River	
				~1970s	Barge in shipway tipped over releasing fuel oil	Unknown	In shipway	The barge/fuel oil release was addressed at the time by excavating the saturated soils/material and placing it on the top of the bank adjacent to the spillway.
Marine Finance (Hendren Tow Boats) #2352	5.8	W	Current: Tugboat business, houseboat/sailboat construction; Historical: Above and metal salvage, moorage.	5/7/2003	Oily bilge water	1 gal	River	Tug pumped oil bilge water to river in vicinity of St Johns Bridge.
U.S. Moorings #1641	6	W	Government port, supply, repair facilities for dredge and other support vessels, warehousing facilities, fuel storage, motor pool garage and parking.	2/4/2008	Hydraulic oil	2 cups	River	Release of materials from hydraulic connection on side of ship due to residual hydraulic pressure. Absorbents applied.
				11/25/2006	Diesel oil	Unknown	River	Sheen observed in river during deballasting a forpeak tank. Release could be due to residual fuel in tank from a recently repaired small bulkhead fracture.
				2/6/2004	Hydraulic oil	Unknown	River	Workers were repairing hydraulic ram on board the Yaquina (ACOE dredge). During install of a new ram, and pulling plug on threaded fitting, approximately 1 pint of hydraulic oil sprayed out, partially landing on the deck and partially falling into the Willamette. Approximately 2 ounces was released into the Willamette. Workers used sorbent pads to pick up some sheen. After minimal cleanup, they could not find a sheen.
				1/15/2004	Hydraulic oil	10 gal	River	Equipment failure on dredging arm swell compensator on the starboard side of the vessel caused a 10-gallon hydraulic fluid spill to river. 50-ft by 300-ft sheen. Also trace amounts of hydraulic oil in 2004 and 2003.
				1/24/2003	Unprocessed/semi-processed oil	1 gal	River	Gray sheen observed inside oil boom at ACOE dock.
				11/24/1996	Oil slick of black fuel oil	Unknown	River	
				3/9/1996	Unknown oil	Unknown	River	
				12/29/1990	Sinking of anchor barge Raggy at its moorings - diesel / motor oil	350 gal (diesel)/ unknown (motor oil)	River	
USACE #1641	6.2	W	Maintenance port for USACE vessels.	4/6/2010	Motor oil	1 cup	River	Equipment failure.
				7/11/2009	Diesel fuel No. 2-D	0.5 pint	River	Equipment failure.
				1/28/2009	Misc. motor oil	2 tbsp	River	Equipment failure.
				11/18/2007	Hydraulic oil	Unknown	River	Release of hydraulic oil from a crane due to broken hydraulic line.
				9/26/2007	Unknown	Unknown	River	USACE advising of a large sheen which appears to be coming from a tugboat near their facility on the Willamette.
				3/10/2006	Gear Oil	9 gal	River	A bow thruster on a dredge ship was being tested when some oil was noticed leaking out of the tunnel.
				12/19/2000	Hydraulic oil	2 gal	River	Released from ESSAYON.
				9/30/1999	Lube oil	Unknown	River	150 sq ft sheen caused by spill from bow thruster on ESSAYON.
				2/19/1997	Hydraulic oil	20 gal	River	Released from bow thruster value on vessel YAQUINA.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
USACE #1641				9/23/1990	Hydraulic oil	10 gal	River	Released from ESSAYON.
				12/28/1989	Motor oil	1 gal	River	Released from ESSAYON while refueling.
Gasco #84	6.2	W	Current: Liquefied natural gas storage and distribution, solid and liquid coal tar pitch storage and distribution; northern portion - bulk fuel storage and distribution; Historic: Oil manufactured gas plant, coal tar formulation, storage and distribution.	6/18/2007	Unknown oil sheen	Unknown	River	Unknown sheen observed at Gasco dock.
				10/22/2003	Coal tar pitch	2 gal	River	KI operations.
				3/2000	Oily water	<25 gal at a time	River	NW Natural operations.
				10/17/1998	Industrial fuel oil, ship bunker or intermediate fuel oil	Unknown	River	MV CHESAPEAKE (Moremal Marine) blew fuel line while emptying the hose. Sprayed oil on dock and deck and some fell into river.
				1998	Fuel oil (PNO)	Few gallons	River	NW Natural operations.
				10/1/1969	coal tar pitch	Unknown	River	KI operations.
Willamette Cove #2066	6.7	E	Current: Vacant; Historical: Plywood manufacturing plant (west parcel), ship repair and maintenance (central parcel) - US Government facilitated during Great Depression and wars (WWI, WWII, and the Korean War), cooperage plant-manufactured wood vats.	None				8/16/01: 30-ft cabin cruiser partly submerged in Willamette River. Sheen noted when discovered.
Arkema	7.3	W	Current: None; Historical: Inorganic chemical manufacturing company from 1941 to 2001. Produced sodium chlorate and potassium chlorate, chlorine, sodium hydroxide, hydrogen gas, hydrochloric acid and DDT.	3/9/1995	Fuel oil	1 gal	Overwater dock	
				1/19/1986	Sodium dichromate or sodium chlorate	100-200 gal	Unknown	According to ERNS Database, Incident No. 43729, Atofina transfer line/leaking valve in line; estimated 100-200 gallons sodium dichromate released (affected media not reported). Incident report also notes sodium chlorate -- unclear which was released, not enough information provided.
Willbridge Terminals (Kinder Morgan, Shell, Conoco Phillips) #1549	7.5	W	Bulk petroleum storage since early 1900s.	4/16/2010	Unknown oil	Unknown	Outfall 22	Unknown sheen near Outfall 22.
				4/12/2010	Unknown oil	Unknown	Outfall 22	Unknown sheen near Outfall 22.
				3/19/2009	Unknown oil	Unknown	Outfall 22	Release of hydrocarbon from outfall due to unknown causes, resulting in sheen in river.
				1/14/2009	Unknown	Unknown	Outfall 22	Spill of materials from Outfall 22 causing sheen on river.
				1/12/2009	Unknown oil	Unknown	Outfall 22	Unknown sheen observed in containment area at Outfall 22 of the Conoco Phillips facility.
				1/5/2009	Unknown	Unknown	Outfall 22	Unknown sheen observed.
				11/13/2008	Unknown	Unknown	Outfall 22	Release into outfall system from stormwater pipe.
				10/25/2008	Diesel	0.5 cup	River	Release from inert gas generating system on tanker due to incomplete combustion. Release of diesel from tanker COLORADO VOYAGER at upper berth of Willbridge, resulted in 3 ft x 5 ft sheen.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
				10/10/2008	Unknown oil	Unknown	Outfall 22	Oil sheen observed in outfall system on Conoco Phillips property. Sheen bypassed oil water separator which came from either Conoco or Chevron as they share same outfall. Sheen is light in color and estimated at 50 ft x 50 ft.
				4/22/2008	Unknown oil sheen	Unknown	Outfall 22	Unknown sheen coming out of Outfall 22 from unknown source.
				4/16/2008	Oil sheen	Unknown	Outfall 22	Sheen in river observed coming from outfall due to unknown reasons.
				4/8/2008	Unknown oil sheen	Unknown	Outfall 22	Unknown sheen coming out of Outfall 22 from unknown source.
				3/26/2008	Unknown oil sheen	Unknown	Outfall 22	Unknown sheen from unknown source.
				3/21/2008	Unknown oil sheen	Unknown	Outfall 22	Unknown sheen from unknown source.
				3/13/2008	Unknown oil sheen	Unknown	Outfall 22	Unknown sheen from unknown source.
				3/8/2008	Unknown oil sheen	Unknown	Outfall 22	Unknown sheen from unknown source.
				2/29/2008	Unknown oil sheen	Unknown	Outfall 22	Ongoing observation (since 1/17/08) of petroleum sheen that has been discharging from outfall. Sporadic sheen.
				2/28/2008	Unknown	Unknown	Outfall 22	Release into outfall system from stormwater pipe.
Willbridge Terminals (Kinder Morgan, Shell, Conoco Phillips) #1549				5/2/2007	Lube oil	55 gal	Storm drain	On May 2, 2007, a 55-gallon drum of lube oil was spilled into a storm drain that drains to the Willamette River at a warehouse located at the Chevron leasehold. Booms were placed around the sheen and a vacuum truck was called in to clean the sheen.
				4/18/2007	Diesel	Unknown	River	Fuel line broke causing discharge to river. Release originated on Kinder Morgan portion of the facility.
				2/9/2007	Unknown	Unknown	River	50' x 100' sheen reported near Kinder Morgan, Chevron Conoco. Release originated on Kinder Morgan portion of the facility.
				9/20/2006	Unknown	Unknown	River	Hose ruptured while loading a barge resulting in discharge to river. Release originated on Kinder Morgan portion of the facility.
				7/23/2006	Hydraulic Oil	Unknown	River	A ship loader fell onto the ship, hydraulic fluid was noticed dripping onto the dock, sheen was also noticed in the river. Release originated on Kinder Morgan portion of the facility.
				7/6/2006	Hydraulic Oil	Unknown	River	Hydraulic line broke on a ship loader which resulted in the release of material into the river. Release originated on Kinder Morgan portion of the facility.
				2/14/2005	Jet fuel, JP-8	2 gal	River	Release occurred when transferring jet fuel from barge to transfer station. Booms and pads applied, valve shut off immediately.
				12/30/2004	Unknown oil	Unknown	Outfall 22	Release of unknown material from an outfall due to unknown causes.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
Willbridge Terminals (Kinder Morgan, Shell, Conoco Phillips) #1549				7/30/2003	Jet fuel, JP-8	Unknown	River	Small amount of aviation fuel released to river from hose used to depressure pipeline. Release occurred on downriver side of marine dock adjacent to hose riser manifold at 5524 NW Doane St.
				3/27/2003	Unknown oil	Unknown	Outfall 22	Unknown sheen of unknown oil observed.
				10/15/2002	Marine fuel oil	Unknown	River	Material released from barge at Conoco Phillips due to faulty connection to discharge header.
				9/29/2002	Unknown oil	Unknown	Outfall 22	Unknown sheen observed at 5528 NW Doane Ave.
				4/18/2002	Unprocessed/semi-processed oil	1 gal	River	Sheen observed between the SN YUKON and the containment boom at berth 314.
				11/21/2001	Other oil (possibly gas turbine oil GST 1000)	Unknown	River	Potential leak of hydraulic oil from propeller shaft of Chevron COLORADO 651. Release occurred at Chevron Willbridge Upper Berth.
				9/28/2001	Diesel fuel	1 gal	River	Transferring fuel from tank to barge (Tidewater) sheen on river under dock. Leak from barge, fracture on bulkhead of tank.
				3/26/2001	Diesel fuel	1 gal	River	Tug refueling area at Conoco Tank Farm released diesel to water.
				11/13/2001	Unprocessed/semi-processed oil	1 gal	River	Chevron COLORADO leak from blade seal on controllable pitched propeller.
				1/12/2001	Unprocessed/semi-processed oil	1 gal	River	Oil sheen released from dry dock #4 during the re-float of Navy ship TIPPACANOE
				10/30/2000	Motor, bearing, propeller and other lubrication oils	1 gal	River	Chevron COLORADO hit log with the hydraulic propeller.
				6/14/2000	Unknown oil	Unknown	Outfall 22	Unknown sheen observed.
				12/11/1999	No. 2-D Fuel oil	Unknown	Outfall 22	Spill occurred while fueling a tug at Tosco Dock.
				9/4/1993	Automotive gasoline	Unknown	Outfall 22	Unknown rainbow sheen observed 200 ft x 3 ft
				3/4/1992	Unknown oil	Unknown	Outfall 22	Sheen observed
				12/2/1991	Unknown oil	Unknown	Outfall 22	Unknown sheen observed
				11/1/1989	Oil	10 gal	River	
				6/12/1989	Asphalt	7,000 gallons	River	An asphalt spill of 7,000 gallons into the Willamette River at the Chevron Willbridge Site Dock occurred on June 12, 1989. Cleanup operations were immediately implemented. The final phase of cleanup included sampling the river bottom of the dock area and analysis for TPH. No areas were found to contain elevated TPH levels.
				9/9/1984	Heavy hydrocarbon	NA	River	Seepage from docking facility.
				9/4/1984	Heavy hydrocarbon	NA	River	Seepage from docking facility.
				8/1/1984	Black oil	NA	River	Seepage from docking facility.
				12/1/1982	Petroleum product	90 gal	Saltzman Creek	
				3/1/1982	Oily water	NA	Saltzman Creek	Leak from weephole in flume wall.
				12/1/1981	Diesel	NA	Saltzman Creek	Leak from drum on pick up.
				4/1/1981	Undocumented solvent	NA	Saltzman Creek	
				4/1/1980	Lube oil	2 gal	River	
				10/1/1979	Aviation gasoline	70 gal	River	
				3/7/1979	Bunker oil	2 - 5 gal	Overwater dock	100% recovered.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
Willbridge Terminals (Kinder Morgan, Shell, Conoco Phillips) #1549				1/19/1979	Aviation fuel	3,297 gal	River	M/V Pecos struck the Shell Oil dock while berthing and ruptured a Jet A line releasing aviation fuel into the river.
				6/1/1978	Gasoline	NA	River	
				6/1/1976	Gasoline	NA	River	
				12/1/1975	Asphalt	100 gal	Saltzman Creek	Tank overflow.
				2/23/1973	Fuel	Unknown	River	An oil spill occurred at the Union Oil Dock on February 23, 1973 during a transfer to the vessel Dredge OREGON. An oil containment boom was deployed to contain the spill.
				1/13/1971	Gasoline	2,500 gal	River	On January 13, 1971, oil tanker M/V Houston hit a gasoline main at the Shell Oil dock and over 2,500 gallons of gasoline was released to the Willamette River.
				8/19/1956	Oil	Unknown	River	Portland Harbor Patrol observed oil in the River possibly coming from "old pipes" under the Shell Oil dock.
				8/18/1956	Oil	Unknown	River	Portland Harbor Patrol observed oil in the River possibly coming from "old pipes" under the Shell Oil dock.
				3/10/1956	Gasoline	1,000 gal	Dock	Occurred at Shell Oil dock while loading a barge.
				1/21/1956	Bunker oil	20 gal	Dock to river	Occurred at Shell Oil dock.
Freightliner	7-8	E	Truck parts and manufacturer.	11/25/2009	Diesel fuel	1,000 gal	Storm drain to river	BES Portland reported fire retardant foam went into the storm drain near the 5036 N. Lagoon outfall, which leads into the Willamette, due to a fire at Freightliner. Up to 1,000 gallons diesel unaccounted for.
				1/25/2007	Unknown	Unknown	Storm drain to river	During regular Port inspections at the Dredge Base, a sheen was observed concentrated around the northern partition of the mooring barge. The source of the sheen was determined to be originating from City outfall M-1, located northwest of the barge location, where the sheen was observed entering the river. The Port later discovered that a release had originated from the nearby Freightliner facility, which also discharges stormwater to outfall M-1. Available records indicate the Coast Guard was notified and Freightliner responded to the spill. Response activities included booming the area proximal to the barge.
				11/29/2006	Pure gear oil	450-500 gal	River	Discharge from City Outfall M-1. Rupture of oil line (synthetic 50 weight lube oil) at facility.
				11/29/2006	Oil water mixture	1,000 gal	River	Discharge from City Outfall M-1. Rupture of oil line (synthetic 50 weight lube oil) at facility.
				7/29/2004	Unknown oil	Unknown	River	Material release discovered from an unknown source in the catch basin at Freightliner, 6936 N Fathom St.
				4/9/2002	Diesel sheen	Unknown	Sheen at storm water outlet	Fuel line rupture on truck.
				7/25/1995	Untreated wastewater	3,000 gal	Storm drain to river	Released to river due to an open valve.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
Shaver Transportation #2377	8.4	W	Current: General towing and lightering; Historical: Mobile telephone service and marine transportation.	3/3/2005	Diesel	10-30 gal	River	Spill contained and cleaned up.
				9/29/2001	Diesel oil	1 gal	River	Tug SANDY sank at Shaver dock.
				8/19/1998	Oil	2-5 gal	River	Released when tug picked up 20 ft section of bunker hose with its propeller that contained oil.
				7/21/1996	Diesel oil	Unknown	River	Released when floating shop facility partially sunk.
Willbridge Terminals (WMCSR-NWR-94-06) #2355	7.7	W	Current: Distribution of refined petroleum products (gasoline, diesel fuel, lubricating oil), fuel storage.	11/14/1996	Unknown oil	Unknown	River	Sheen observed (50 ft x 1000 ft, yellow-green color)
				5/16/1996	No.2 Fuel oil	Unknown	River	Fuel valve closed on diesel engine on crane (on a barge) causing filter to overflow.
				1989	Asphalt	6,300 gal	River	Multiple instances of sheen was observed on water (1998-2004), no spills >1 gallon.
McCall Oil #134	7.9	W	Asphalt manufacturing and chemical manufacturing, storage and distribution.	5/9/2010	No. 1-D fuel	Unknown	River	Spill occurred during fueling of Sea Link Marine at fuel dock.
				8/7/2006	Diesel	Unknown	River	Material release from a tank barge due to operator error.
				10/16/1998	Unprocessed/semi-processed oil	Unknown	River	USCG reported 250 ft x 1/4 mile long light sheen near McCall Oil Dock.
				10/13/1998	Oil	2 gal	River	Oil/water separator outflow was clogged and oil released to river.
				12/10/1996	Unknown	<1 gal	Parking lot - storm drain	Material washed onto parking lot.
				6/1/1994	Oil	1 quart	River	
				1991 and mid-1970s	Asphalt	Unknown	River	
				Mid-1970s	Oil and water	Unknown	River	
US Coast Guard - Marine Safety Station #1338	8	E	Current: USCG marine safety and marine inspection offices; Historical: Roofing shingle manufacturer, lumber company.	2/3/2011	No. 2-D fuel oil	Unknown	River	Release of fuel from boat at marina. The tank "burped" and a small amount came out the vent.
				12/11/2010	Gasoline	Unknown	River	While refueling Sheriff's office boat at Station Portland Dock, fuel tank "burped" causing a release of unknown amount of fuel. Sheen was observed near dock and flowing with river. Sheen was approximately 2 ft x 50 ft.
				6/5/2010	Gasoline	Unknown	River	Discharge of fuel from police vessel. After fueling, the vessel drove away from fuel pier with gas tank uncapped.
				5/8/2010	Motor oil	2 qts	River	Due to engine problem, oil leaked from engine and discharge to river.
				4/6/2010	Motor oil	1 cup	River	An engine malfunction caused a release to the water.
				10/28/2009	Motor oil	Unknown	River	Spill of materials to river due to operator error.
				7/11/2009	No 2-D fuel oil	1 pint	River	USCG was refueling county sheriff boat at fuel dock. When recapping the tank and departing, the tank burped and released 1 pint of diesel fuel into river.
				1/28/2009	Motor oil (Castrol GRX 10W30)	Unknown	River	Release of oil occurred when individual slipped while filling up outboard engine.
				6/5/2008	Gasoline	2 gal	River	Overflow during vessel fueling.
				6/9/2007	Gasoline	Unknown	River	Overflow during vessel fueling.
				9/11/2007	Motor oil	1 quart	River	Discharge during engine vessel maintenance.
				12/7/2004	Petroleum	Sheen	River	

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
US Coast Guard - Marine Safety Station #1338				8/18/2002	Diesel - bilge from tug	10 gal	River	Release from bilge of tug ST.NICHOLAS. 400-by 100-ft sheen.
				9/9/1999	ZEP paint and varnish remover	1 gal	River	Hose rupture.
				11/28/1998	Diesel	30 gal	River	Unknown cause, suspect bilge pumping. No responsible party identified.
				10/8/1996	Fuel	Unknown	River	
				1991	Hydraulic oil	1 gal	River	Released from POLAR SEA.
Fred Devine Diving and Salvage #2365	8.2	E	Current: Moorage; Historical: Moorage and waterfront structures (1940s), cleaner and solvent storage.	5/10/2006	Hydraulic oil	1 pint	River	Pleasure cruiser broken line spilled material into river.
				2000	Paint	5 gal	River	1 pint of hydraulic oil spilled into Willamette - date unknown. Crews cleaned up spill.
				11/27/2000	Oil	3 gal	River	Release of oil / Mobile L EAL 224H from a hose on a hydraulic unit bursting; approx. 30 ft x 30 ft sheen observed; report indicates 3 gallons of oil released to Willamette River; spill dissipated in the water.
				3/10/1999	Unknown oil	Unknown	River	Oil sheen near Fred Divine outfall (outfall one mile) 40 ft x 1,000 ft - unrecoverable.
				3/8/1995	Diesel	Unknown	River	Bag of used sorbent pads had a split in it and caused a release of diesel. Estimated 40 ft x 70 ft sheen on lagoon. Pads and boom deployed around spill.
Cascade General #271	8.4	E	Current: Cascade General - Ship repair yard and other industrial operations, POP - parking lot/undeveloped property; Historical: Military shipyard and military ship dismantling (1942-1949), POP - leased out to ship repair/industrial operators (1950-1996), Cascade General - ship repair/industrial operations (1996-present).	7/29/2010	Unknown material	Unknown	River	Spill of unknown material from vessel EDISONS WEST.
				3/4/2010	Unknown oil	Unknown	River	Sheen observed while running engine test on GLOBAL SENTINAL at dock.
				2/22/2010	Diesel fuel No. 2-D	Unknown	River	Diesel spilled on barge, small amount discharged to river.
				12/30/2009	Hydraulic oil	0.5 gal	River	
				10/21/2009	Motor oil	1 gal	River	
				10/6/2009	Unknown oil sheen	Unknown	River	Unknown sheen observed in Portland Shipyard.
				9/9/2009	AFFF foam	3 gal	River	Discharge from deck nozzle on USNS CARL BRASHEAR. Equipment failure.
				7/13/2009	"A triple F"	5 gal	River	Release of "A triple F" from sprinkler to drain onboard vessel USNS CARL BRASHEAR due to operator error while installing "A triple F" switches. Release occurred at Berth 313.
				3/9/2009	Sandblasting dust	Unknown	Storm drain	Sandblasting debris entering storm drain near 5020 N Channel Ave.
				2/23/2009	Hydraulic oil	1 gal	River	Hydraulic hose failed releasing hydraulic oil onto deck of vessel GLOBAL SENTINAL and less than 1 gallon into river. The vessel was in dry dock and a hydraulic hose broke on the crane. The vessel was pre-boomed, the oil sprayed over the knife edge of deck. Approximately 1 cup of oil sprayed over side. PRP listed as Transoceanic Table Ship Company Inc.
				2/19/2009	Unknown oil sheen	Unknown	River	Unknown sheen observed.
				11/18/2008	Unknown oil sheen	Unknown	River	Unknown sheen observed.

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Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
				11/10/2008	Unknown oil	0.5 gal	River	Released from deck of barge due to runoff from rain at Berth 310. PRP listed as DIX corporation, Max J. Kurney Construction.
				9/18/2008	Unknown oil	1 cup	River	Released from rudder of vessel M/V HIM BRENTON REEF due to leak. Released at Dry Dock #3.
				9/16/2008	Hydraulic oil	1 cup	River	ACOE Dredge Essayons lost less than 1 cup of hydraulic oil from the propeller system, sheen was contained inside boom. Sheen non-recoverable.
				8/25/2008	Lubricating oil	Unknown	River	While testing propeller shaft in shipyard for overhaul and while returning the shaft, sheen was observed in water next to ship. Chevron Texaco listed as PRP.
				7/18/2008	Unknown sheen	Unknown	River	Unknown sheen observed.
				6/17/2008	Unknown oil	Unknown	River	Discharge of oil from SS CAP JACOB due to unknown causes.
				6/3/2008	Unknown oil	Unknown	River	Discharge of residual oil from deck of tanker vessel due to heavy rainfall. Chevron Shipping company listed as PRP.
Cascade General #271				5/12/2008	Hydraulic oil	2 gal	River	Release of oil into Swan Island Lagoon due to drain plug in pipe accidentally kicked by workers at berth 302 of Cascade General. Area was pre-boomed, pads applied and bubbler used to confine sheen.
				6/3/2008	Residual oil	~2 tbsp.	River	Chevron reported ~2 tablespoons of residual oil washed off deck of tanker at 5555 N Channel Ave.
				9/27/1997	Diesel fuel	50 gal	Storm drain	Unknown source, 50 gallons diesel 20 yds in storm drain.
				8/23/2007	Sandblasting dust	50 lbs	River	Sandblasting vessel and large quantities of grit and sandblasted material went into the Swan Island Lagoon.
				6/28/2007	Lubricating oil	Unknown	River	Leak from vessel.
				4/13/2007	Lubricating oil	100 gal	River	Release 100 gallons lube oil from T/V Chevron Mississippi. CRC for cleanup actions. Booms deployed by RP.
				4/10/2007	Oily mixture	Unknown	River	While cleaning out bunker tank on M/V POLAR ENDEAVOR, an oily mixture going to shore through hose from a portable tank to a slop tank had a leak and released material to river.
				3/5/2007	Unknown oil	Unknown	River	Materials released from unknown source created sheen on water between vessels and dock. Material is inside boom surrounding vessel, but is not known where material originates.
				12/4/2006	Other oil	Unknown	River	Release into river from leaky pipe.
				9/23/2006	Oil, misc: lubricating	Unknown	River	Check valve failure.
				9/23/2006	Lube oil	~5 gal	River	Check valve failed at Dry Dock One, spilled 5 Gal lube oil to Willamette River.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				
				Date	Materials Released	Volume Spilled	Spill Surface	Comments
Cascade General #271				9/13/2006	Diesel	1 gal	River	Less than one gallon of oil spilled to the Willamette River by Cascade General. Work boat burped while unmanned. Equalizer line may be clogged causing all the fuel to build up in one tank rather than remaining equalized between both tanks. Mechanics at work to resolve. Sheen too light to recover.
				4/18/2006	Sandblasting dust	Unknown	River	
				5/13/2004	Hydraulic oil	<5 gal	River	Small amount of hydraulic oil spilled on dock, when dock is submerged, a sheen is seen in the water.
				11/25/2003	Lube oil	15 gal	River	22-50 gallons released during transfer of the USNS JOHN OLMSTEAD docked. 15 gallons released to river.
				6/29/2003	Hydraulic oil	Unknown	River	Release of hydraulic oil to water from a crane on a vessel at Berth 302/303. Fluid reportedly spilled while testing a hose that sprung a leak. Material contained and cleanup was conducted.
				5/29/2003	Lube oil	55 gal	River	Released from vessel, UNIVERSE EXPLORER, due to broken lube line.
				3/28/2003	Oil	1 gal	River	A piece of metal fell into the lagoon. Approximately 1 gallon of oil released to surface water.
				4/11/2002	Oil	2 L	River	Release of 2 liters of oil into the Willamette.
				8/10/2001	Unprocessed/semi-processed oil	1 gal	River	Slight sheen on Willamette River. No additional information available.
				12/16/2000	Oil	0.5 gal	River	Residual oil spilled from equipment being loaded onto a barge; most contained on barge - 0.5 gal released to Willamette River.
				12/6/2000	Oil	0.5 gal	River	Residual oil spilled from equipment while loading onto barge.
				11/20/2000	None released	None	None	Pacific Scout fishing trawler caught on fire in dry dock.
				10/17/2000	Waste oil	2 gal	River	A gasket on 6-inch oil slop line failed causing waste oil to spill from the line into Swan Island Lagoon; approx. 15 ft x 3 ft sheen observed; report indicates 2 gallons of bunker-like waste oil released to Willamette River; booms applied and contractor called for cleanup.
				10/4/2000	Lubricating oil	5 gal	River	Release of lubricating oil from 6-inch slop line during testing operations due to a cracked valve; approx. 40 ft x 3 ft rainbow-colored sheen observed; report indicates 5 gallons of oil released to Willamette River; containment boom deployed and absorbent pads used.
				6/9/2000	Hydraulic oil	1 barrel	River	Materials released while testing emergency fire pump. No known reason for release.
				5/22/2000	Diesel	3 gal	River	3 gal fuel can of diesel fell in river.
				4/5/2000	Unknown	0.5 gal	River	Unknown cause.
				3/21/2000	Diesel	~5 gal	River	5 gal diesel into river, after check ball valve failed.
				2/23/2000	Generator fuel	~1 gal	River	10 gal spilled during generator testing, ~1 gal reached river.
				10/23/1999	Lubricating oil	30 gal	River	Lube oil flushing pump/ruptured hose. Oil spilled into boomed containment area at #304.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				
				Date	Materials Released	Volume Spilled	Spill Surface	Comments
Cascade General #271				1/29/1999	Hydraulic oil	5 gal	River	
				01/00/1999	Hydraulic oil	5 gal	River	Approximately 5 gallons of hydraulic oil was blown into the water while draining the stem lube of a vessel on Dry Dock 3. Cascade General received a notice of violation for the release from the Coast Guard.
				10/20/1998	Generator fuel	5 gal	River	
				10/00/1998	Diesel fuel	25 gal	River	Approximately 25 gallons of diesel fuel was released from a generator. Cascade General received a notice of violation from the U.S. Coast Guard.
				10/1/1998	Diesel fuel	25 gal	River	Approximately 25 gallons of diesel fuel was released from a generator. Cascade General received a notice of violation from the U.S. Coast Guard.
				12/23/1997	Diesel	25-50 gal	River	
				11/13/1997	Crude oil	100 gal	River	Line broke during pressure testing, 50-100 gallons went into river.
				9/27/1997	Diesel	22 gal	River	
				9/27/1997	Diesel	50 gal	River	Fuel tank on truck struck piece of I-beam and damaged tank. Approximately 50 gallons diesel released 20 yards in storm drain.
				8/28/1997	Unknown oil	25-40 gal	River	~25 gal of black waste oil released from an outfall into Swan Island Lagoon.
				3/21/1997	Wastewater	Unknown	River	During a facility inspection, DEQ observed the discharge of wastewater into the river via an unauthorized discharge point. DEQ subsequently issued NON #NWR-HW-97-030/NWR-WQ-97-043 on 5/1/1997.
				3/18/1997	Wastewater	Unknown	River	During a facility inspection, DEQ observed the discharge of wastewater into the river via an unauthorized discharge point. DEQ subsequently issued NON #NWR-HW-97-030/NWR-WQ-97-043 on 5/1/1997.
				9/23/1996	Unknown	Unknown	River	While performing over-water tank washing on the vessel SAN FRANCISCO, Cascade General failed to cap the end of the discharge line resulting in the release of the residual material.
				4/9/1996	Unknown oil	~25 gal	River	Oil released into the river when a stern line broke on the USS HIGGINS.
				10/9/1995	Ballast water	40 gal	River	Oil in lines used to release ballast water spilled during dry docking. Release of approximately 40 gallons of petroleum from vessel OMI COLUMBIA. The Coast Guard issued a notice of violation to Cascade General for release (USCG #PEN-210-95, Oregon Incident Report #95-2006).
				2/7/1995	Oil	Unknown	River	An oil spill was observed at Berth 305 coming from the storm drain at the berth. The Coast Guard was notified.
				8/23/1994	Bunker fuel	Unknown	River	A hose came out of the top of the tank and released bunker fuel onto the Pier. Bunker fuel was cleaned up with dry agent and absorbent material.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
				3/2/1994	Slops	Unknown	River	Pacific Dynamics was observed dumping slops down a manhole or storm drain in the yard.
				2/4/1994	Gasoline	0.5 gal	River	A forklift tipped over and the gas tank leaked. Sorbent pads were used to cleanup. Report indicates 0.5 gallon released to river.
				9/18/1993	Unknown oil	Unknown	River	An oily substance was observed in the water at Berths 301 through 304. Cascade General was notified and they reported that an oil boom had opened and were catching as much of the material as possible.
				8/19/1993	Unknown	Unknown	River	Cascade General employees were observed using high pressure water hoses to blast an unknown substance off a barge into the water.
				7/20/1993	Hydraulic oil	~50 gal	River	
				7/4/1992	Hydraulic oil	Unknown	River	A small hydraulic oil spill occurred on the main deck of Dry Dock 4 after a line ruptured on the hydraulic oil pumper.
				6/8/1992	Water and sludge oil	Unknown	River	WSI slop tank overflowed with water and sludge oil on Pier D Berth 313 (east end of Dry Dock 4).
				2/13/1992	Fuel	Unknown	River	Fuel was observed coming from a storm drain at Berth 311, approximately 30 ft x 60 ft. Coast Guard stated it was a thin film and not to worry about it.
Cascade General #271				1/8/1992	2-D Fuel oil	3 barrels	River	Oil released from F/V PACIFIC EXPLORER into river during fuel bunkering operations.
				9/16/1991	Waste oil / lubricants	35 gal	River	Sheen observed at Rivermile 8.5; report indicates 35 gallons of waste oil/lubricants released to Willamette River; Northwest Marine conducted cleanup and recovered 30 gallons of product.
				9/16/1991	Waste oil/lubricants	~35 gal	River	
				6/25/1991	Oil	Unknown	River	Oil sheen observed.
				6/9/1991	Sandblasting dust	Unknown	River	Sandblast sand released to river from side of a Greek-flag vessel. Cascade General was identified as the prime contractor.
				4/27/1991	Hydraulic fluid	15-20 gal	River	Estimated 15 to 20 gallons of hydraulic fluid released from a punctured drum on the pier. Chempro contacted to clean up material on pier and in the river. Blankets placed to absorb the material on the pier.
				4/17/1991	Lube oil	150-200 gal	River	Discharged oil into storm drain that discharged into River from Exxon's vessel EXXON BENICIA.
				7/19/1989	Hydraulic oil	1 gal	River	Estimated 1 quart of hydraulic oil was released to Willamette River due to equipment failure; a hydraulic hose on a man lift arm broke during a painting operation on the SS ATIGUN PASS. Cascade deployed booms and used skimmers to clean up the material.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				
				Date	Materials Released	Volume Spilled	Spill Surface	Comments
Cascade General #271				11/30/1987	Petroleum residue	Unknown	River	Port employees were observed cleaning equipment with commercial oil emulsifier known as Gamlin. The petroleum residue was draining into the Willamette River.
				6/11/1987	Diesel	~25 gal	River	
				4/11/1982	Ballast water	900 bbls	River	
				5/14/1980	Oil	Unknown	River	Release of oil to Willamette River discharged from ship repair facility.
				8/18/1974	Paint & debris	25 gal	River	The river eroded filled area and control house for drydock fell into the river. Estimated release of 25 gallons of paint, a small quantity of oil and a substantial amount of debris.
				3/20/1973	Waste oil	2-4 gal	River	Release of waste oil from tanker wash water tank area (possibly aged Bunker C). Spill migrated to an 8 ft tunnel below the storage tank area. The tunnel connected to a 10-inch outfall in the vicinity of Berth 310; approx. 200 sq ft slick observed in SW corner of small boat base; estimated 2-4 gal released to Willamette River from outfall.
Gunderson LLC #1155	8.8	W	Current: Manufacturing rail cars and marine barges; Historical: Rail car and marine vessel manufacturing, ship dismantling and auto salvage.	5/20/2010	Hydraulic oil	Unknown	Storm drain	During storm water sampling at Outfall 377, a sheen was observed on the water at catch basin.
				5/17/2010	Hydraulic oil (vegetable)	Unknown	River	Vegetable oil discharge from hydraulic system during hydrostatic testing. The material discharge from a coupling that was loose.
				2/26/2001	gtea-415 & toluene	1.5 gal	River	
				8/23/2000	Water-based paint	Unknown	Storm drain	Employees in paint department rinsed pain brushes into storm drain.
				3/18/1994	Unknown oil	Unknown	River	Holding tank on barge fell off barge resulting in release.
Equilon Property (Pipeline Containment) #2117	8.8	W	Current: Storage/distribution of gasoline, diesel and ethanol; Historical: Beginning in 1928 -Storage/distribution of petroleum, bunker fuel, jet fuel, and lubrication oil.	1994, 1992, 1989, 1988	Diesel	~250 gal	River	Action was taken.
Texaco Portland Terminal #169	8.8	W	Current: Storage/distribution of gasoline, diesel and ethanol; Historical: Beginning in 1928 -Storage/distribution of petroleum, bunker fuel, jet fuel, and lubrication oil.	3/23/1998	Diesel oil	20-25 gallons	Outfall to river	100 ft sheen in cove by dock originating from storm water outfalls.
				2/8/1996	Diesel oil	Unknown	River	Spill containment tank/flood waters entered and overflowed the tank.
				9/19/1992	No.2-D Fuel oil	Unknown	River	Tidewater tank barge No. 64 overfilled, sheen observed.
Goldendale Aluminum #2440	10	E	Current: Storage of lubricating and hydraulic oils; Historical: Alumina and electrode binder pitch unloading facility, grain shipment facility.	12/28/1991	Bunker C fuel	8,000-11,000 gal	River	Estimated 8,000-11,000 gallons of intermediate fuel oil was spilled by M/V Tai Chung (owned by Taiwan Navigation Company), a bulk aluminum oxide carrier, during bunkering operations from a fuel barge tied up next to it.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
				9/9/2010	Hydraulic oil	1 gal	River	Discharge of hydraulic oil from fire hubs. PRP listed as USACE.
				10/26/2000	Diesel or motor oil	Unknown	River	A spill was reported from two different sources, including diesel that had been tracked around the property from a leaking vehicle and motor oil near a storm drain (source unknown). SSA put pads and booms around the storm drains, but a sheen was present on the river at Berth 203. Foss Environmental was contacted for cleanup and the incident was reported to the National Response Center and the Oregon Emergency Response System.
				10/25/2000	Hydraulic oil	1 gal	River	
				10/9/1998	Hydraulic Oil	2 gal	River	1-inch pipe on deck of vessel PACIFIC KING cracked during hatch cover operation releasing ~1 liter to the water.
				10/17/1997	Unknown	Unknown	Potential release to the river	An employee exited an SSA truck while the engine was still running and the vehicle rolled over the bullrail at Berth 206 and sank in the Willamette River. No sheen or debris in the river was observed. The vehicle was pulled from the river approximately two hours after it sank.
POP - Terminal 2 #2769	10	W	Current: Marine terminal; Historical: Marine terminal, shipyard-ship construction during WWII (unknown to 1949), exporter of agricultural and manufactured wood products.	2/5/1996	Motor oil	1 gal	River	Approximately 1 gallon of motor oil was released to the dock on the northern portion of the property, due to a damaged barge lift operated by one of SSA's customers. Due to rain, the sheen expanded to a larger area and discharged to the Willamette River through the storm water conveyance system. Absorbent booms were placed around the catch basins once the spill was identified and the release was reported to the Coast Guard. Absorbent booms were also placed in the river in the vicinity of the storm water outfalls to prevent the remainder of the material from dispersing. The oil was subsequently cleaned up from the dock and properly disposed of off-site.
				1/15/1995	Paint spilled from vessel into river	Unknown	River	M/V PAC PRINCE spilled pallet load of paint (silver paint, green paint and thinner)into river. NRC Incident #276445.
				1/15/1995	Pallet load of paint spilled from ships crane	Unknown	River	M/V PAC PRINCE spilled pallet load of paint (grey, green, and orange colored paint, and thinner). Incident occurred at Terminal 2, Berth 4. NRC Incident #276446.
				12/5/1992	Hydraulic fluid	Unknown	River	A piece of SSA equipment was found to be leaking hydraulic fluid. Despite application of sorbent material by SSA, hydraulic fluid was discharged to the storm water system and subsequently released to the Willamette River in the vicinity of Berth 204 where it created a sheen several hundred square feet in size.

Table 4.3-5. Overwater Releases from ECSI Sites within the Study Area.

Site Name and ECSI#	River Mile	River Bank	Major Industrial Operations	Documented In-River				Comments
				Date	Materials Released	Volume Spilled	Spill Surface	
POP - Terminal 2 #2769				6/17/1978	Oil and bilge water	Unknown	River	
				2/26/2010	Hydraulic oil	1 gal	River	Spill from Tidewater Barge Line tug boat due to equipment failure. A hydraulic seal failed on the vessel, resulting in a spill of 3 gallons on deck and 1 gallon into river.
				12/18/2008	Gear box oil	Unknown	River	Release of gear box oil from small winch on dock due to unknown cause. Small sheen resulted.
				8/17/2008	Gear oil	8-10 gal	River	Gear oil released due to operator error during repair of dockside machinery.
				6/12/2008	Gear oil, 8090 weight	1 qt	River	5 gallon bucket on dock kicked over and released ~ 1 qt to river.
				10/29/2001	Unprocessed/semi-processed oil	10 gal	River	Sheen observed near M/V ROVER. Sheen old, gray and weathered, not from vessel.
				2/16/2001	Hydraulic oil	Unknown	River	Unknown sheen observed between V.COMOS VERDE and river bank. Sheen size 50 ft x 200 ft at Cargill Incorporated.
				2/12/1998	Hydraulic oil	Unknown	River	Malcom Drilling Co. machine leaked hydraulic oil onto soil and into river.
				9/12/1995	Other oil	Unknown	River	M/V ESPERANZA release of bilge water.
				8/18/1995	Unknown oil	unknown	River	Sheen observed near M/V OCEAN CROWN, 40 ft x 300 ft.
Glacier Northwest	11-12	E	Cement manufacturer.	3/30/2008	Hydraulic oil	4 gal	River	Hydraulic line on the TASMANSEA broke releasing approx. 15 liters of hydraulic oil to the deck of the boat.
				10/23/2006	Unknown organic chemical	Unknown	River	Drum containing organic chemicals spilled onto deck of M/V OCEAN EXPLORER and into river.
				8/26/2004	Oil	1 gal	River	Hydraulic line failure on dock.
				2/10/2000	Hydraulic oil	Unknown	River	Hydraulic line failure caused a release.

Notes:

Spills information obtained from National Response Center Online Database (www.nrc.uscg.mil) and Supplemental Preliminary Assessment, Swan Island Upland Facility (Ash Creek and Newfields 2006).

AST - aboveground storage tank
CRSG - Columbia River Sand and Gravel
CSM - conceptual site model
DEQ - Oregon Department of Environmental Quality
ECSI - Environmental Cleanup Site Information
EOSM - Evraz Oregon Steel Mills
ERIS - Emergency Response Information System
KI - Koppers International
NA - not available
NRC - National Response Center
POP - Port of Portland
SSA - Stevedoring Services of America
TPH - total petroleum hydrocarbon
USACE - U.S. Army Corps of Engineers
USCG - U.S. Coast Guard

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Unknown	Multnomah Channel	Pleasure craft	12/26/2007, 1/27/2010	A 12/26/2007 report to the NRC stated that a release of gas from a sinking vessel entered the river. An incident report to the NRC on 1/27/2010 noted spray paint was being applied to a vessel in Freds Marina, with residue noted on the surface of the water.	Direct discharge to river	NRC Incident Reports[a]
Alaska Sea Cloud	2-3	Barge	11/13/2001, 4/10/2006 and 4/12/2006; 9/21/2006	On November 13, 2001, a report to the NRC stated that an unknown amount of residual oil was released from a barge and a sheen was noted on the river. A similar report occurred on April 10, 2006 discussing a release from a barge with a sheen on the river. No volume estimate of substance was noted in the NRC report. Another release occurred from the same barge on April 12, 2006 when approximately three ounces of oil was released from the deck of a barge into the river. On September 21, 2006, the SEA CLOUD was moored at an undisclosed location in Portland Harbor at which time it was reported to the NRC that an overboard discharge line released approximately two tablespoons of oily bilge water into the river due to a defective check value.	Direct discharge to the river	NRC Incident Reports
Blue Water Shipping Company	2-3	Transportation	6/1/2001	On June 1, 2001 M/V MED INTEGRITY discharged an unknown amount of oil to the Willamette River while located at JR Simplot.	Direct discharge to the river	NRC Incident Report #568009, NRC Incident database
Steinfields Products	2-3	Food processing plant, including a pickling plant	12/4/1997	A report to the NRC stated that approximately 400 gallons of diesel oil was released from a boiler backup storage tank overflow. Approximately 100 gallons of oil reached a nearby storm drain and was discharged into the Willamette River.	Discharge of material to river via storm drain	NRC Incident database
Sunshine Maritime, Ltd	2-3	Transportation	1/12/2006	A discharge of approximately 1 quart of hydraulic oil from vessel M/V SEA LADY occurred due to unknown causes.	Direct discharge to river	NRC Incident Report #784964
James River/Western Transportation	2-3, 4-5	Marine transportation including oil bunkering	8/10/1994, 10/24/1994, 10/3/1995	An Aug. 1994 report to the NRC stated that approximately of 10 gallons of diesel oil was released from M/V WESTERN STAR into the Willamette River during fueling. Oct. 1994 and Nov. 1994 reports to the NRC stated that approximately 1 pint of lubricating oil and 2 gallons of hydraulic oil were released into the Willamette River, respectively. In 1995, a lube oil spill to river occurred, but the location was not identified. No additional information available.	Direct discharge to river	NRC Incident database, Notice of Federal Interest for an Oil Pollution Incident
Fritz Maritime Agencies	2-3, 4-5	Marine transportation company	3/18/1994, 1/22/1998	In 1994, an unknown amount of petroleum product at Terminal 4 directly to the Willamette River. In January 1998, approximately one pint of hydraulic oil was reportedly released into the river.	Direct discharge to river	NRC Incident Reports
West Coast Marine Cleaning	2-3, 7-8	Cleanup contractor	12/23/1999, 5/2000 and 11/2000	In December 1999 a 3-gallon spill of waste oil from a vacuum hose occurred during tank cleaning of a barge when a hose connection came loose. In May 2000, a spill from diesel can of no more than 2 gallons occurred. In November 2000, a discharge of approximately 1/2 gallon of waste oil occurred due to a transfer hose rupture.	Direct discharge to river	USCG Pollution Reports; NRC Incident Report #547979
General Metals of Tacoma	3	Unknown	9/8/2009	Release due to 22 ft steel hull work boat sinking. Cause and amount of discharge is unknown.	In river	NRC 917199
M/V BIG BLUE	3-4	Cargo vessel	3/29/2001	In March 2001 at the International Terminals Slip, the ship discharged approximately 15 gallons of hydraulic and bunker oil during deballasting.	Direct discharge to river	NRC Incident Reports #561131 & 56143
M/V C. MEHMET	3-4	Merchant vessel	3/5/2001	A discharge of less than 1 gallon of IFO 380 oil occurred from this vessel due to a holed flange.	Direct discharge to river	USCG Pollution Report
M/V SP5 ERIC GIBSON	3-4	Product transfer	11/18/2003	A report to the NRC stated that approximately 1 gallon of hydraulic oil was released into the Willamette River from a container/roll-on or roll-off vessel due to a broken hydraulic fitting on a cargo crane.	Direct discharge to river	NRC Incident Reports
Mark Marine Service, Inc.	3-4	Marine towing company	1/8/1999 and 9/2000	A January 1999 report to the NRC stated that an approximately 1 bucket of lube oil was released from a tugboat into the Willamette River. In 2000, OSFM incident report stated that two tugs sank in Multnomah Channel near Alder Creek Lumber Company. An oil slick and debris were observed in the vicinity of Fred's Marina and Lucky Landing.	Direct discharge to river	NRC Incident Reports; Oregon State Fire Marshal database
Pan Ocean Shipping Co., Ltd.	3-4	Transportation	11/14/2006	M/V OCEAN JADE discharged 45 liters of hydraulic oil to the deck of the vessel, with at least 1 liter reaching the river. Discharge the result of a broken pipe.	Direct discharge to river	NRC Incident Reports
Tidewater Barge Lines	3.7	Transportation	4/22/2008	Unknown amount of unknown material released from barge due to runoff during rain.	Direct discharge to river	NRC 868798
Tidewater Barge Lines	4.2	Marine transportation company	8/17/1999	5 gallons of hydraulic oil (vegetable) were released into the river by Tidewater Barge Lines tug MAVERICK due to a leaking seal on a hydraulic ram.	Direct discharge to river	NRC 495417/ OERS 99-1918
HELM STAR	4.3	Marine vessel	11/4/1991	An oil spill from the vessel HELM STAR was observed at Berth 406. Riedel Environmental was contacted to clean up the spill.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V ARGO MASTER	4.3	Marine vessel	5/27/1991	According to a Coast Guard report, a release of grain occurred from the M/V ARGO MASTER at Pier 1.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V ATLANTIC BULKER	4.3	Marine vessel	12/28/2002	Unknown sheen observed adjacent to Port of Portland Terminal #4.	In river	NRC 632864
M/V BURKSHIRE	4.3	Marine vessel	12/5/1971	According to a Coast Guard report, a release of 187 gallons of oil occurred from the M/V BURKSHIRE at Pier 1.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V JAY RATNA	4.3	Marine vessel	10/24/1971	According to a Coast Guard report, a release of 15 gallons of oil occurred from the M/V JAY RATNA at Pier 1.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
M/V OCEAN BEAUTY	4.3	Marine vessel	5/4/1994	The vessel M/V OCEAN BEAUTY was discharging ballast at Berth 401 and a sheen was discovered around the vessel; quantity/material not reported.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V ORIENTAL ANGEL	4.3	Marine vessel	7/27/1993	An approximately 5 ft X 5 ft sheen was caused by the release of 0.1 gallon of lubricating oil from packing gland on rudder post of vessel M/V ORIENTAL ANGEL at Berth 401.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
NAPIER STAR	4.3	Marine vessel	3/22/1994	An approximately 480 ft X 300 ft silvery sheen of unknown oil was observed within Slip 1 at Berth 408 around the vessel NAPIER STAR; sheen reportedly contained within the slip; quantity of material not reported.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Not yet identified	4.3	Unknown	9/20/1973	A minor spill occurred from a ship docked the night before at the grain berth. The U.S. Coast Guard was notified and attempted to clean up the spill.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Not yet identified	4.3	Unknown	4/12/1991	An oily film and what appeared to be sludge was observed between Berth 403 and 408. The Coast Guard arrived and determined that substance was unknown and that it was not regular oil. It was determined that it was edible oil and grain dust.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Not yet identified	4.3	Unknown	4/14/1996	A boat sinking at Pier 2 caused a sheen on the water.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
OCEAN LARK	4.3	Marine vessel	8/17/1988	An oil slick from the grain ship OCEAN LARK (a grain ship) was reported. The Coast Guard was subsequently notified.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Pacific Molasses	4.3	Bulk liquid distribution	7/2/1982	On July 2, 1982, an oil slick was reported at Pier 2, Berth 408 2. The U.S. Coast Guard was notified and observed the spill. The Coast Guard reported that although not confirmed, the source may have been Barge #6 belonging to Pacific Molasses. The Coast Guard in turn followed up with Pacific Molasses.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Pacific Molasses	4.3	Bulk liquid distribution	4/25/1989	On April 25, 1989, 10 gallons of tallow was released from a ship line into Slip 1. The Coast Guard subsequently issued a Notice of Federal Interest in a Pollution Incident to Pacific Molasses for the release.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Portland Stevedoring Company	4.3	Stevedoring	11/9/1971	On November 9, 1971, Portland Stevedoring released bauxite ore into the Willamette River while unloading the MARABU PORR at Pier 2.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
S/S SHELLY	4.3	Marine vessel	5/11/1971	According to a Coast Guard report, an oil slick associated with the S/S SHELLY was observed at Pier 1.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
SANKO POPPY	4.3	Marine vessel	4/11/1989	The vessel SANKO POPPY was bunkering and an overflow occurred, spilling oil into the slip at Pier 1. A containment boom was placed in the slip.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Unknown Vessel	4.3	Marine vessel	4/20/1981	A release of diesel fuel occurred at Berth 403 from a Chinese vessel. The slick was estimated at 550 ft. (quantity not reported).	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
YONEUN	4.3	Marine vessel	4/4/1982	An oil spill was reported at Berth 401. The crewmen from YONEUN were reported to be in small boat trying to get the oil out with paper towels. The U.S. Coast Guard was notified. It was reported that the vessel had dumped its bilge water into the river.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
ANGEL HONESTY	4.6	Marine vessel	8/27/1993	An oil spill at Berth 410 at the stern of the vessel ANGEL HONESTY was observed. The Coast Guard was notified. The oil reportedly dissipated quickly.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Brix Maritime Co.	4.6	Transportation company	3/7/1992	A leak at Berth 411 occurred from a Brix Maritime barge fueling the vessel GORGOVA. The U.S. Coast Guard and a Brix investigator came to the site to evaluate the release.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
CELTIC PRINCESS	4.6	Marine vessel	1/30/1985	An oil slick at the bow of the CELTIC PRINCESS at Berth 410 was observed. The vessel crew said they were not responsible for the oil slick and its origin remains underdetermined.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Hall-Buck Marine Terminals / ANSAC PROSPERITY	4.6	Marine vessel	7/27/1992	On July 27, 1992, approximately 0.12 gallons of diesel released to river from overfilling during fueling operations on the carrier ANSAC PROSPERITY at Hall-Buck at Berth 411. Sorbents were used to collect the product.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
HANDY PRINCE	4.6	Marine vessel	6/14/1991	An oil slick was reported at Berth 411 which appeared to be coming from the vessel HANDY PRINCE. A small hole was noted on the vessel where there was liquid coming out and going into the river. The Coast Guard was notified and they documented the spill.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
KEN SPANKER	4.6	Marine vessel	4/7/1992	During transfer at Berth 411, approximately 300 gallons of black oil was released; the spill was reportedly contained on the vessel KEN SPANKER.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V ANSAC ASIA	4.6	Marine vessel	3/27/1996	A release of oil occurred during fuel transfer to the M/V ANSAC ASIA when a tank was overfilled at Berth 411; approximately 1 gallon of 2-D fuel oil released to Willamette River; Riedel used sorbents to recover the material.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V DONA AMALIA	4.6	Marine vessel	5/7/1971	A release of a small quantity of bauxite ore occurred to the Willamette River during unloading operations on the vessel M/V DONA AMALIA at Pier 4.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V MARITIME FAITH	4.6	Marine vessel	5/28/1997	An approximately 25' X 25' sheen was discovered around and emanating from vessel M/V MARITIME FAITH at Berth 411; cause unknown; quantity not reported.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
M/V MAY STAR	4.6	Marine vessel	2/27/1993	Diesel was spilled while transferring material to the M/V MAY STAR at Berth 411; quantity not reported, spill reportedly contained on vessel.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
M/V SEASWAN	4.6	Marine vessel	5/20/1997	Approximately 1 teaspoon of 2-D fuel oil released during fuel transfer operations caused by a valve left open; vessel reported as M/V SEASWAN at Berth 411; absorbents used for cleanup of the spill.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Not yet identified	4.6	Unknown	5/26/1989	A sheen was noted on Slip 3.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Not yet identified	4.6	Unknown	3/10/1992	A light rainbow sheen was observed on water at the head of Berth 412 behind Jones gearlocker. OTC was aware of situation and had notified the environmental authorities	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Not yet identified	4.6	Unknown	1/11/2005	Approximately 0.5 cup of oil released from an outboard motor on a "little skiff" associated with a crane barge in Slip 3; cause reported as equipment failure; cleanup completed and included applying booms and absorbents and the skiff was removed from the water.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
PACIFIC QUEEN	4.6	Marine vessel	3/8/1981	A large oil spill was found at Berth 414 after PACIFIC QUEEN departed and reportedly cleaned its bilges. The Coast Guard and DEQ were notified.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Zidell Explorations Inc.	4.7	Ship scrapping	9/6/1973	On September 6, 1973, the hull of the USS PRINCETON sank while moored at the Kingsley Lumber dock in Linnton. The hull, which was owned by Zidell, released an estimated 50,000 gallons of heavy black oil directly to the Willamette River. Cleanup activities took at least three weeks and both a state enforcement action and federal suit were brought against Zidell for the incident.	Direct discharge to river	On Scene Commander's Reports
M/V AOMORI WILLOW	4-5	Unknown at this time	5/30/2001	A report to the NRC stated that an approximately 1 gallon of diesel oil was released onto the deck of a vessel then into the Willamette River due to tank overflow during an internal fuel transfer.	Direct discharge to river	NRC Incident Report #567788
M/V CENTURY LEADER	4-5	Freight vessel	4/6/2000	Vessel discharged approximately 1 liter of hydraulic oil to river due to the bursting of a hydraulic seal.	Direct discharge to river	USCG Pollution Report
ANSAC HARMONY	4-5	Unknown	1/26/2003	According to a Coast Guard report, Cowlitz Clean Sweep cleaned up an oil spill in the river in the vicinity of Terminal 4.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
SS BATTLE CREEK VICTORY	4-5	Marine vessel	2/5/1957	In February 1957, an oil spill was observed by the Portland Police Bureau as water and oil were pumped from the SS BATTLE CREEK VICTORY. The vessel was docked at Terminal 4, Pier No. 2. The vessel's agent, Pope & Talbot, informed the police that the spill would be cleaned up.	Direct discharge to river	NARA historical USCG records
Trident Shipping Limited	4-5	Tank leak	4/8/2001	A leak of approximately 50 gallons of IFO 180 occurred on the M/V ASTYPALEA. Leak was a result of cracks in the forward starboard fuel tank of the vessel.	Direct discharge to river	NRC Incident Report and Transmittal, Fed. Proj S01035
Tidewater-Shaver Barge Lines	4-5	Marine transportation company	8/8/1947	In 1947, a release of oil into the Willamette River was observed coming from an unidentified barge operated by Tidewater-Shaver Barge Lines.	Direct discharge to river	Portland Fire Marshal records
Tidewater Barge Lines	4-5, 5-6, 7-8, 8-9, 9-10	Marine transportation company	2/1991, 4/1991, 6/22/1993, 7/16/1993, 6/22/1994, 8/1994, 6/30/1995, 2/10/1999, 3/26/2001, 9/28/2001 and 1/28/2004	Two 1991 NRC database reports involved Tidewater Barge vessels. The first incident involved, M/V LEIRA which released approximately 1 gallon of lubricating oil directly into the Willamette River at an unidentified location. Tank Barge TW 704 released approximately 15 gallons of gasoline into the Willamette River at River Mile 10. In 1993, approximately 10 gallons of gasoline and 2 gallon of fuel oil were released into the river during two separate incidents. A 1994 report stated that approximately 1 gallon of gasoline was released into the Willamette River. A 1995 report to the NRC stated that approximately 5 gallons of oil was released into the Willamette River due to operator error while refueling. A Feb. 1999 report to the NRC stated that approximately 3 gallons of diesel oil was released into the Willamette River from the vessel, DEFIANCE. In March 2001, less than 1 cup of diesel fuel oil was released into the Willamette River during the fueling of a tug due to a leaky hatch on the vessel. In September 2001, a 1-gallon leak of No. 2 diesel from the right collision bulkhead of Barge No. 1 was discovered at the Tosco dock. In January 2004, a report to the NRC stated that an unknown amount of jet fuel (JP-8) was released into the Willamette River from a barge due to an unknown cause.	Direct discharge to river	NRC Incident Reports # 560738, 581299
Tidewater Barge Lines	4.8	Marine transportation company	2/22/2007	One ounce of diesel oil was released into the Willamette River at approx. RM 4.8 from a Tidewater Barge Lines barge due to a leak in a tank.		
Transversal Shipping Company	4-5, 5-6	Shipping company	3/10/1997, April 2001	A March 1997 report to the NRC stated that an unknown amount of oil from M/V SEMENA washed off the deck during a rain storm into the Willamette River. An April 2001 OSFM incident report stated that a Bunker C fuel oil slick had drifted towards the mouth of Terminal 4, Berth 408. The spill was traced to Transversal Shipping across the river. Another incident occurred in April 2001, when a vessel docked at Transversal caught fire. The City's Fire Boat responded and pumped water for five hours. Transversal was identified as an agent for the vessel.	Direct discharge of hazardous substance.	NRC Incident database; Oregon State Fire Marshal database
M/V BIO BIO	5	Marine vessel	3/18/1994	A light sheen was observed in the water around vessel M/V BIO BIO I docked at Berth 415. The source and quantity of the material are unknown.	Direct discharge to river	Port of Portland 104(e) Response for T4 Auto Storage Area

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Not yet identified	5	Unknown	4/11/1982	Diesel spill on the deck of a ship at Berth 414 and released approximately one gallon of oil to the Willamette River.	Direct discharge to river	Port of Portland 104(e) Response for T4 Auto Storage Area
Not yet identified	5	Unknown	3/15/1985	An unknown quantity of oil was released to the Willamette River in the vicinity of Berths 415 and 416.	Direct discharge to river	Port of Portland 104(e) Response for T4 Auto Storage Area
Not yet identified	5	Unknown	9/25/1995	An oily film was observed upriver from Berth 416. The Coast Guard was contacted. The source of the film could not be determined.	Direct discharge to river	Port of Portland 104(e) Response for T4 Auto Storage Area
Toyota	5	Auto import and storage	6/25/1981	An oil release occurred at Berth 415 from a pipe originating at the Toyota plant (quantity not reported).	Direct discharge to river	Port of Portland 104(e) Response for T4 Auto Storage Area
Toyota	5	Auto import and storage	6/4/1995	The culvert between Berths 415 and 416 overflowed during a heavy rain event and caused a soap-like foam to form on the river. The foam extended halfway to the Berth 416 float and was monitored but dissipated quickly with the heavy rain and flow of the river. The Coast Guard was notified and they determined on-site response was not necessary based on the nature of the observations.	Discharge to river via overland flow	Port of Portland 104(e) Response for T4 Auto Storage Area
Unknown	5-6	Pleasure craft	4/28/2008	A NRC incident report stated that there was a discharge of 2 oz. of oil from a vessel due to addent engine oil and accidentally spilling some into the water.	Direct discharge to river	NRC Incident Reports
Advanced American Diving	5-6	Diving and salvage operations	1/23/2005	Overfill of barge at POP, Terminal 4. 5-10 gallons diesel causing sheen on water. Contained in boom	Direct discharge to river	OERS # 05-0173
Advanced American Diving	5-6	Diving and salvage operations	7/29/1998	A report to the NRC stated that a barge disturbed "some kind of contamination" in the bottom of the Willamette River.	In-water disturbance	NRC Incident Report #448107
Gelco Construction	5-6	Road construction	7/13/2005	Discharge occurred during re-lining of a storm drain. Approximately 1 quart of asphalt liner was released through the line and into the river.	Discharge to river via storm sewer	NRC Incident Report #765482
M Cutter	5-6	Towing and mooring	2/5/1996	A report to the NRC stated that an unknown amount of diesel oil was released from the D/B PAUL BUNYUN into the Willamette River due to a previously frozen fuel line.	Direct discharge to river	NRC Incident Reports
M/V ZANIS GRIVA	5-6	Transportation	10/17/2001	A report to the NRC stated that approximately 2 barrels of hydraulic oil were released from the vessel into the Willamette River due to equipment failure.	Direct discharge to river	NRC Incident Report #583407
Keystone Shipping Co.	5-6, 7-8, 8-9	Marine transportation company	8/13/1991, 6/6/1992, 10/17/1995, 3/3/1997, 3/16/1998	A 1991 report stated that approximately 2 gallons of waste oil/lubricating was released into the river when a contractor error opened a bilge valve on the T/S DELAWARE TRADER. In June 1992, the State Fire Marshal reported a ship fire on Keystone's "bulk oil ship," the ATIGUN PASS. The fire was caused when welding torches igniting "paraffin/oil" on the bulkheads. It is not clear from the report whether fire fighting activities flushed contaminated water into the river. A 1995 report to the NRC stated that approximately 1 gallon of oil was released from the tanker KEYSTONE CANYON into the Willamette River due to equipment failure. A 1997 report to the NRC stated that an unknown amount of soot was released from M/V FREDERICKSBURG into the Willamette River when the engines were "fired up" and shot out of the exhaust pipe. In 1998, the Portland Harbor Master responded to a pump room fire aboard Keystone's vessel, S/S FREDERICKSBURG. The vessel was moored at MarCom's dock and being repaired. An operator cutting a bolt from a flange with a blow torch and dropped the bolt into the bilge. The bolt ignited gasoline which was in the bilges. It is not clear from the report what impact the vessel's fire had on the river.	Direct discharge to river	National Response Center; Portland Harbor Master records, PSY Suppl. PA App. F (2006)[b]
Olympic Tug & Barge	6-7, 7-8	Marine transportation company	10/16/2007	Approximately 1 gallon of hydraulic oil was released into the Willamette River from a tug boat at 8010 NW St. Helens Road.	River	NRC 851759
Olympic Tug & Barge	6-7, 7-8	Marine transportation company	5/10/2007	Approximately 4 ounces of lubricating oil was released into the Willamette River from Olympic Tug & Barge's MAX SONDLAND at Olympic Tug and Barge facilities.	River	NRC 834961
Olympic Tug & Barge	6-7, 7-8	Marine transportation company	8/18/2006	Approximately 8 ounces of intermediate fuel oil (IFO) 380 was released into the Willamette River when Olympic Tug & Barge's oil barge BMC 7 was bunkering M/V OAK HARBOR across from Terminal 2.	River	NRC 808285
Olympic Tug & Barge	6-7, 7-8	Marine transportation company	12/18/2008	1 gallon heavy fuel oil and water released from catch basin on a fueling dock into river.	Storm drain to river	NRC 892287
Olympic Tug & Barge	6-7, 7-8	Marine transportation company	10/16/2007	1 quart lubricating oil released to river due to overfilling of lube oil tank on the tug LUCY SONDLAND.	Direct discharge to river	NRC 851752

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Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Olympic Tug & Barge	6-7, 7-8	Marine transportation company	8/5/1995, 8/7/1995, 6/29/1997, 11/3/1999, 1/28/2002	A 1995 report to the NRC stated that approximately 5-8 gallons of oil was released into the Willamette River and an unknown amount of fuel was released during transfer from a ship to an Olympic barge. A June 1997 report to the NRC stated that approximately 50 gallons of diesel oil was released from the tug LELA JOY into the Willamette River due to a tank overflow. A Nov. 1999 report to the NRC stated that approximately 1 gallon of oil was released from M/V PACIFIC FALCON into the Willamette River during refueling. In 2002, approximately 2 gallons of waste oil discharged to Willamette River after a half-full drum was knocked over when Olympic was moving a heavy winch by crane.	Direct discharge to river	NRC Incident Reports
Kaiser Company, Inc.	6-7	Shipbuilding	1943	In 1943, month/day unknown, fuel oil escaping from vessels at the dry docks [was] attributed to negligence or errors on the carriers" built by Kaiser.	Direct discharge to river	Port of Portland 104(e) Response for Willamette Cove
Kaiser Company, Inc.	6-7	Shipbuilding	7/1/1943	Oil was permitted to discharge into the river when CASABLANCA was at dry dock. Port suspected it was an intentional release due to method of release.	Direct discharge to river	7/19/1945 Letter, Port to Kaiser
Kaiser Company, Inc.	6-7	Shipbuilding	7/28/1943	On July 28, 1943, the Kaiser (carrier) vessel LISCOMBE BAY was believed to have been the cause of a release of oil while on dry dock that caused a fire hazard that stopped all welding and work in the area from 7/30/1943 to 8/2/1943.	Direct discharge to river	Port of Portland 104e Response for Willamette Cove
Not yet identified	6-7	Unknown	1914	In 1914, Pontoon No. 1 sank during a docking.	Possible direct discharge to river	Port of Portland 104e Response for Willamette Cove
OLEUM	6-7	Marine vessel	1951	In 1951, the Tanker Oleum caused unspecified damage requiring cleanup of oil from towers, paint trestles and decks.	Direct discharge to river	Port of Portland 104e Response for Willamette Cove
Police Vessel	6-7	Public enforcement	6/5/2010	A report to the NRC stated that discharge of fuel occurred after the vessel pulled away from the dock with the fuel tank uncapped.	Direct discharge to river	NRC Incident Reports
OSPREY ARROW	6-7	Product transfer	10/22/2003	A report to the NRC stated that approximately 2 gallons of pitch was released from the vessel into the Willamette River due to an equipment failure or malfunction.	Direct discharge to river	NRC Incident Reports
Pacific Northern Oil	6-7	Bulk storage terminal	8/19/1999	A report to the NRC stated that approximately 200 gallons of oil (blend of diesel and bunker oil) was released onto the soil and concrete from an overloaded oil/water separator. It was reported that oil was discharged into the Willamette River.	Direct discharge to river	NRC Incident Reports
SS ILICH	6-7	Marine vessel	1944	In 1944, the Russian SS Ilich "capsized at the inner berth of the south pier at the dry dock and sank in about 46 feet of water" [neither the] "War Shipping Administration, its contractors or the Russians" assumed removal responsibility (Port, June 1944). The Ilich was removed by the U.S. Army Corp of Engineers in 1944.	Possible direct discharge to river	Port of Portland 104e Response for Willamette Cove
SS SUMANCO	6-7	Marine vessel	7/1924	The S.S. Sumanco was dry docked. Damage to the vessel fractured bottom plates of oil tanks allowing oil to escape into the river.	Direct discharge to river	Port of Portland 104e Response for Willamette Cove
YONEUN	6-7	Marine vessel	4/10/1982	A release of oil to the Willamette River occurred from the S.S. YONEUN at Berth 401 (quantity not reported). The slick was estimated at 100 ft. in length & 50 ft. in diameter. Cleanup was conducted by the Coast Guard.	Direct discharge to river	Port of Portland 104(e) Response for T4 S1/S3
Portland General Electric Company	6-7, 7-8, 12-13	Power barge Pole transformer	12/17/1992, 10/12/1993, 5/20/1999, 10/1/2000, 10/26/2004; 10/30/1999	A 1992 report to the NRC stated that approximately 22 gallons of hydraulic oil was spilled with an unknown amount released into the Willamette River via a storm drain. A 1993 report to the NRC stated that a 5-gallon spill of PCB transformer oil occurred when a transformer exploded. An unknown amount of oil was released into a storm drain discharging into the Willamette River. A May 1999 report to the NRC stated that approximately 15 gallons of transformer oil was released into a nearby storm drain and into the Willamette River. The NRC database reported that it is not known whether the release reached the Willamette River. In November 1999, the NRC reported that approximately 3 gallons of oil was released onto the ground from a ruptured truck reservoir line. The spill reached a nearby storm drain and was released into the Willamette River. In October 2000 the sump on Power Barge Rio DaLuz overflowed during heavy rains, discharging approximately 2 gallons of lubricating oil to the river. In October 2004, approximately 30 gallons spilled from a pole transformer containing fluid with 31 ppm PCB, based on September 30, 1986 sampling. Oil initially discharged to ground and subsequently to the catch basin.	Discharge of material to river via storm drain	NRC Incident Reports; NRC Incident Report #739571

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Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Sause Brothers	6-7, 7-8, 9-10	Hydraulic line failure	7/2/1992, 8/18/1993, 12/13/1996, 4/2/2006	A 1992 report to the NRC stated that an unknown amount of "hot" oil was release into the Willamette River. A 1993 report to the NRC stated that approximately 1 cup of oil was released from a pinhole leak in a tank on the tank barge NESTUCCA NO. 569658 into the Willamette River. A 1996 report to the NRC stated that approximately 5 gallons was released from the tug TITAN into the Willamette River due to overfueling. In 2006, a 1-gallon release of hydraulic oil at facility dock from shore crane was due to a broken line. "Old age" of hydraulic line cited as cause of release.	Direct discharge to river	NRC Incident Reports; NRC Incident Report #792758
Railroad Bridge	~7	Unknown	8/20/2001	Oil sheen observed	River	OERS # 01-2089
Boart Longyear	7.1, west bank	Drill Rig	8/19/2009	Release of hydraulic oil from drill rig mounted on a barge. Oil discharge was due to equipment failure, an o-ring failed on equipment. Discharge was contained on barge deck and in moon pool where drill unit goes through barge. Clean up completed with no material escaping to river water.	No discharge to river	NRC 915873
Alaska Tanker Company	7-8	Transportation	6/5/1999	It was reported that a release of an unknown amount of oil was observed coming from the vessel M/V DENALI at Berth 314 on the river side.	Direct discharge to the river	PSY Suppl. PA (2006) [a]
American Trading Transportation	7-8	Transportation company	8/13/1991	In 1991, approximately 2 gallons of waste oil/lubricants was released to the river from the T/S DELAWARE TRADER, owned at the time by American Trading Transportation Co.	Direct discharge to the river	PSY Suppl. PA, App. F (2006)
Ballard Diving & Salvage Inc.	7-8	Ship repair	8/22/2003	A report to the NRC stated that approximately 10 gallons of hydraulic oil was released into the Willamette River from a hydraulic line that was cut during the polishing of propellers on a military vessel (the USNS SISLER Navy vessel).	Direct discharge to the river	NRC Incident Reports
Central Gulf	7-8	Transportation company	7/8/1996	In 1996, an unknown amount of oil leaked out the stern tube of the vessel GREEN HARBOUR into the river.	Direct discharge to the river	PSY Suppl. PA, App. F (2006)
Dynea Overlays Inc.	7-8	Provider of bonding and surface solutions	4/23/2002	A report to the NRC stated that approximately 2 liters of unknown oil type was released into the Willamette River from a vessel due to unknown causes.	Direct discharge to the river	NRC Incident Reports
LONG BEACH and EXXON BENICIA	7-8	Petroleum product distribution company	8/24/1988, 4/17/1991, 3/15/1993	Exxon is the owner of the vessel LONG BEACH which was being repaired at PSY. In 1988, a contractor released sandblast grit and paint chips into the river. An April 1991 report stated that NMIW illegally discharged approximately 150-200 gallons of lubricating oil into a storm drain that discharged into the river from Exxon's vessel EXXON BENICIA. In 1993, a release of approximately 0.01 gallon of Bunker C oil was released into the river from the T/S EXXON BENICIA.	Direct discharge to the river	PSY Suppl. PA App. F
Foss Environmental	7-8, 8-9	Emergency response contactor including cleaning catch basins and oil/water separators	3/9/1995,1/26/1998, 7/13/2001	A 1995 report to the NRC stated that less than 1 gallon of hydraulic oil was released onto asphalt then into the Willamette River from a power steering hose on a vehicle. A January 1998, NRC report stated that approximately one-half gallon of "bilge slop" was released into the river from a vacuum truck vent. The 2001 incident discharged approximately 5 gallons of slop oil due to clogged vacuum line.	Direct discharge to river; indirect discharge to river through separator.	NRC Incident Reports, NRC Incident Report 572917
Garwood Oil	7-8	Petroleum product distribution company	12/30/2003	A report to the NRC stated that approximately 20 gallons of fuel oil was released from a fuel tank on a tractor trailer due to a transport accident. It is not known whether the release reached the Willamette River.	Possible indirect discharge to stormwater system.	NRC Incident Reports
General Steamship Corp.	7-8 8-9 9-10	Marine construction and transportation	7/7/1992, 3/14/1994, 9/16/1996, 6/15/2000	A 1992 report to the NRC stated that an unknown amount of oil was released from M/V BELFOREST into the Willamette River. A 1994 report to the NRC stated that approximately 0.5 cup of motor oil was released from M/V AMERICAN DYNASTY into the Willamette River from a 5-gallon bucket that was knocked over. A 1996 report to the NRC stated that an unknown amount of oil was released from the bulk carrier TAI SHING into the Willamette River due to a leaking bilge or cargo tank. The same day, the vessel ALASKAN JEWEL discharged 1 barrel of hydraulic oil while testing the emergency fire pump. On June 15, 2000, a spill of approximately 10 gallons of lubricating oil was released from the M/V TALL [PAUL] BUCK into the river as reported to the NRC. Also, on June 15, there was a discharge of less than 1 gallon of lube oil caused by crew members of the M/V TALL BUCK over-pressurizing the stern tube. This was discharged to the Swan Island Lagoon.	Direct discharge to river	NRC Incident Reports; NRC Incident Reports # 531544, TALL BUCK Incident Report # 532237, Tall Buck: ERNS Database/NRC Incident No. 532225, PSY Suppl. PA, App. F (2006)
Hickey Marine	7-8	Vessel repair	8/29/1996	A report to the NRC stated that approximately 2 gallons of oil was released from the crane barge SEA LION into the Willamette River due to a broken air compressor hose.	Direct discharge to river	PSY Suppl. PA, App. F (2006)
Industrial Marine, Inc.	7-8	Ship repair	10/17/2006	A report to the NRC stated that during spray painting operations on the bridge wing of M/V CHEMICAL EXPLORER, the over sprayer landed in the Willamette River due to operator error. Approximately one-half cup of "International Paint (called 99)" was released into the Willamette River.	Direct discharge to river	NRC Incident Reports
K-Sea Transportation	7-8	Tank overflow	11/10/2007	Approximately 2 gallons of fuel discharged to the river due to valve misalignment on the Tug SCORPIUS.	Direct discharge to river	NRC Incident Report 854198
Lindblad Expeditions	7-8	Unknown at this time	4/25/2003 and 5/10/2006	An April 2003 NRC report stated that approximately 1 pint of oil was released from a bilge manifold as a result of flushing a leaking hot water heater discharge overboard from the vessel, LAZETTE. In May 2006, an NRC report stated that a fitting broke on a hydraulic crane which resulted in the release of approximately 1 pint of hydraulic oil into the Willamette River.	Direct discharge to river	NRC Incident Reports #643271, 796683

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Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Linden Farms	7-8	Operated a poultry processing facility	5/3/1998	A 1998 report stated that guts and grease were observed discharging from a storm drain at the chicken farm processing facility.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 98-1032)
Marine Vacuum Service, Inc.	7-8	Tank, bilge and boiler cleanup	Potential releases during occupancy from 1993 to 1995	Marine Vacuum leased Bay 1 including two office spaces, a shop, and an adjacent parking lot at the PSY. Also Marine Vacuum conducted overwater activities as part of its operations. Environmental inspections performed in 1995 and 1996 determined the following: (1) floor and walls of the shop were contaminated with oil and it was noted that the shop had two floor drains; (2) parking lot was stained with oil; and (3) three drums of unknown substance were abandoned in Bay 1.	Possible indirect discharge to stormwater system.	PSY Suppl. PA (2006)
Military Sealift Command	7-8	Military transportation	12/1/2004	Approximately 5 gallons of oil was released into the river when a Doppler speed log was replaced on the USNS HENRY K. KAISER.	Direct discharge to river	PSY Suppl. PA, App. F (2006)
O'Briens Oil Pollution	7-8		9/10/2005	A report to the NRC stated that approximately 1 quart of No. 2 diesel oil was released into the Willamette River from a pipeline due to unknown causes.	Direct discharge to river	
Pax Company of Utah (division of Cenex)	7-8	Farm supply company	5/30/1980	Release from dumping 5-7 barrels (225 gallons) of various chemical wastes (including herbicide 2,4-D) into storm sewer manhole in Mock's Landing with some material discharged to the Willamette River; penalty of $1,000 assessed to Cenex by DEQ.	Discharge of material to river via storm drain	Port of Portland 104(e) Response for SIUF/B311
Northwest Marine Iron Works	7-8	Vessel construction and repair	5/13/1982, 8/25/1988, 10/19/1988, 12/12/1990, 5/23/1991	A 1982 release of approximately 2 gallons of lube oil into the river. In August 1988, NMIW staff were observed dumping sandblast sand and wastewater into the river from a vessel. In October 1988, NMIW staff reported disposed of sandblast sand into river at night. In 1990, sandblast grit was released into the river. A May 1991 report to the NRC stated that approximately 300 gallons of lubricating oil was released from the facility, with 200 gallons spilling into the Willamette River.	Direct discharge to river	NRC Incident Reports
Rainier Petroleum	7-8	Transportation	8/7/2006	An approximate 15-gallon oil spill occurred at the McCall facility involving Brix Maritime Barge #4. Spill caused by operator error (flow "kicked back" causing an overfill). Brix Maritime is identified as operator of the vessel, while Rainier Petroleum is listed as the "managing owner" and Marine Equipment Leasing is identified as the owner.	Direct discharge to river	NRC Incident Report #807033
Roadway Express	7-8	Freight transfer and delivery	2/20/1990	A report to the NRC stated that during a rain storm an unknown amount of oil was being washed into storm drains discharging into the Willamette River. The report stated that a leak developed in a tractor trailer fuel line.	Discharge of material to river via storm drain	NRC Incident Reports
Salmon Bay Barge Line, Inc.	7-8	Fuel transfer	6/29/2000	A 2-gallon discharge of diesel fuel occurred due to overfilling of fuel tank on tug JESSE.	Direct discharge to river	NRC Incident Report #533913
Sea Coast Towing	7-8	Transportation	3/19/2000, 5/8/2001, 8/10/2003 and 10/10/2005	In March 2000, approximately 1 gallon of diesel fuel was released into the Willamette River from the tug vessel JOHN BRIX, which had a leak from its fuel vent. In May 2001, a report to the NRC stated that approximately 3 gallons of diesel fuel was released into the Willamette River during a tank to barge overfill. In August 2003, a report to the NRC stated that approximately 100 gallons of jet fuel (JP-8) was released into the Willamette River during a tank to barge overfill. An October 2005 report to the NRC stated that approximately 1 tablespoon of hydraulic oil was released into the Willamette River from a barge due to an equipment failure.	Direct discharge to river	USCG Pollution Report; NRC Incident Reports #565304, 653457; NRC Incident Reports
Sea-Land Service, Inc./ Sea-Land Transport Co. and SEA-LAND NAVIGATOR, SEA-LAND HAWAII	7-8	Transportation	Potential releases during occupancy from 1963 to 1974; in-water spill on 10/7/1990 and 12/23/1990	Sea-Land Service leased Bay 10 in Building 4 for several years. Building 4 had a series of floor drains which collected wastewater then discharged through a private outfall into the river downstream of Berth 314; also stormwater and wastewater discharged through private outfall in Dry Dock #3. Several vessels owned by Sea-Land have been brought to the PSY dry docks for repair. Both Building 4 and the dry docks are subjects of environmental investigations for contamination from various hazardous substances. In October 1990, while cleaning the aft of the SEA-LAND HAWAII, Lockwood Industries released oil, dust, and paint into the river causing a sheen on the surface. In December 1990, an unknown amount of foam was released into the river during the repair of the vessel NAVIGATOR, owned by Sea-Land.	Possible indirect discharge to stormwater system; also direct discharge from spill.	PSY Suppl. PA App. F (2006); Sewer map at PUB0006726
Sound Freight Lines, Inc.	7-8	Fuel transfer/tug operator	11/6/2007	The tug BLACK HAWK discharged approximately 50 gallons of diesel to the river due to a leaky valve.	Direct discharge to river	NRC Incident Report #853814
M/V SEA RIVER NORTH SLOPE; S/R GALENA BAY	7-8	Transportation	7/6/1994, 10/18/2001	SeaRiver Maritime is the owner of the vessel, M/V SEA RIVER NORTH SLOPE. It was reported that a stern tube on the vessel released approximately 2 gallons of turbine oil into the river. In 2001, a release of approximately 1 pint into the river causing a sheen from a leak in a lube oil cooler on SeaRiver's vessel S/R GALENA.	Direct discharge to river	PSY Suppl. PA (2006)
SS BARBARA	7-8	Marine vessel	6/21/1957	On June 21, 1957, a "large amount of bunker fuel" was released from the dry dock into the river due to operator error by an employee of WISCO while repairing the SS BARBARA. Olympic Steamship Co. was identified as the vessel local agent by the U.S. Coast Guard.	Direct discharge to river	NARA historical USCG records
Tanker Pacific Management	7-8	Transportation	6/9/2000, 7/9/2000	Two separate releases occurred of an unknown amount of oil into the river during the testing of fire equipment aboard the M/V ALASKAN JEWEL. Foam was mixed with hydraulic oil, discharge on deck and over the side.	Direct discharge to river	PSY Suppl. PA, App. F (2006)

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Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Trans Marine Navigation Corporation	7-8	Marine transportation	6/25/2001	A release was reported of approximately 1 gallon or 5 liters of marine oil gasoline from a faulty cap of a sounding pipe on the vessel M/V DANSUS.	Direct discharge to river	PSY Suppl. PA, App. F (2006), USCG Pollution Report
Transoceanic Shipping Company	7-8	Provider of bonding and surface solutions	1/19/2001, 4/13/2002	A report to the NRC stated that approximately 0.5 gallon of hydraulic oil was released into the Willamette River due to a ruptured hose in the blower thruster on the cable laying ship GLOBAL SENTINAL. In 2002, approximately 2 liters of unknown oil was released into the river from the vessel TYCOM RELIANCE.	Direct discharge to river	NRC Incident Report #554151
Tyco Telecommunications	7-8	Oceanic cable vessel	4/13/2002	M/V TYCOM RELIANCE discharged approximately 2 liters of scar oil to the river due to suspected seal slippage.	Direct discharge to river	USCG Pollution Report
U.S. Army	7-8	Transportation	1/26/1993	Based on Internet research it appears that the U.S. Army was the vessel owner in 1986. In 1993, a release of oil was reported from the SS AUSTRAL LIGHTNING onto the pier at Berth 312. It is not clear whether the oil was discharged into the river.	Possible direct discharge to river	PSY Suppl. PA App. F (2006)
United Parcel Service	7-8	Package delivery depot and equipment maintenance facility	4/28/1993	A report to the NRC stated that approximately 35 gallons of hydraulic oil was released onto the ground when a garbage compactor's hydraulic fitting broke. An unknown amount of oil was released into the Willamette River.	Direct discharge to river	NRC Incident Reports
Tidewater Barge Lines	7.5-7.9	Marine transportation company	10/3/1998	200 gallons unleaded gasoline released into river when dockline broke while pumping to or from Tidewater Barge Lines barge TRI-CITIES VOYAGER	Direct discharge to river	NRC 458351
Tidewater Barge Lines	8.3	Marine transportation company	8/21/1999	One gallon of hydraulic fuel released due to equipment failure.	Direct discharge to river	USGS, 2001. Letter of Warning - 8.21.1999 Incident
Tidewater Barge Lines	8.6-8.8	Marine transportation company	6/28/1976	An unknown quantity of gasoline was released from a Tidewater barge at the Shell Oil docks.	Direct discharge to river	DEQ, 1976. Spill report for 6.28.1976 Incident.
Albina Engine and Machine Works	8-9	Ship repair	4/8/1971	Slick reported at shipyard. No additional information available.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Albina Engine and Machine Works	8-9	Ship repair	6/11/1975	DEQ observed fugitive emissions from Albina Engine & Machine operation of sandblasting equipment and the uncontrolled storage and handling of material. In a letter dated 7/1/1975, DEQ instructed Albina Engine to cease sandblasting operations.	Possible direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
American Classic Voyages	8-9	Marine vessel	11/11/2000	Vessel pumping slops to a pump truck and hose broke behind truck, releasing material onto dock; report indicates 2 gallons of bilge slop released to Willamette River; cleanup crew called and booms/sorbents applied.	Direct discharge to river	ERNS Database, Incident No. 547979; Port of Portland 104(e) Response for SIUF/B311
American Heavy Lift Shipping Co.	8-9	Marine vessel	4/6/1994	A 1994 report to the NRC stated that approximately 30 gallons of waste oil was released from the vessel M/V KING into the Willamette River due to a tank overfill.	Direct discharge to river	NRC Report #233673
American Trading Transportation	8-9	Marine vessel	1991	1991, month/day unknown. 2 gallons of waste oil/lubricants released from F/V Pacific Explorer	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
AMERICAN VETERAN	8-9	Marine vessel	2/2/1992	Oil was observed in Swan Island Lagoon. It appeared that the source of the oil was vessel AMERICAN VETERAN. The vessel left Berth 303 and 304 without cleaning up or containing spill.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Barge F 100	8-9	Marine vessel	2/20/1970	Aerial photographs show release of oil emanating from the Navy Dry Dock. Barge F 100 was repaired on the Navy Dry Dock that date.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
BARGE NESTUCCA	8-9	Marine vessel	3/29/1993	A Light gray to silvery substance was observed in water at Berth 302 around THE BARGE NESTUCCA. There were 15 to 20 patches, each patch was around 2 feet by 2 feet.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
BP ARCO / MV ARCO SPIRIT	8-9	Marine vessel	5/14/2000	Release of crude oil from M/V ARCO SPIRIT at Berth 312; cause of release unknown; small sheen observed; unknown quantity of material released to Willamette River; contractor and diving crew called for cleanup.	Direct discharge to river	ERNS Database, Incident No. 528969; National Response Center #528969; Port of Portland 104(e) Response for SIUF/B311
BT ALASKA	8-9	Marine vessel	5/19/1993	While heavy sandblasting was occurring on BT ALASKA, a dust cloud was observed settling on top of the water.	Possible direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
CAPE BLANCO	8-9	Marine vessel	2/25/1993	Dust reported accumulating on the water at Berth 314 near the CAPE BLANCO.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
CAPE BOVER	8-9	Marine vessel	3/1/1992	A fuel spill about 40 yards in length and 20 yards in width was observed between Berth 305 and the vessel CAPE BOVER. The Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Cascade General / CAPE ORLANDO	8-9	Ship repair / Marine Vessel	8/19/1994	Unknown colored substance within containment boom of CAPE ORLANDO. Cascade General labor foreman advised they would have it cleaned up.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311

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Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Cascade General / CAPE ORLANDO	8-9	Ship repair / Marine Vessel	8/30/1994	A sheen was observed at the stern of CAPE ORLANDO at Berth 304 outside of Cascade General's sea curtain. The sheen was reported to Coast Guard.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Cascade General / KISKA TAE 35	8-9	Ship repair / Marine Vessel	12/2/2002	Release of bilge waste during pumping of slop tank of USNS KISKA TAE 35 (tank was overfilled); unknown quantity of material released to Willamette River.	Direct discharge to river	ERNS Database, Incident No. 630598; Port of Portland 104(e) Response for SIUF/B311
Cascade General / U.S. Army Corps of Engineers	8-9	Ship repair / Marine Vessel	12/19/2000	Release from repair on a hydraulic line on U.S. Army Corps Dredge ESSAYONS; approx. 100' x 5' rainbow-colored sheen observed; report indicates 2 gallons hydraulic oil released to Willamette River; booms applied.	Direct discharge to river	ERNS Database, Incident No. 551416; National Response Center #551416; OERS 0-2993; Port of Portland 104(e) Response for SIUF/B311
Cascade General Inc.	8-9	Ship repair	5/12/1993	A foamy, colored substance was observed in the water between pier and dry dock. Cascade General was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Cascade General Inc.	8-9	Ship repair	8/2/1994	A diesel sheen was observed at the head of Dry Dock 3.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Cascade General Inc.	8-9	Ship repair	9/16/1996	Oil sheen of unknown volume reported.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 96-2634)
Cascade General Inc.	8-9	Ship repair	12/21/1999	Sheen observed under pier. No additional information available.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 99-2936)
Cascade General Inc.	8-9	Ship repair	10/18/2001	Approx. 100' x 15' sheen observed; estimated 2 pints of unknown petroleum product released to Willamette River from an unidentified source; Cascade General deployed booms to contain material.	Direct discharge to river	National Response Center #583585; Also reported as ERNS Database, Incident No. 583575; National Response Center #583575; Port of Portland 104(e) Response for SIUF/B311
Cascade General Inc.	8-9	Ship repair	11/9/2002	Sheen on Willamette River. No additional information available.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 2-2728)
Cascade General Inc.	8-9	Ship repair	2/17/2005	Report indicates 1 gallon of oil released from vessel to the Willamette River; cause unknown; booms applied and West Coast Marine hired to do cleanup.	Direct discharge to river	NRC Report #750373; Port of Portland 104(e) Response for SIUF/B311
Cascade General Inc. & ExxonMobil	8-9	Ship repair / Marine Vessel	1/28/1992	Oil sheen was observed in water at bow of EXXON BATON ROUGE.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Cascade General Inc. / TONSINA	8-9	Ship repair / Marine Vessel	7/2/1992	Sandblast dust was observed forming on surface of water between the vessel TONSINA and the pier.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Chevron / WSI / Hydroblast	8-9	Ship repair / Marine Vessel	3/6/1992	DEQ received notification that a WSI contractor (Hydroblast) discharged 6,000 to 7,000 gallons of water containing paint chips from hydroblasting the deck of the CHEVRON CALIFORNIA.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
CHEVRON CALIFORNIA	8-9	Marine vessel	3/16/1993	A light gray film of unknown substance was observed at Berth 302 within the sea curtain of CHEVRON CALIFORNIA. CHEVRON CALIFORNIA reported that approximately 1 gallon of light lubricating oil was in the water and that it did not come from the ship.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Chevron Corporation	8-9	Marine vessel	6/18/1986	Estimated less than 1 gallon hydraulic oil released to Willamette River. Hydraulic line parted on the M/V CHEVRON LOUISIANA; report indicates less than 1 gallon hydraulic oil released to Willamette River.	Direct discharge to river	ERNS Database, Incident No. 48780; Port of Portland 104(e) Response for SIUF/B311
Chevron Corporation	8-9	Marine vessel	9/4/1990	Release of oil from the vessel CHEVRON OREGON at Berth 312.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Chevron Corporation	8-9	Marine vessel	4/9/2000	M/V CHEVRON COLORADO controllable pitch/prop seal failed causing hydraulic oil release; approx. 5' x 10' sheen observed; unknown quantity of oil released to Willamette River; area was preboomed.	Direct discharge to river	ERNS Database, Incident No. 525488; OERS 0-770; Port of Portland 104(e) Response for SIUF/B311
Chevron Corporation	8-9	Marine vessel	6/18/2003	Release of hydraulic oil from vessel.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311

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Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Chevron LUBE QUEST	8-9	Marine vessel	6/12/1992	An approximately 80 to 100 feet by 6 feet wide fuel-type substance, oil or possibly petroleum, was observed along the pier. The Coast Guard was notified. Source was suspected as the vessel LUBE QUEST.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Chevron LUBE QUEST	8-9	Marine vessel	6/16/1992	An oil streak was observed coming from Chevron LUBE QUEST on the other side of the Lagoon.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
ExxonMobil	8-9	Marine vessel	5/4/1991	Release of sandblast grit into river from EXXON LONG BEACH.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Freighters, Inc. / M/V LUMBER QUEEN	8-9	Marine vessel	5/2/1971	Release of oil from vessel under repair. Slick from M/V LUMBER QUEEN observed at shipyard (quantity not reported).	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
General Steamship / F/T American Dynasty	8-9	Marine vessel	3/15/1994	Release of hydraulic oil. Five-gallon bucket knocked over side. M/V AMERICAN DYNASTY Release of hydraulic oil from bucket knocked over on F/T AMERICAN DYNASTY while at Berth 302; 10' x 10' sheen observed; report indicates 0.5-1 cup hydraulic oil released to Willamette River; booms and sorbent pads deployed.	Direct discharge to river	ERNS Database, Incident No. 230056 & 230087; National Response Center #230087 & #230056; Port of Portland 104(e) Response for SIUF/B311
General Steamship Company	8-9	Marine vessel	6/17/1993	M/V BOGASARI LIMA/line ruptured while transferring product, lubricating oil.	Direct discharge to river	NRC Report #180939 & NRC Report #180932
General Steamship Company	8-9	Marine vessel	2/25/1994	Unknown sheen surrounding vessel, M/V TAI SHING.	Direct discharge to river	NRC Report #223424
General Steamship Company	8-9	Marine vessel	2/11/1997	Unknown sheen, no longer visible. General Steamship vessel in area.	Direct discharge to river	NRC Report #376272
General Steamship Company	8-9	Marine vessel	6/23/1997	Unknown rainbow sheen 50 x 50 ft.	Direct discharge to river	NRC Report #392439
GRAND CANYON STATE	8-9	Marine vessel	5/5/1992	Oil surrounding the vessel GRAND CANYON STATE was observed to be moving towards Berth 306 where the CAPE BRETON was laid up. The material was reportedly dark in some areas with bubble shapes.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Kaiser Company, Inc.	8-9	Shipbuilding	5/10/1946	Sludge observed in Swan Island Basin (lagoon), reportedly from dumping from moored ships (quantity not reported); Kaiser Co. also reported Navy personnel using dump adjacent to Naval barracks for deposit of sludge.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
KENAI	8-9	Marine vessel	8/18/1991	A crane operator observed someone from the vessel KENAI dump unknown materials over the side. The on-duty guard could not see anything in the water.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Keystone Shipping Co. / BMC-4	8-9	Marine vessel	10/28/1992	Material was discovered to be leaking during transfer of diesel from T/B BMC-4 to tanker KEYSTONE CANYON Berth 313; amount released reported as unknown; boom had been predeployed.	Direct discharge to river	ERNS Database, Incident No. 142358; National Response Center #142358; Port of Portland 104(e) Response for SIUF/B311
LURLIME	8-9	Marine vessel	1/19/1993	Crude oil from the deck of the vessel LURLIME spilled onto the deck of Dry Dock 4. The spill was contained by plugging drains of dry dock and cleaned up with dry sand and absorbent diapers. None of the oil went into the water.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
USNS Carl Brashear	8-9	Transportation	7/13/2009	A report to the NRC stated that there was a release of 5 gallons of "A Triple F" from a sprinkler to the drain onboard the vessel due to an operator error while installing "A Triple F" switches.	Direct discharge to river	NRC Incident Reports
HMI Beneton Reef	8-9	Tanker	9/16/2008	A report to the NRC stated that duck grease was poured down the drain and the grease was pumped overboard via grey water discharge.	Direct discharge to river	NRC Incident Reports
M/V COLUMBIA	8-9	Passenger ferry	4/27/2005	In 2005, a release of unknown materials caused a sheen on the river from the outboard area of the M/V COLUMBIA, a vessel owned by the Alaska Department of Transportation.	Direct discharge to river	PSY Suppl. PA, App. F (2006)
M/V CSO CONSTRUCTOR	8-9	Marine pipe laying vessel	9/15/1998	In 1998, a release of unknown oil from the vessel created a 10 m^2 sheen on the river.	Direct discharge to river	PSY Suppl. PA, App. F (2006)
Maersk Line Limited	8-9	Marine vessel	10/1/1990	October 1990, while cleaning the aft of the SEA-LAND HAWAII a contractor released oil, dust and paint in the river causing a sheen on the surface.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
NORTHERN LIGHT	8-9	Marine vessel	3/18/1993	A 30 x 50 feet patch of gray unknown substance was observed in the water at the stern of the NORTHERN LIGHT.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Northwest Aggregates Co.	8-9	Transportation	3/3/2004	A report to the NRC stated that approximately 14 quarts of gear oil was released from a gear box on a conveyor belt when the conveyor belt broke and the gear box fell into the Willamette River.	Direct discharge to river	NRC Incident Reports
Northwest Marine Iron Works	8-9	Ship repair	9/11/1990	Oil was observed at Berth 304 between bents 50-53.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Northwest Marine Iron Works	8-9	Ship repair	12/9/1990	Oil and debris observed in water; other report indicates material was a milky white substance.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Northwest Marine Iron Works	8-9	Ship repair	8/20/1991	Ballast water observed coming from the vessel SIERRA MADRE. Northwest Marine was the contractor.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311

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Northwest Marine Iron Works	8-9	Ship repair	8/5/1992	A red sandblasting material was observed in water at Dry Dock 3.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Northwest Marine Iron Works	8-9	Ship repair	10/19/1998	DEQ complaint that North West Marine Iron Works while working on the vessel the GOLDEN GATE dumped sandblast sand in the river at night.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Northwest Marine Iron Works & ExxonMobil	8-9	Ship repair	4/8/1991	Large quantities of sandblast sand was washed into river by Northwest Marine while working on the EXXON BENICIA. No additional information available.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Northwest Marine Iron Works / SKIPANON / Barge BMTB 332	8-9	Ship repair / marine vessel	3/27/1992	NW Marine was sandblasting barges SKIPANON and BMTB332. Sandblast material was observed in the water at the head of Dry Dock 3. The problem went on for a few days.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	4/27/1986	Tank ship placed back in water and sheen observed; report indicates 1/2 cup crude oil released to Willamette River; material cleaned up.	Direct discharge to river	ERNS Database, Incident No. 46950
Not yet identified	8-9	Unknown	6/11/1987	32-ft boat sank; report indicates 20 gallons diesel fuel released to Willamette River; cleanup conducted with booms and sorbent pads.	Direct discharge to river	ERNS Database, Incident No. 61769; Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	8/26/1988	Oil on river observed off Freightliner Corp.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	7/26/1990	Oil was observed in the water outside of the curtain at Berth 314.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	9/19/1990	White paint observed in water approximately 25 feet wide at Berth 305.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	11/9/1990	Diesel spill from storm drain.	Discharge of material to river via storm drain	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	11/11/1990	Heavy oil sheen reported around Dry Docks 3 & 4 in the area of the small boat basin; source not related to PSY or contractors; no additional information available.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	11/13/1990	Oil sheen observed, likely originated from refueling LCUs. Did not appear to be substantial.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	12/7/1990	Spill occurred from an overflow during refueling/bunkering operations.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	12/15/1990	Foamy material observed on water; reportedly originated from testing fire suppression equipment.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/1/1991	Fisherman observed oil slick outboard from tankers at the shipyard. The spill was reported to DEQ.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	8/8/1991	Diesel spill flowing into the shipyard. Appeared to be coming from across the river.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	8/17/1991	A green substance resembling paint was observed in the water between Berth 311-314.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	9/6/1991	A diesel spill occurred between Berth 312 and 313, 40 to 60 feet in diameter outside the sea curtain.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	10/2/1991	Sandblast sand in water.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	10/12/1991	Oil sheen (diesel) observed. No additional information available.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	11/6/1991	Oil slick observed. No additional information available.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	11/30/1991	Yellowish sheen observed (storm drain).	Discharge of material to river via storm drain	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	12/21/1991	Oil sheen observed. No additional information available.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	1/11/1992	Oil sheen observed.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	2/21/1992	Oil sheen observed on water.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	2/23/1992	A scaly, scummy substance that resembled old paint was observed in the river. It had a translucent appearance.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Not yet identified	8-9	Unknown	2/27/1992	A thick oil spill (reported as black and white) was observed at Berth 305. The Coast Guard was notified, but indicated it wasn't enough to clean up.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/11/1992	Sandblast material was observed in the lagoon extending from Dry Dock 1 to Berth 306.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/12/1992	Oily substance observed on water at Berth 311. Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/19/1992	Orange colored material observed.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/24/1992	An oily sheen observed at Berth 312. The Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/27/1992	A heavy blue sheen of oil was observed at Pier A and a small amount of a similar sheen was observed at Pier B at the head of Dry Dock 4. The Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	4/1/1992	Sandblast grit observed in water.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	4/2/1992	Sandblast grit was observed being washed into the river.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	4/2/1992	Orangish material observed.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	4/29/1992	A spill of fuel approximately 20 feet by 150 feet was observed on the water at the west end of Dry Dock #3. WSI cleaned it up and the Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	5/6/1992	Oily sheen observed from runoff.	Discharge of material to river via storm drain or overland flow.	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	5/12/1992	Oil sheen observed.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	7/2/1992	An oil spill occurred between the Dry Dock and Pier D at pilings 24-29. The Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	10/7/1992	Oil spill observed. The source appeared to be downstream and was deposited in shipyard by winds.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	10/8/1992	Sheen observed in lagoon; type of material, quantity and source not known.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	12/12/1992	An approximately 20-ft wide and approximately 2 miles long sheen was observed . The material appeared to be lighter weight than diesel. The Coast Guard was notified and determined cleanup was not necessary.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	2/14/1993	A sheen with an approximately 50 yards long and 20 to 30 feet wide area with old and new oil was observed. The Coast Guard was notified. No additional information was available.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	2/25/1993	Film observed on water near Dry Dock 1.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/8/1993	An oily substance was observed in the water on the portside of Dry Dock 4. The Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	3/9/1993	Two areas (10 x 3 feet and 15 x 7 feet) of reddish-pink substance were observed in the water.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	6/22/1993	A bright multi-colored substance was observed at Berth 305. The substance was 120 feet long and approximately 20 to 30 feet wide.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	8/4/1993	A 100 x 20 foot patch of sandblast material was observed outside of the sea curtain/oil containment boom at Berth 313. Dry Dock 4 was covered by the same reddish substance.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	9/9/1993	Sand blast scum (approximately 15 to 25 feet wide and 300 to 400 feet long) was observed on top of the water. It was reported to Cascade General and they reported that it would sink to the bottom.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	11/2/1993	Release of chicken fat/clay mixture near Berth 302 to Berth 305.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Not yet identified	8-9	Unknown	8/2/1994	5' x 5' sheen observed in lagoon off of U.S. Navy & Marine Corporate Reserve Center. Caller indicated source could be a remediation site he/she was working on. Boom deployed to contain the material.	Direct discharge to river	ERNS Database, Incident No. 253123
Not yet identified	8-9	Unknown	6/25/1996	Sheen observed in the lagoon.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 96-2014)

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Not yet identified	8-9	Unknown	8/14/1996	A substance that appeared to be glue was found coming out of a storm drain, entering the lagoon at Cascade General/USCG area of the Swan Island Lagoon.	Discharge of material to river via storm drain.	LWG Programmatic Work Plan (referenced as OERS 96-2393)
Not yet identified	8-9	Unknown	10/8/1996	During refueling a work boat from shoreside, the surge suppressor failed. No cleanup. Product dissipated.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 96-2852)
Not yet identified	8-9	Unknown	5/31/1997	Approx. 1/4 mile x 2000' rainbow-colored sheen observed; unknown quantity of unknown oil released; source appeared to be coming from upriver; area from which sheen observed was preboomed.	Direct discharge to river	ERNS Database, Incident No. 389384
Not yet identified	8-9	Unknown	11/9/1998	Sheen on river from outfall. USCG determined it to be unrecoverable.	Discharge of material to river via storm drain	LWG Programmatic Work Plan (referenced as OERS 98-2681)
Not yet identified	8-9	Unknown	11/10/1998	Oil coming from outfall M-1. BES boomed and was looking for source.	Discharge of material to river via storm drain	LWG Programmatic Work Plan (referenced as OERS 98-2693)
Not yet identified	8-9	Unknown	4/5/2000	Approximately 0.5 gal released to water.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 0-741)
Not yet identified	8-9	Unknown	5/2/2000	MVA with 80 gallons of diesel going to a storm drain - semi leaking. Drain is 500 - 1000 yards from the river. Fire boat on scene; product not yet visible on river. BES en route. USCG contacted.	Discharge of material to river via storm drain	LWG Programmatic Work Plan (referenced as OERS 0-961)
Not yet identified	8-9	Unknown	11/15/2000	Unknown material resembling blast grit observed "floating" near dock - sinks when touched.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 0-2730)
Not yet identified	8-9	Unknown	1/31/2001	Light sheen discharge from outfall - 50'X50'. No additional information available.	Discharge of material to river via storm drain	LWG Programmatic Work Plan (referenced as OERS 1-223)
Not yet identified	8-9	Unknown	9/23/2001	Approx. 10' x 3' rainbow-colored sheen observed on water; release of unknown quantity of oil to Willamette River from an unidentified source.	Direct discharge to river	ERNS Database, Incident No. 580665; National Response Center #580665; OERS 1-2410
Not yet identified	8-9	Unknown	8/4/2002	Sheen observed on water; release of unknown oil to Willamette River from an unknown source; booms and absorbents applied and material was contained.	Direct discharge to river	ERNS Database, Incident No. 618890; National Response Center #618890
Not yet identified	8-9	Unknown	1/30/2008	NRC Environmental received a call from Port of Portland Marine Security that a tank was observed floating in the water in north Portland Harbor. NRC responded and deployed 100 feet of containment boom around the tank. A four-gas meter and a photoionization detector were used monitor the air inside the tank. All readings were normal and visual/olfactory observations indicated that there was no odor or sheen. It was determined that there were no pollution concerns from the contents of the tank and that no further testing was required. No additional information was available.	Possible direct discharge to river	Port of Portland 104(e) Response for the Dredge Base
Not yet identified	8-9	Unknown	4/1992	A sheen was observed on the lagoon and the source was determined as an outfall between Berth 305 and 306.	Discharge of material to river via storm drain	Port of Portland 104(e) Response for SIUF/B311
NW Marine / Allstate Marine Cleaning / STANDLEY	8-9	Ship repair / marine vessel	6/29/1990	Chempro observed an oil slick on the river while conducting an in-house spill training at Swan Island Lagoon. The Coast Guard was notified and NW Marine and Allstate cleaned up the slick. Report indicates the source was the vessel STANDLEY.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
NW Marine / SEALAND HAWAII	8-9	Ship repair / marine vessel	9/14/1990	Sandblast material and oil were observed in the water at Berths 302 and 304. The oil sheen was observed emanating to Berth 305. The Coast Guard investigated and determined the oil was coming from under the sea curtain at the SEALAND HAWAII. NW Marine was notified and they cleaned up the oil.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
OBSERVER ISLAND	8-9	Marine vessel	2/17/1991	Grey paint spilled in water at Berth 303 from overspraying on OBSERVER ISLAND. Paint was approximately 60-70 yards long and 4-20' wide in places.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
OVERSEAS GALENA BAY	8-9	Transportation	10/19/2001	A report to the NRC stated that approximately 1 pint of lubricating oil was released from the vessel into the Willamette River from a leak in the lube oil cooler in the engine room.	Direct discharge to river	NRC Incident Reports
OVERSEAS OHIO	8-9	Marine vessel	1/25/1994	Brownish colored water observed coming from a drain hole near the deck of the ship OVERSEAS OHIO. Appeared to be leaving an unknown sediment.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
OVERSEAS OHIO	8-9	Marine vessel	1/31/1994	Black or brown substance observed emanating from the OVERSEAS OHIO at Berth 312.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Pacific Detroit Diesel	8-9	Manufacturing	8/28/1997	Approx. 100 yd x 200 yd black oil with gray sheen observed on Swan Island Lagoon; report indicates 25-40 gallons of unknown oil released to lagoon from outfall; source not known; cleanup contractor initiated cleanup.	Discharge of material to river via storm drain	ERNS Database, Incident No. 401531; National Response Center #401531; LWG Programmatic Work Plan (referenced as OERS 97-2198)
Pacific Marine Services / PAC Barge	8-9	Ship repair / marine vessel	10/15/1973	Release of debris and paint from sandblasting and painting. Release of debris and paint to Willamette River from sandblasting and painting work on PAC Barge 302-2 at Berth 309 (quantity not reported).	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Peninsula Truck Lines, Inc.	8-9	Transportation company	4/19991	OSFM incident report stated that an employee washing the bed of a 40-ft trailer spilled approximately 2 gallons of blue dye pigment into the storm sewer. The storm sewer is situated in the City of Portland's stormwater basin No. 18 which discharges to the Willamette River.	The intersection is situated in the City of Portland's OF 18 stormwater basin.	Oregon State Fire Marshal database
Polar Tankers	8-9	Marine vessel	5/14/2000	Release of crude oil from tanker POLAR SPIRIT while on dry dock; leaking drops of oil every few minutes; unknown quantity of oil released to Willamette River; ship boomed; vessel boomed; USCG, PDX Fire called by OERS. Report states ODFW Clean Rivers would also be called.	Direct discharge to river	ERNS Database, Incident No. 528965; National Response Center #528965; OERS 0-1055; Port of Portland 104(e) Response for SIUF/B311
Port of Portland	8-9	Government	7/9/1992	A hydraulic oil leak on a crane for Dry Dock 4 spilled onto the portside of the EXXON NORTH SLOPE which was on the dry dock. No release to the river was indicated.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Portland Truck and Diesel	8-9	Transportation	1/9/2003	A report to the NRC stated that approximately 160 gallons of oil were released from an oil/water separator to the surrounding soil due to equipment failure. The NRC database reported that it is not known whether the release reached the Willamette River.	Possible release to City's storm water conveyance system to either OF18 or 19.	NRC Incident Reports
Sea-Land Service, Inc./ Sea-Land Transport Co. and SEA-LAND NAVIGATOR, SEA-LAND HAWAII	8-9	Transportation company	12/1990	December 1990, day unknown, an unknown amount of foam was released into the river during the repair of a vessel, NAVIGATOR, owned by Sea-Land.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
SIERRA MADRE	8-9	Marine vessel	8/3/1990	Oil was observed in water at the stern of the vessel SIERRA MADRE. The oil dispersed before cleanup could occur.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
SIPCO / OVERSEAS CHICAGO	8-9	Ship repair / Marine Vessel	4/3/1992	Dirty water pumped by SIPCO from OVERSEAS CHICAGO into river.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
T/V ARCO SAG RIVER	8-9	Marine vessel	4/23/1986	In 1986, it was reported that 1 cup of crude oil was released to the river from a ballast pipeline. Discharge of pipeline/oil in line/discharging ballast at Dry Dock 4; report indicates 1 cup of Alaska North Slope crude oil released to Willamette River from T/V ARCO SAG RIVER; 10' x 50' sheen observed; boom placed and cleanup crew contacted.	Direct discharge to river	ERNS Database, Incident No. 46828; Port of Portland 104(e) Response for SIUF/B311
Trans Marine Navigation Company / M/V DANSUS	8-9	Marine vessel	6/25/2001	Release of marine gas from a faulty cap on a sounding pipe on M/V DANSUS while on dry dock; approx. 20 m x 4 m bluish-colored sheen observed; reports indicate 1 gallon or 5 liters of marine gas released to Willamette River; also states release was automotive gasoline; material contained by previously deployed boom.	Direct discharge to river	ERNS Database, Incident No. 570837; ERNS Database, Incident No. 570839; National Response Center #570837; OERS 1-1497; Port of Portland 104(e) Response for SIUF/B311
U.S. Army Corps of Engineers	8-9	Government	12/28/1989	Release of oil during transfer operations. Dredge ESSAYONS (U.S. Army Corps dredge), while transferring; approx. 10' sheen observed; report indicates 1 gallon motor oil released to Willamette River; sorbent material used to cleanup spill.	Direct discharge to river	ERNS Database, Incident No. 112496; Port of Portland 104(e) Response for SIUF/B311
U.S. Army Corps of Engineers	8-9	Government	9/16/1990	Yellow and white paint was observed in the river at Berth 302 near the Corps DREDGE ESSAYONS. Paint was contained within the boom. Cascade General was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
U.S. Army Corps of Engineers	8-9	Government	9/20/1990	Hydraulic oil released from Dredge ESSAYONS due to equipment failure at Berth 303; approximate 6,000 sq. ft. sheen observed; report indicates 10 gallons hydraulic oil released to Willamette River; vessel was boomed in and sorbents used to cleanup spill.	Direct discharge to river	ERNS Database, Incident No. 40514; NRC Report #40514; Port of Portland 104(e) Response for SIUF/B311
U.S. Army Corps of Engineers	8-9	Government	9/23/1990	Hydraulic oil released from Dredge ESSAYONS due to equipment failure at Berth 303; approximately 6,000 sq. ft. sheen observed; report indicates 10 gallons hydraulic oil released to Willamette River; vessel was boomed in and sorbents used to cleanup spill.	Direct discharge to river	ERNS Database, Incident No. 40514; National Response Center #40514; Port of Portland 104(e) Response for SIUF/B311

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
U.S. Coast Guard	8-9	Government	12/9/1991	While pumping out sewage from the Coast Guard vessel POLAR STAR at Berth 312, a spill occurred (reported as DEQ Spill No. 91-163). When the POLAR STAR crew noticed sewage coming from the line, they immediately stopped pumping operations. It was estimated that less than 100 gallons of sewage was released in the Willamette River. No cleanup of the release was performed because of the inaccessibility of the location.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
U.S. Coast Guard	8-9	Government	4/5/1992	Oil sheen on the water caused by an engine problem in USCG RESOLUTE. A propeller hub leaked approximately 1/4 gallon of oil.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
U. S. Navy	8-9, 10-11	Defense agency	4/22/1946, 1/25/1987, 9/29/1989, 1/6/1991, 7/18/1991, 7/24/1991, 10/9/1991, 7/12/1994, 9/24/1994, 6/13/1995, 6/19/1995, 1/7/1996, 5/12/1997, 1/12/2001, 4/18/2002, 6/29/2003, 11/25/2003	A 1946 release of bilge oil into Swan Island Lagoon at Berthing Area B from pumping out bilges of an LST. Navy was owner of vessel USNS WILKES, which released approximately 1 gallon of lubricating oil in bilge into river in 1987. In 1989, Navy BARGE 60 was in repair at the PSY when a contractor released sandblast grit into the river. In January 1991, an oil sheen observed on water from the USNS SILAS BENT. Sheen approximately 20-30' x 80'. Material dissipated. A July 1991, two incidents were reported, including the release of approximately 1 gallon of hydraulic oil and 3 gallons of waste oil/lubricants from the USS WILLIAM H. STANDLEY into the river. In October 1991, two reports to the NRC stated that approximately 5 gallons of aviation fuel and 1 gallon of waste lubricating oil were released from USNS HASSAYAMPA and the USNS TITAN into the Willamette River, respectively. In 1994, a report stated that approximately 1 pint of jet fuel was released into the river when a contractor removed a cargo hose from the USNS GUADALUPE. A Sept. 1994 report stated that approximately 1 ounce of hydraulic oil was released into the river from the M/V SEALIFT ANTARCTIC. In June 1995, two NRC reports stated that approximately 6 gallons of waste oil was released from the USNS TIPPECANOE into the Willamette River during two separate incidents. An April 1996 report stated that approximately 25 gallons of unknown oil was released into the river when a stern line broke on the USS HIGGINS. A 1997 report to the NRC stated that approximately of 3 gallons of "bilge slops" or oily waste was released from USNS JOHN ERICSSON into the Willamette River when a tank truck in the process of shutting down lost material. In 2001, an oil sheen was observed in the dry dock following repairs to the Navy ship TIPPECANOE. In 2002, a sheen on the river was observed around the Navy vessel, USNS YUKON. In November 2003, 22-50 gallons of lubricating oil released during transfer to Navy vessel docked at Swan Island. Report indicates 2 gallons released to Willamette River. Absorbents and booms deployed and release was secured.	Direct discharge to river	PSY Suppl. PA, App. F (2006) NRC Incident Reports Port of Portland 104(e) Response for SIUF/B311
U.S. Navy & Pacific Coast Environmental, Inc.	8-9	Government	10/20/1991	Ballast tank on U.S. Navy vessel pumping over the side; operation was shut down and absorbent pads and a boat were deployed. Report indicates 50 gallons of diesel fuel released to Swan Island Lagoon.	Direct discharge to river	ERNS Database, Incident No. 92949; National Response Center #92949; Port of Portland 104(e) Response for SIUF/B311
United States	8-9	Government	6/11/1946	Fire at Deperming Station; letter indicates "that the standing order forbidding pumping of oily bilges is being disobeyed."	Possible direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
United States / Kaiser Company, Inc.	8-9	Shipbuilding	1/16/1943	Deck and sides of the SS SCHENECTADY, fractured just aft of the bridge superstructure while tied up at outfitting pier.	Possible direct discharge to river	Port of Portland 104(e) Response for SIUF/B311; www.fingerpublishing.com
VENETIA	8-9	Marine vessel	6/2/2003	8' X 8' sheen observed outside boom of UNIVERSE EXPLORER - believed to be from the VENETIA, a neighboring ship.	Direct discharge to river	LWG Programmatic Work Plan (referenced as OERS 3-1115)
Werner Enterprises	8-9	Transportation	1/13/2000, 10/19/2001	In January 2000, a spill from tractor trailer of 60 gallons occurred at the Werner facility. The spill discharged to a storm sewer and approximately 30 gallons reached the river. In October 2001, a report to the NRC stated that approximately 30 gallons of fuel oil was released when a crossover line on a tractor trailer saddle tank ruptured. The oil was released to the roadway then flowed into a storm drain. The roadway is situated in the City of Portland's storm water Outfall Basin 18.	Direct discharge to river	NRC Incident Report #516905; NRC Incident Reports
West State Inc.	8-9	Ship repair	4/28/1991	Diesel spill around starboard side of Dry Dock 3; looked to be emanating from the sea curtain. West State Inc. notified and worked to clean up.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
West State Inc.	8-9	Ship repair	8/11/1992	Sewage liquids spilled from a vessel (name illegible).	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
West State Inc. & Chevron Corporation	8-9	Ship repair / marine vessel	5/4/1991	Release of sandblast grit and paint chips into river from West State Inc. working on CHEVRON RANGER ARIZONA.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
West State Inc. & Chevron Corporation	8-9	Ship repair / marine vessel	1/29/1992	WSI was observed washing out ballast tanks of CHEVRON CALIFORNIA and letting the water flow over the inboard side of the ship.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
West State Inc. & Chevron Corporation	8-9	Ship repair / marine vessel	2/12/1992	Sandblast material was observed being pumped into the river from the vessel CHEVRON CALIFORNIA.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
West State Inc. / SIPCO / SEALAND NAVIGATOR	8-9	Ship repair / marine vessel	2/9/1991	Release from shoveling sandblast sand into river while West State Inc. and SIPCO working on the SEALAND NAVIGATOR.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
West State, Inc. / MARYLAND	8-9	Ship repair / marine vessel	11/14/1987	Alleged oil slick on river from drydock which was being flooded to lower the tanker MARYLAND (formerly STUDEVANT) into the water.	Possible direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
West State, Inc. / OVERSEAS PHILADELPHIA	8-9	Ship repair / marine vessel	5/17/1992	Dust was discharged from vessel OVERSEAS PHILADELPHIA at Berth 304 directly to the lagoon instead of a bag house. Reportedly due to mechanical failure.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
West State, Inc. / SIPCO / SEALAND TRADER	8-9	Ship repair / marine vessel	1/26/1991	Release of sandblast grit into air and river from West State Inc. and SIPCO working on SEALAND TRADER.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
Western Towboat Co.	8-9	Tugboat operator	3/9/2004	During an internal transfer, vessel Ocean Mariner discharged 4 gallons of diesel from an overhead vent. Diesel ran out scupper and discharged to river.	Direct discharge to river	NRC Incident Report #715543
WISCO / SS BARBARA	8-9	Ship repair / marine vessel	6/20/1957	Workmen for WISCO were removing belly plugs from SS BARBARA to drain water ballast from tanks and by mistake took out an oil tank plug. A considerable amount of oil was released to the Willamette River and WISCO was working all night to clean it up.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
WSI / CURY	8-9	Ship repair / marine vessel	3/27/1992	Heavy black oil was observed at the stern of the vessel CURY. The Coast Guard was notified.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
WSI / DELAWARE TRADER	8-9	Ship repair / marine vessel	5/2/1994	WSI working on the DELAWARE TRADER was observed discharging large quantities of muddy water (possibly sandblast grit) onto the Pier at Berths 302 and 303.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
WSI / Lockwood Industries	8-9	Ship repair / marine vessel	1/26/1992	Two Lockwood Industries tankers (#6B-1 and #101) were observed with dripping oil from valves.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
WSI / OVERSEAS OHIO	8-9	Ship repair / marine vessel	1/17/1994	An oily substance and blob of an unknown black substance (1-, 2-, and 3-inch diameters) were observed emanating from the OVERSEAS OHIO at Dry Dock 4. WSI notified the Coast Guard.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
WSI / OVERSEAS OHIO	8-9	Ship repair / marine vessel	1/27/1994	Two hoses were observed from OVERSEAS OHIO dumping a mixture of sand and water into the river.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
WSI / OVERSEAS OHIO	8-9	Ship repair / marine vessel	2/4/1994	Dirty water was overflowing from tank into the river.	Direct discharge to river	Port of Portland 104(e) Response for SIUF/B311
American Transport	9-10	Transportation company	8/1991	American Transport Inc. (now American Energy, Inc.) has been reported as a responsible party for a number of spills in the City of Portland, some of which have entered a waterway. One incident within the Study Area reported in the OSFM database involved 4,400-gallon tanker that broke off its mount, spilling diesel fuel. OSFM reported that 500 gallons were released and material entered a waterway. The location of the spill is situated in the City of Portland's Stormwater Basin No. 19A, which discharges to the Willamette River.	The intersection is situated in the City of Portland's OF 19A stormwater basin.	Oregon State Fire Marshal database NRC Incident Reports, NRC Incident Reports #303504 & 777997
CPS Express	9-10	Transportation company	One-time event occurring in March 1995	OSFM incident report stated that a tractor trailer rig leaked approximately 10-15 gallons of an unknown chemical into the public street. OSFM reported that approximately 10 gallons were released into a storm sewer. The storm sewer is situated in the City of Portland's Stormwater Basin No. 17, which discharges to the Willamette River.	Stormwater from the area flows into the Lower Balch Creek Basin which discharges to City of Portland Outfall 17 thence into the Willamette River.	Oregon State Fire Marshal database
Crowley Marine Services		Marine transportation company	10/5/1990, 2/9/1993, 4/10/1997, 5/2/1997	A 1990 report to the NRC stated that a 10-gallon release occurred with an unknown amount of diesel oil flowing into the Willamette River when a tank was overfilled. A 1993 report to the NRC stated that approximately 2 gallons of ballast water were released into the river. An April 1997 report to the NRC stated that approximately 1 pint of hydraulic oil was released from the tug ADVENTURER into the Willamette River due to a seal leak on a propeller shaft. A May 1997 report to the NRC stated that approximately 0.5 cup of diesel oil was released from the tug CAVALIER into the Willamette River due to a seal failure.	Direct discharge to river	NRC Incident Reports
General Electric Company	9-10	Electrical apparatus decommissioning facility	2/4/1994	A report to the NRC stated that approximately 1 pint of PCB-contaminated oil was released when a capacitor motor leaked onto concrete due to an equipment failure. The report confirmed that there was a release to the water, although a "zero" was the amount reaching the water in the report.	Discharge to river via storm sewer	NRC Incident Reports
LASCO Shipping	9-10	Transportation	10/9/1998	A report to the NRC stated that approximately 1 liter of hydraulic oil was released from the M/V PACKING into the river due to a broken hydraulic hose on a hatch cover.	Direct discharge to river	NRC Incident Reports

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Michael Wakefield dba Three Hats Farm	9-10	Transportation company	One-time event occurring in May 2001	OSFM incident report stated that a semi-tractor trailer jack-knifed during an auto accident. The seam on the trailer tank ruptured, spilling 30-40 gallons of diesel fuel onto the roadway in the vicinity of two storm drains. OSFM estimated that 20-30 gallons discharged into the storm drains. The intersection is situated in the City of Portland's Stormwater Basin No. 15, which discharges to the Willamette River.	Stormwater from the area flows into the Nicolai Basin which discharges to City of Portland Outfall 15 thence into the Willamette River.	Oregon State Fire Marshal database
Portland Bagel	9-10	Bakery	12/1995	OSFM incident report stated that a truck was leaking diesel fuel in a nearby parking lot (3571 NW Yeon). OSFM reported that 2-3 gallons of diesel fuel spilled and may have flowed into a storm sewer sump. The storm sewer is situated in the City of Portland's Stormwater Basin No. 17, which discharges to the Willamette River.	Stormwater from the area flows into the Lower Balch Creek Basin which discharges to City of Portland Outfall 17 thence into the Willamette River.	Oregon State Fire Marshal database
Pro Truck Lines	9-10	Transportation	5/25/1995	A report to the NRC stated that approximately 80 gallons of diesel oil was released to the ground from ruptured fuel line on a truck. An unknown amount of oil was released to the Willamette River via public conveyance system.	Discharge of material to river via storm drain	NRC Incident Reports
Stevedoring Services Inc.	9-10	Terminal stevedoring operations for loading and unloading container cargo, bulk and breakbulk for products	1/15/1995	A report to the NRC stated that an unknown amount of paint thinner was released into the Willamette River when a paint pallet spilled from the M/V PAC PRINCE's crane.	Direct discharge to river	NRC Incident Reports
Truax Oil, Inc.	9-10	Transportation company	12/19/1990	As reported to the NRC, a tanker truck driver lost control of the vehicle. The accident ruptured the tanker, releasing at least 50 gallons of diesel fuel. An unknown amount discharged to the storm drain and then entered the Willamette River. The accident occurred within the City of Portland's Stormwater Basin No. 17, which discharges to the Willamette River.	Stormwater from the area flows into the Lower Balch Creek Basin which discharges to City of Portland Outfall 17 thence into the Willamette River.	National Response Center
ALLUNGA	10	Marine vessel	4/14/1985	A 100 ft. by 300 ft. sheen was observed traversing the lengths of Berths 205 and 206. The Coast Guard determined the source to be soot from the vessel ALLUNGA which was berthed at the WISCO facility for overhaul work.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
City of Portland	10	Government	1/5/2005	January 5 through 6, 2005 – A sheen was observed in the City of Portland's Fireboat Cove adjacent to Terminal 2 during dredging activities associated with a utility locate. Port staff videotaped sediments being sucked up, sprayed into the air and being deposited back into the slip.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
DIMOSTA	10	Marine vessel	5/24/1989	A spill occurred when three barrels of sulfuric acid fell from the vessel DIMOSTA onto the dock near the bullrail and ruptured spilling a small amount of liquid. The liquid was diluted and partially washed away with rainwater into river. The spill was estimated at 165 liters.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
GOLDEN ALPHA	10	Marine vessel	6/28/1992	Approximately one barrel of oil was released from the vessel GOLDEN ALPHA at Berth 206. The spill caused a sheen on the river that extended about 200 feet around the ship's stern.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
MICRONESIAN NATIONS	10	Marine vessel	1/16/1999	Prior to departing Berth 206, the fuel/oil was discharged from the stern of the vessel MICRONESIAN NATIONS. The diameter of the spill was approximately 150 ft. by 200 ft. under the dock. The Coast Guard was notified. No additional information was available.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
Not yet identified	10	Unknown	11/4/1981	Oil was observed on the water underneath Berths 201 to 203. The Coast Guard was notified and they indicated it was a sheen of diesel originating from "down river."	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
Not yet identified	10	Unknown	5/16/1983	An oil and red paint mixture was observed traversing the length of Berth 205. The oil/paint slick was approximately 1,800 feet long and 10 to 12 feet wide. Although the source could not be determined, it appeared to be originating from upstream and extended a short distance beyond the WISCO fence.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
Not yet identified	10	Unknown	7/19/1989	A light sheen was observed on the river in the vicinity of Berth 206.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
Not yet identified	10	Unknown	8/20/2004	A personal watercraft struck piling #221 at Berth 204 and sank. Gasoline was noted leaking from the sunken boat. Fred Devine Diving and Salvage was contacted to recover the vessel.	Direct discharge to river	Port of Portland 104e Response for Terminal 2
OVERSEAS BOSTON	10	Marine vessel	12/20/1993	A thick foamy substance was observed in the water in the vicinity of Berth 206. The source was determined to be a substance originating from the OVERSEAS BOSTON, which was berthed at the Sulzer-Bingham facility.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
SEA VENTURE	10	Marine vessel	10/14/1991	Approximately 25 to 30 gallons of diesel was released from the vessel SEA VENTURE at Berth 203 and caused a sheen on the river. Crowley contacted the Coast Guard and Riedel International was called, the area was boomed off, and absorbents were used to control the spill. Approximately 90 percent of the spill was cleaned up within an hour of its release.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Union Pacific Railroad Company	10	Railroad company	10/30/1994	An oil slick was identified off Terminal 2 in the vicinity of Berth 206. The Coast Guard was contacted and they indicated that the slick was residual oil from a Union Pacific Railroad spill that occurred the previous week. The Coast Guard decided the sheen would break up and did not require clean-up.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
Western Transportation Company	10	Transportation company	7/10/1989	A sheen was observed in the water off of Berths 203 and 204 and appeared to be originating from Western Transportation upstream.	Direct discharge to river	Port of Portland 104(e) Response for Terminal 2
Arrow Transportation Company	10-11	Transportation company	10/10/1990	Material spilled from a hose when Arrow Transportation Company was loading a ship from a truck, approximately 15 gallons of lubricating oil released, approximately 5 gallons reached Willamette River. Spill was cleaned up with sorbent materials.	Direct discharge to river	Port of Portland 104(e) Response for T1 North
M/V MARIA CARLA D'AMICO	10-11	Marine vessel	11/2/1971	Oil slick associated with vessel M/V MARIA CARLA D'AMICO observed adjacent to Terminal 1; estimated 90 gallons released to Willamette River.	Direct discharge to river	Port of Portland 104(e) Response for T1 South; Port of Portland 104(e) Response for T1 North
Not yet identified	10-11	Unknown	6/24/1997	Release of unspecified oil reported based on "unknown sheen sighting"; sheen size approximately 100 ft X 100 ft; some rainbow color; caller was aboard SS BEAVER STATE.	Direct discharge to river	Port of Portland 104(e) Response for T1 North; Port of Portland 104(e) Response for T1 South
Shaver Transportation Company	10-11	Transportation company	11/8/1971	Estimated 3 barrels of Bunker C released to Willamette River by Shaver Transportation fuel barge when a line to the vessel ALBIA broke (reported by Shaver).	Direct discharge to river	Port of Portland 104(e) Response for T1 North
SS EL CENTRO AMERICANO	10-11	Marine vessel	2/13/1982	Oil spill observed on the deck of the vessel SS EL CENTRO AMERICANO at Berth 103 (quantity not reported); no additional information available.	Direct discharge to river	Port of Portland 104(e) Response for T1 North
SS LOCH LOYAL	10-11	Marine vessel	12/11/1971	Oil slick associated with SS LOCH LOYAL observed at Berth 8 (quantity not reported).	Direct discharge to river	Port of Portland 104(e) Response for T1 North
SS MAAS LLOYD	10-11	Marine vessel	2/8/1971	Release of oil from Berth 6 to Willamette River, cleaned up by Shaver (quantity not reported).	Direct discharge to river	Port of Portland 104(e) Response for T1 North
SS MARYLAND or TUG NAVIGATOR	10-11	Marine vessel	5/31/1985	Oil slick observed at Berth 101; estimated at 100 ft in length; source reported as either vessel SS MARYLAND or the tug NAVIGATOR (quantity not reported).	Direct discharge to river	Port of Portland 104(e) Response for T1 North
Zidell Explorations	10-11	Ship scrapping	1968	Oil slick from release at upstream Zidell facility observed at Terminal 1.	Direct discharge to river	Port of Portland 104(e) Response for T1 South; Port of Portland 104(e) Response for T1 North
MARAD / GREEN MOUNTAIN STATE	11	Marine vessel	9/11/1996	An overspray occurred while a contractor was painting the Marad vessel GREEN MOUNTAIN STATE. Marad accepted responsibility for the overspray and contacted the affected tenant, Thermo Pressed Laminates.	Direct discharge to river	Port of Portland 104(e) Response for T1 South
NAVIGATOR	11	Marine vessel	5/30/1985	The tug NAVIGATOR had a wire run through the propeller shaft seal causing it to spew oil when it was departing from Berth 104. No volume was indicated, but the release was reported to the Coast Guard and cleaned up by Crowley Maritime's environmental team on the day of the release.	Direct discharge to river	Port of Portland 104(e) Response for T1 South
Not yet identified	11	Unknown	3/9/1981	A 10 by 1,000 ft spill was observed at Berth 104; no known cause.	Direct discharge to river	Port of Portland 104(e) Response for T1 South
Not yet identified	11	Unknown	9/25/1981	An oil slick was observed emanating from the Fremont Bridge area downstream to Terminal 1 Berths 101 to 106; source reported as upriver (quantity not specified).	Direct discharge to river	Port of Portland 104(e) Response for T1 South; Port of Portland 104(e) Response for T1 North
Not yet identified	11	Unknown	10/19/1981	A spill was reported extending from Berth 105 down to Berth 101, although no ships were in the vicinity, only a barge; 20-30 feet wide.	Direct discharge to river	Port of Portland 104(e) Response for T1 South
Not yet identified	11	Unknown	5/24/1974	A discharge of lube oil occurred from the maintenance shop in the Gearlocker because of an equipment failure and caused an oil sump to overflow into the Willamette River. A 5-foot by 15-foot oil slick was observed and it was estimated that less than one gallon of oil per day entered the river.	Direct discharge to river	Port of Portland 104(e) Response for T1 South
U.S. Maritime Administration	11	Government	Unknown	No Date. While conducting painting activities on the MARAD vessel GREEN MOUNTAIN STATE laid up at Berth 104, MARAD's contractor accidentally oversprayed into an area leased by Thermo Pressed Laminates.	Direct discharge to river	Port of Portland 104(e) Response for T1 South
Unknown Vessel	11	Marine vessel	5/21/1991	An oily sheen was observed downriver from an old paddle-wheel docked at Berth 105.	Direct discharge to river	Port of Portland 104(e) Response for T1 South
Olympic Tug and Barge	11.4	Transportation	11/24/2001	Sheen observed comping from vicinity of the Irving dock.	In river	NRC 586800
M/V Jude Breeze	11-12	Transportation	3/29/2008	A NRC incident report stated that there was a contractor working on the ship that spilled 0.5 gallons of oil into the river while disconnecting a hose.	Direct discharge to river	NRC Incident Reports

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Rexel/Taylor Electric	12-13	Warehouse	5/18/2006	A 120 gallon spill/unrecoverable sheen on river caused by firefighting efforts at facility warehouse. Spill traced to three utility pole transformers that were damaged in the fire. Oils were released to the ground and water from firefighting efforts washed oil down storm drain. Unknown whether the transformers contained PCB oil.	Discharge of material to river via storm drain	NRC Incident Report #797606
Tidewater Barge Lines	12.1	Marine transportation company	8/28/1994	Diesel released under Steel Bridge from Barge #36	Direct discharge to river	from Second Amended complaint
DREDGE OREGON	Swan Island	Dredge vessel	6/7/2005	40 gallons of hydraulic oil released to river while transferring. Fuel came out of vent during fuel transfer, spilled on deck and between 5-10 gallons entered the river. Absorbents were used to clean up spill.	Direct discharge to river	NRC 761272/ OERS 05-1253
LIBERTY SEA	Terminal 5	Marine vessel	12/8/2000	Sheen of unknown oil observed along side LIBERTY SEA vessel at Columbia Grain Elevators, Terminal 5.	In river	NRC 550405/ OERS 00-2910
JOHNNY PETERSON	Terminal 5	Marine vessel	8/5/2003	Towing vessel pushing barge SANDERLING ran into POP Ship dock at T5 behind the Alcaltel Facility, releasing 750 gallons.	Direct discharge to river	OERS 03-1681
LIBERTY SEA	Terminal 5	Marine vessel	12/8/2000	Sheen of unknown oil observed along side LIBERTY SEA vessel at Columbia Grain Elevators, Terminal 5.	In river	NRC 550405/ OERS 00-2910
JOHNNY PETERSON	Terminal 5	Marine vessel	8/5/2003	Towing vessel pushing barge SANDERLING ran into POP Ship dock at T5 behind the Alcaltel Facility, releasing 750 gallons.	Direct discharge to river	OERS 03-1681
National Oceanic and Atmospheric Administration	Unknown	Research vessel	2/5/2001	A discharge of approximately 1 cup of No. 2 diesel occurred from the R/V MCARTHUR to Willamette River.	Direct discharge to river	USCG Pollution Report
Portland General Electric Company	Unknown	Electric utility company	10/25/2004	In October 2004, approximately 30 gallons spilled from a pole transformer at 3001 SE Morrison containing fluid with 31 ppm PCB based on 9/30/1986 sampling. Oil initially discharged to ground and subsequently to river via storm drains.	Discharge of material to river via storm drain	NRC Report #739571
Portland General Electric Company	Unknown	Electric utility company	11/30/1999	In November 1999, the NRC reported that approximately 3 gallons of hydraulic oil was released into the water, from a ruptured truck reservoir line. The spill reached a nearby storm drain and was released into the Willamette River.	Discharge of material to river via storm drain	NRC Report #507354
Portland General Electric Company	Unknown	Power barge Pole transformer	4/4/2008	Hydraulic lift broke on wiggle tail digging truck and hydraulic oil was released into nearby storm drain at 20717 NW Vaughn St.	Storm drain	NRC 867007
Wilson Oil	Unknown	Transportation company	12/1987	OSFM incident report stated that a tanker truck overturned leaking approximately 3,000 gallons of gasoline on the roadway. The OSFM report does not provide enough information concerning the spill, but it is assumed that some volume of gasoline discharged into storm sewers on St. Helens Road which then flowed to the Willamette River. More research is necessary to determine where the tanker truck picked up the load and the exact location of the accident.	Stormwater system	Oregon State Fire Marshal database
Tosco Company	Unknown	Tug	11/2/1999	Fuel tank vent on tug HOWARD OLSON "burped" during refueling. Approximately 1/2 gallon No. 2-D fuel oil spilled during refueling.	Direct discharge to river	NRC 504542/ OERS 99-2526
Sause Brothers	Unknown	Transportation	7/27/2010	Unknown hydrocarbon sheen observed at Sause Dock.	In river	NRC 948990
Sause Brothers	Unknown	Transportation	3/29/2008	Diesel fuel release from tug boat due to tank overflow. Cracked fuel tank spilled diesel fuel into bilge and bilge automatically turned on releasing 55 gallons into river. Location described as 3710 NW Front Ave.	Direct discharge to river	NRC 866359/ OERS 08-0788
Sause Brothers	Unknown	Transportation	12/28/2007	Sheen observed in river. Source is old underground saturation that seeps to surface occasionally. The 10 ft x 15 ft sheen was contained with absorbents. Weathered oil may have been stirred up from bottom or discharged from groundwater under bank. Unknown origin. Location described as 3710 NW Front Ave.	Direct discharge to river	NRC 858324/ OERS 07-2994
Yong/Trans-Marine Navigation	Unknown	Transportation company	2/12/2000	M/V YONG AN released No. 2 bunker oil when pumping bilges. Valve was stuck open. Location described as Columbia Grain elevator at terminal #5 south of Broadway.	Direct discharge to river	NRC 519661/ OERS 00-0354
M/V COLORADO VOYAGER	Unknown	Marine vessel	12/30/09	A NCR incident report noting the spill of unknown oil from a scupper during the changing of a pad in the scupper.	Direct discharge to river	NRC Incident Reports
Tugboat PORTLAND	Unknown	Tugboat	5/31/1991	Diesel oil release of unknown quantity	Direct discharge to river	NRC 73950
M/V CABLE VENTURE & T/B BMC4	Unknown	Unknown	6/18/1993	Material observed in water during bunkering	Direct discharge to river	NRC 181179
Barwil Agencies	Unknown	Marine vessel	12/19/1993	M/V KIMISIS leaking lubricating oil from discharge pipe. Sheen size 1 meter in diameter	Direct discharge to river	NRC 213241
Barwil Agencies	Unknown	Marine vessel	10/29/2001	Unknown oil released from the M/V ROVER due to rain washing material off deck at 800 N River St.	Direct discharge to river	NRC 584611
M/V COVE ENDEAVOR	Unknown	Marine vessel	1/14/1994	M/V COVE ENDEAVOR leaking bunker oil due to unknown cause. Sheen observed 1000 ft x 100 ft. Location description listed as Schnitzer International Terminal	Direct discharge to river	NRC 216741 and 216707

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
West Coast Shipping Company	Unknown	Unknown	7/6/1995	Loose rivet on starboard bunker tank sheet of T/S CORNUCOPIA. No. 6 fuel oil release. Location described as Union Chemical Dock.	Direct discharge to river	NRC 298604
Anglo Eastern Ship Management	Unknown	Unknown	2/1/1997	Crew of M/V HANDY GUNNER was washing out holds and inadvertently washed oil off deck into water. Location described as Lone Star Cement Terminal.	Direct discharge to river	NRC 375991
Hickey Marine	Unknown	Unknown	2/8/1997	Hydraulic oil released due to steering system hydraulic hose rupture on tug MAVERICK. Location described as Columbia Grain Pier Facility.	Direct discharge to river	NRC 375991
M/V PAN NOBLE	Unknown	Unknown	6/23/1997	Sheen observed coming from M/V PAN NOBLE	Direct discharge to river	NRC 392440
JA RAINBOW	Unknown	Marine vessel	1/28/1998	Vessel JA Rainbow had hydraulic leak. A line burst on rope tightener spilling hydraulic oil on the deck (600 liters, 160 gallons total, 15-20 gallons in the river)	Direct discharge to river	NRC 421623/OERS 98-0223
Barge GOLIATH	Unknown	Barge	3/28/1998	Hydraulic line on Barge GOLIATH broken. Area boomed, 40-45 gallons, mostly contained. Location described as United Grain below BNRE bridge.	Direct discharge to river	OERS # 98-0727
M/V EVRIMEDON	Unknown	Marine vessel	5/4/1998	Leak of unknown oil in ballaster. Location described as Columbia Grain Docks near St. Johns.	Direct discharge to river	NRC 435312
Unocal Agricultural Products	Unknown	Unknown	7/24/1998	Dock electric line puller shaft seal/shaft over heated and expanded allowing an unknown oil to spill.	Direct discharge to river	NRC 447409
Vessel JUNEAU	Unknown	Marine vessel	9/30/1998	3 ft x 70 ft sheen of unprocessed/semi-processed oil observed near vessel. Location described as Schnitzer Steel dock.	Direct discharge to river	OERS # 98-2319
Maritime Fire and Safety	Unknown	Unknown	9/12/2000	A grain vessel leaked an unknown oil into river at Columbia Grain Dock.	In river	NRC 541921
Unocal Inc.	Unknown	Barge	12/4/1995	Release of diesel oil from fuel line on barge.	Direct discharge to river	NRC 316021
Maritime Fire and Safety	Unknown	Unknown	9/12/2000	A grain vessel leaked an unknown oil into river at Columbia Grain Dock.	In river	NRC 541921
NAN CHANG HAI	Unknown	Marine vessel	4/18/2004	Diesel oil sheen observed on river resulting from fueling operation of an excavator located on vessel. Located near 14003 N Rivergate Blvd.	Mobile	NRC 719188
City of Portland OF-18	Unknown	Government	7/28/2006	Unknown sheen originating from outfall under facility that is owned by city at 4350 NW Front Ave. It was formerly OF-18.	In river	NRC 805865
Lindblad Expedition	Unknown	Unknown	10/27/2006	Half a quart of diesel fuel discharged into river from starboard aft storage tank due to unknown causes.	Direct discharge to river	NRC 816238
West Coast Marine Cleaning	Unknown	Cleanup contractor	3/29/2008	Spill reported at 800 N River St/CLD Irving grain elevator. Oil spilled while disconnecting a hose on a ship. Released 1 quart of bilge water due to hose cap coming off end of transfer hose after completing the transfer.	In river	NRC 866396 and 966397
Georgia Pacific Consumer Products NW	Unknown	Unknown	10/1/2008	Lubricating oil release from material handling system's from leaking gear boxes at two locations. This release was discovered during formal inspection. Release went to river and caused sheen. Location described as 13333 N Rivergate Blvd.	Direct discharge to river	NRC 885897
Georgia Pacific Consumer Products NW	Unknown	Unknown	11/20/2008	Motorized sweeper developed oil leak at pressure gauge. Operator did not notice leak and drove across dock. When stopped a puddle developed which seeped between floor boards of dock and some amount was released to river. Estimated less than 2 tablespoons released. Small sheen developed. Location described as 13333 N Rivergate Blvd.	Direct discharge to river	NRC 890593
Georgia Pacific Consumer Products NW	Unknown	Unknown	6/2/2009	Unknown sheen observed at facility, 13333 N Rivergate Blvd.	In river	NRC 907372
Olympic Tug & Barge	Unknown	Marine transportation company	11/3/1998	PACIFIC FALCON tug boat released approximately 1 gallon of No. 2-D fuel oil. Overfilled during refueling.	Direct discharge to river	NRC 462526/ OERS 98-2637
Prodica	Unknown	Barge	11/16/1999	Rainwater washed residual motor oil from deck of the barge HEDGES into water. Location described as 14003 N Rivergate Blvd.	Direct discharge to river	NRC 505967
Chevron Shipping Company	Unknown	Unknown	1/12/2010	Spill of unknown oil from a scupper on a vessel during changing of pad in the scupper.	In river	NRC 928374
Aldridge Motor Sports	Unknown	Unknown	4/13/2005	Owner of company dumped oil and other materials (solvents, gasoline, ethylene glycol) down storm drain at facility to save money.	Storm drain	NRC 755648
Trimet	Unknown	Unknown	10/22/2007	City crew flushing hydrant nearby which flushed some oil down storm drain at N Willams and N Russell.	Storm drain	NRC 852324
British Petroleum	Unknown	Unknown	6/5/2008	Due to remediation system being down, contaminated water entered unknown waterway. System located at 9930 NW St Helens Rd.	Fixed	NRC 873225
Western Star Truck Plant	Unknown	Unknown	12/19/2008	Release of diesel fuel from distribution system due to equipment failure. Release was to the ground and into storm drain near 6936 N Fathom St.	Storm drain	NRC 893015
Reinhard Petroleum	Unknown	Unknown	2/20/2009	Truck leaked diesel due to unknown causes. Material reached storm drain at 4155 NW Yeon St.	Storm drain	NRC 898110
Columbia Steel Casting Company	Unknown	Unknown	6/3/2009	Small amount of lube oil in air compressor leaked into cooling water system into storm drain at 10425 N Bloss Ave.	Storm drain	NRC 907495

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Knappton Corporation	Unknown	Unknown	1/12/1998	Oil/water separator disconnected and caused a small sheen on board barge. 1-5 gallons released. Location described as 9030 NW St Helens Rd.	Vessel-Barge	OERS # 98-0067
Knappton Corporation	Unknown	Unknown	1/12/1998	Bilge pump problem. ~25 gallons released to river. Pump shut off after 15-20 sec. Product contained in slip area, boom and pads applied. Location described as 9030 NW St Helens Rd.	Vessel-Barge-River	OERS # 98-0075
Knappton Corporation	Unknown	Unknown	7/8/2002	Tug LEWISTON lost 5 gallons while fueling at 9030 NW St Helens Rd. Tug was pre-boomed.	River	OERS # 02-0911
Fesco Agents	Unknown	Unknown	2/22/2000	10 gallon loading equipment leaking inside freight container - improperly stored. Leaked oily substance (hydraulic fluid?). Occurred at POP Berth #603 (Rivergate Area)	Vessel-Cargo	OERS # 00-0431
Cerrahgil Group of Companies	Unknown	Unknown	3/5/2001	Fuel spill (1 gal) on board vessel. Crew used degrease/dispersant to clean spill. Material escaped over board through breach of scuppers (not closed correctly). Occurred at Portland International Terminal.	River	OERS # 01-587
Ership International	Unknown	Unknown	4/27/2004	NON issued for ballast water violation NON-BW-04-001	Direct discharge to river	OERS # 04-4401
Tidewater Barge Lines	Unknown	Marine transportation company	11/18/1996	Released 75 gallons of unknown material due to ruptured hydraulic steering line on Tidewater tug MAVERICK	Direct discharge to river	OERS # 96-3169
Tidewater Barge Lines	Unknown	Marine transportation company	4/8/1991	Seam failed on Barge TW 704 and released gasoline to river	Direct discharge to river	67116
Tidewater Barge Lines	Unknown	Marine transportation company	5/2/1985	15 gallons of diesel fuel released into river from an overflow during fueling of Tidewater Barge Line tug boat INVADER	Direct discharge to river	NRC Incident Report No. 6636
Tidewater Barge Lines	Unknown	Marine transportation company	7/17/1984	150 gallons of diesel fuel was released into river from hole in tank of Tidewater Barge #36.	Direct discharge to river	NRC Database Incident Report No. 3993
Unknown outfall	Unknown	Unknown	5/17/1996	Unknown oil observed in unknown outfall at 9030 NW St Helens Rd.	Storm drain/outfall	NRC 940087
Unknown outfall	Unknown	Unknown	10/27/1998	Outfall dumping milky color substances into river next to Albina RR yard at 2600 N River St	Outfall to river	NRC 461582
Unknown outfall	Unknown	Unknown	8/6/2007	Sheen on river originating from outfall pipe. Sheen observed at 6211 N Ensign St.	In river	NRC 844597
Unknown	Unknown	Unknown	7/17/1992	Unknown rainbow sheen observed 0.5 miles x 40 ft. Location given as 9030 St. Helens Rd.	In river	NRC 127305
Unknown	Unknown	Unknown	11/18/1992	Unknown rainbow sheen observed 300 ft x 50-80 ft. Location given as 9030 St. Helens Rd.	In river	NRC 145369
Unknown	Unknown	Unknown	12/15/1992	Unknown sheen observed between Union and Chevron oil docks. Blue-gray sheen 300 yds x 50 ft.	In river	NRC 149247
Unknown	Unknown	Unknown	1/16/1993	Unknown sheen observed 100 ft x 15 ft. Location given as 9030 St. Helens Rd.	In river	NRC 153669
Unknown	5	Unknown	8/12/1993	Unknown rainbow sheen observed 150 ft x 200 ft.	In river	NRC 192126
Unknown	Unknown	Unknown	7/27/1994	Unknown rainbow sheen observed 5 ft x 5 ft. Location described as Swan Island Navy and Marine Corps Reserve Center	In river	NRC 253123
Unknown	Unknown	Unknown	10/9/1994	Unknown sheen observed near M/V BLED. Sheen 20 ft x 75 ft. Location described as Columbia Aluminum, 2600 N River St, Swan Island.	In river	NRC 264545
Unknown	Unknown	Unknown	12/27/1994	Unknown pink sheen of unknown material observed 50 yds in size. Location described as 9420 NW St Helens Rd.	In river	NRC 274414
Unknown	Unknown	Unknown	12/29/1994	Unknown rainbow sheen of unknown oil observed 3 ft x 15 ft. Location described as 11400 NW St Helens Rd.	In river	NRC 274645
Unknown	Unknown	Unknown	1/12/1995	Unknown blue sheen of unknown oil observed 50 ft x 30 ft. Location described as 9030 NW St Helens Rd.	In river	NRC 276118
Unknown	Unknown	Unknown	2/15/1995	Unknown silvery to rainbow sheen observed, 25 ft x 50 ft. Location described as International Terminals Slip.	In river	NRC 279930
Unknown	Unknown	Unknown	10/30/1995	Unknown rainbow sheen observed 100 ft x 100 ft. Location described as 12005 N. Burgard Rd, International Terminals.	In river	NRC 312450
Unknown	Unknown	Unknown	12/18/1995	Unknown rainbow sheen observed 4 ft x 70 ft. Location described as 9930 NW St Helens Rd.	In river	NRC 317544
Unknown	Unknown	Unknown	1/10/1996	Unknown rainbow sheen observed 1000-2000 sq ft. Location described as 12005 N Burgard Rd.	In river	NRC 319630
Unknown	Unknown	Unknown	2/9/1996	Unknown sheen of unknown oil observed 300 sq yd. Location described as 8010 NW St Helens Rd.	In river	NRC 325102
Unknown	Unknown	Unknown	6/21/1996	Unknown rainbow sheen of unknown oil observed 200 ft x 50 ft. Location described as 5528 NW Doane Ave.	In river	NRC 348336
Unknown	Unknown	Unknown	3/7/1997	Unknown sheen of unknown oil observed 50 ft x 100 ft. Location described as 12005 N Burgard.	In river	NRC 379360

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Unknown	Unknown	Unknown	4/15/1997	Unknown sheen of unknown oil observed downstream of Swan Island. Sheen was approximately 1 mile long.	In river	NRC 383733
Unknown	Unknown	Unknown	5/15/1997	Unknown oil observed	In river	NRC 387344
Unknown	7	Unknown	7/21/1997	Barge and tug observed a light blue sheen, approximately 1 mile.	In river	NRC 396039
Unknown	Unknown	Unknown	9/22/1997	Unknown silver sheen, 100 yds x 100 ft. Location described as 9030 NW St. Helens Rd docks.	In river	NRC 404552
Unknown	6	Unknown	10/7/1997	Unknown rainbow sheen observed 400 ft x 100 ft. Location described as 9030 NW St Helens Rd near dock.	In river	NRC 406565
Unknown	6	Unknown	10/22/1997	Unknown silvery sheen observed on south bank, 10 sq ft in diameter.	In river	NRC 408472
Unknown	Unknown	Unknown	10/11/1998	Unknown sheen observed, 15 ft in size. Location described as 5528 NW Doane.	In river	NRC 459405/ OERS 98-2439
Unknown	Unknown	Unknown	3/16/2000	Unknown sheen observed at 8010 NW St Helens Rd.	In river	NRC 523141
Unknown	Unknown	Unknown	8/29/2000	Unknown sheen of unknown oil observed in river due to equipment failure. Location described as Portland terminal 5528 NW Doane St.	In river	NRC 540398
Unknown	Unknown	Unknown	8/31/2001	Unknown sheen of unknown oil observed on east side of 800 N River St.	In river	NRC 578423
Unknown	Unknown	Unknown	9/19/2001	Unknown sheen of unknown oil observed at 1050 N River St.	In river	NRC 580237
Unknown	Unknown	Unknown	11/24/2001	Unknown gray sheen observed 200 ft x 10 ft.	In river	OERS # 01-3070
Unknown	Unknown	Unknown	10/4/2003	Unknown sheen observed in river at 7900 NW St Helens Rd.	In river	NRC 701558
Unknown	Unknown	Unknown	3/30/2004	Unknown sheen observed at MP 7.8.	In river	NRC 717417
Unknown	Unknown	Unknown	6/8/2004	Unknown sheen of unknown oil observed under St.Johns Bridge.	In river	NRC 724340
Unknown	Unknown	Unknown	7/14/2004	Unknown oil sheen observed at 5880 NW St Helens St.	In river	NRC 728320
Unknown	Unknown	Unknown	7/16/2004	Unknown oil sheen observed on river. Location not given.	In river	NRC 728516
Unknown	Unknown	Barge	10/8/2004	Sheen observed coming from barge at dock.	In river	OERS # 04-2287
Unknown	Unknown	Unknown	1/6/2005	Unknown sheen observed in river at 3660 NW Front Ave	In river	NRC 746355
Unknown	near T4	Unknown	1/11/2005	1/2 cup gear oil spilled to river. The skiff that caused the leak was towed from site, booms and pads applied.	Direct discharge to river	OERS # 05-0082
Unknown	Unknown	Unknown	2/18/2005	Cargill Grain reported unknown sheen from unknown source. Sheen was 15 ft x 200 ft at 800 N River St.	In river	NRC 750415/ OERS 05-0349
Unknown	Unknown	Unknown	2/18/2005	Unknown sheen observed near 800 N River St.	In river	NRC 751175
Unknown	Unknown	Unknown	3/4/2005	Unknown sheen observed from outfall adjacent to 6208 N Ensign.	In river	NRC 751705
Unknown	Unknown	Unknown	4/7/2005	Unknown sheen observed while driving across Fremont Bridge. Bright green sheen was located in river in front of tan colored warehouse.	In river	NRC 755134
Unknown	Unknown	Unknown	7/28/2005	Release of corrosive dye (basazol violet 49L corrosive dye 26% acetic acid) into storm drain from leaking storage container.	Storm drain	NRC 767209
Unknown	Unknown	Unknown	10/6/2005	Unknown sheen observed near 12005 N Burgard Rd	In river	NRC 775225
Unknown	Unknown	Unknown	10/17/2005	Unknown sheen observed from unknown source at river berth 503.	In river	NRC 776422
Unknown	Unknown	Unknown	1/16/2006	Unknown sheen observed at 9930 NW St. Helens Rd.	In river	NRC 785364
Unknown	Unknown	Unknown	3/6/2006	Unknown sheen observed at 14400 N Rivergate.	In river	NRC 790099
Unknown	~4	Unknown	8/9/2006	Unknown sheen observed at terminal 4, berth 410.	In river	NRC 807276
Unknown	Unknown	Unknown	9/27/2006	Unknown sheen observed at Swan Island Lagoon.	In river	NRC 812829
Unknown	Unknown	Unknown	10/17/2006	Unknown sheen observed at 14003 N Rivergate Blvd.	In river	NRC 815114
Unknown	Unknown	Unknown	10/18/2006	Unknown sheen originating from a storm drain.	Storm drain	NRC 815219 and 815373
Unknown	Unknown	Unknown	10/20/2006	Unknown sheen observed at 2600 N River Rd. Reported by Union Pacific Railroad to caller.	In river	NRC 815464
Unknown	Unknown	Unknown	11/5/2006	Unknown sheen reported at marina coming from storm drain located in Port of Portland. Caller reports rocks are covered with oil and boaters noticed the sheen the night prior. Sheen located at 6211 N Enson St.	In river	NRC 817181

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Unknown	Swan Island boat ramp	Unknown	11/22/2006	Discharge of motor oil from sunken pleasure craft due to unknown causes.	Direct discharge to river	NRC 818895
Unknown	Unknown	Unknown	11/28/2006	Petroleum (heavy lubricant oil) released from storm drain due to unknown causes.	Storm drain	NRC 819369
Unknown	6	Unknown	4/19/2007	Dark brown sludge substance observed in river at 6543 N Burlington Ave.	In river	NRC 832833
Unknown	Unknown	Unknown	5/12/2007	Unknown sheen observed. Location not reported.	In river	NRC 835165
Unknown	Unknown	Unknown	5/20/2007	Unknown sheen observed at 7900 NW St.Helens Rd.	In river	NRC 835976
Unknown	~6	Unknown	6/2/2007	Ghost sheen on Willamette, light sheen approximately 1/4 to 1/2 mile long, stretching across river, spotted from the air approximately 1/2 mile down stream from the St John's Bridge. CG was not able to locate sheen from the water.	In river	OERS # 07-1141
Unknown	3.5	Unknown	7/3/2007	Unknown sheen observed.	In river	NRC 840889
Unknown	Unknown	Unknown	7/17/2007	Unknown sheen observed at 8444 N St Helens Rd.	In river	NRC 842444
Unknown	MarCom dock/St Johns Bridge	Unknown	8/8/2007	Unknown sheen observed.	In river	NRC 844852
Unknown	Unknown	Unknown	9/11/2007	Unknown green material on water from unknown source. Sheen is along shoreline at 8010 NW St Helens Rd.	In river	NRC 848519
Unknown Tug	Unknown	Tug	9/26/2007	Sheen observed near tug at 8010 NW St Helens Rd.	In river	NRC 849970
Unknown	Terminal 4	Unknown	10/21/2007	Unknown sheen observed at 11011 N Lombard, Terminal 4	In river	NRC 852259
Unknown	Terminal 4	Unknown	11/7/2007	Unknown sheen observed at 11011 N Lombard.	In river	NRC 853864 and 853896/ OERS 07-2520
Unknown Tug	Unknown	Tug	11/10/2007	While fueling tug, one gallon of diesel fuel released.	Direct discharge to river	NRC 854197
Unknown	Unknown	Unknown	12/16/2007	Unknown sheen from unknown source coming out of ground and causing sheen on water at 9420 NW St. Helens Rd.	In river	NRC 857351
Unknown	Unknown	Unknown	12/19/2007	Unknown sheen observed at 14003 N Rivergate Blvd.	In river	NRC 857662
Unknown	Unknown	Unknown	1/19/2008	Unknown sheen observed at 8010 NW St Helens Rd.	In river	NRC 860091
Unknown Material	Unknown	Unknown	3/2/2008	Unknown orange material in river at 11011 N Lombard.	In river	NRC 863868
Unknown	7.5	Unknown	3/31/2008	Unknown sheen observed.	In river	NRC 866537
Unknown	Swan Island Lagoon	Unknown	4/27/2008	Unknown sheen observed.	In river	NRC 869229
Unknown	Unknown	Marine vessel	4/28/2008	Discharge of oil from vessel due to adding engine oil and spilling some into river near 6767 N Basin Ave.	Direct discharge to river	NRC 869332
Unknown	Unknown	Unknown	5/3/2008	Unknown sheen observed at 5531 NW Doane Ave.	In river	NRC 869759
Unknown	Unknown	Unknown	5/29/2008	Unknown sheen reported at New Star Terminal.	In river	NRC 872433
Unknown	Unknown	Unknown	7/23/2008	Unknown sheen observed at 14003 N Rivergate Blvd.	In river	NRC 877755
Unknown	Unknown	Unknown	7/29/2008	Unknown sheen observed at 5424 NW Doane Ave.	In river	NRC 878829
Unknown	Unknown	Unknown	8/9/2008	Unknown sheen observed at 800 N River St.	In river	NRC 880084
Unknown	Unknown	Unknown	9/8/2008	Unknown sheen observed at 12005 N Burgard Rd	In river	NRC 883248
Unknown	Berth 312 and 313 Swan Island	Unknown	9/28/2008	Unknown sheen observed.	In river	NRC 885545
Unknown	Unknown	Unknown	9/30/2008	Unknown oily sheen observed from outfall at end of street at 6211 N Ensign St. Material is releasing from unknown source into Swan Island Lagoon.	In river	NRC 885735
Unknown	Unknown	Unknown	10/6/2008	Unknown silvery sheen observed at 13333 N Rivergate Blvd near dock.	In river	NRC 886344

Table 4.3-6. Overwater Releases from Vessels and Other Spills in the Study Area.

Party	River Mile	Type of Operation (s)	Date of Release	Summary of Release	Pathway to River	Reference
Unknown	Unknown	Unknown	12/29/2008	Spill of material in sewer lines from unknown sources. Location described as Burgard/Manufacturing buildings 9006 N Sever Rd.	Storm drain	NRC 893571
Unknown	Unknown	Unknown	3/17/2009	Unknown sheen observed at Rivergate Terminal	In river	NRC 900220
Unknown	Unknown	Unknown	3/26/2009	Unknown sheen observed at marine shipyard in Swan Island.	In river	NRC 990974
Unknown	Unknown	Unknown	6/16/2009	Unknown sheen observed at 800 N River St.	In river	NRC 908784
Unknown	Unknown	Unknown	6/19/2009	Stormwater runoff observed producing sheen at 5880 NW St Helens Rd.	In river	NRC 909154
Unknown	Unknown	Unknown	7/2/2009	Unknown sheen observed under BNSF railroad bridge possible near Buoy 16.	In river	NRC 910513
Unknown	Unknown	Unknown	7/24/2009	Unknown sheen observed in vicinity of the transfer dock between the ship and shore. Sheen could be creosote from piling or sediment blown up from exhaust cooling system for ship. Location described as 14003 N Rivergate Blvd, middle of dock area.	In river	NRC 912658
Unknown	Unknown	Unknown	8/26/2009	Unknown discontinuous sheen observed	In river	OERS # 09-1967
Unknown	Unknown	Unknown	9/1/2009	Unknown sheen observed under ramp connecter to floating barges at 6208 N Ensign St.	In river	NRC 916666
Unknown	Unknown	Unknown	10/14/2009	Unknown sheen observed at railroad bridge near Willamette Cove, south of St Johns bridge.	In river	NRC 920584
Unknown	3	Unknown	10/20/2009	Unknown sheen observed.	In river	NRC 921113
Unknown	Unknown	Unknown	10/24/2009	Unknown sheen observed at Terminal 411.	In river	NRC 921530
Unknown	Unknown	Unknown	12/24/2009	Unknown sheen in Swan Island Lagoon at 6208 N Ensign. Sheen is trapped between mooring barge and shoreline.	In river	NRC 927056
Unknown	Unknown	Unknown	6/22/2010	Unknown sheen observed at 13333 N Rivergate Blvd.	In river	NRC 945003
Unknown	Unknown	Unknown	8/10/2010	Unknown sheen observed at 5555 N Channel Ave.	In river	NRC 950484
Unknown	Unknown	Unknown	8/10/2010	Unknown silvery to rainbow sheen observed between docks at 13333 N Rivergate Blvd.	In river	NRC 950539
Unknown	Unknown	Unknown	10/4/2010	Unknown sheen possibly coming from old pilings 50 yds offshore at 14003 N Rivergate Blvd.	In river	NRC 955999

Notes:

[a] National Response Center Database, http://www.nrc.uscg.mil/ NRC. 2002.

[b] Supplemental Preliminary Assessment, Swan Island Upland Facility (Ash Creek and Newfields 2006).

LWG - Lower Willamette Group
NARA - National Archives and Records Administration
NMIW - Northwest Marine Iron Works
NRC - National Response Center
OSFM - Oregon State Fire Marshal
PCB - polychlorinated biphenyl
PSY - Portland Shipyard
USCG - U.S. Coast Guard
WISCO - Willamette Iron and Steel Company

Table 4.4-1. Summary of NPDES-permittted Discharges by Type of Permit in the Study Area.

NPDES Permit Type	Number of Permits (as of Feb. 2011)
General Permits for cooling water/heat pumps **(GEN01)**	8
General Permits for boiler blowdown **(GEN05)**	2
General Permits for treatment of groundwater **(GEN15A)**	4
General Permits for stormwater **(GEN12A,C,Z)**	86
Individual Permits for facilities not elsewhere classified that dispose of primary smelting/refining of metals not elsewhere classified **(NPDES-IW-B08)**	1
Individual Permits for facilities not elsewhere classified that dispose of process wastewater (includes remediated groundwater) **(NPDES-IW- B14)**	1
Individual Permits for facilities not elsewhere classified that dispose of process wastewater **(NPDES-IW-B15)**	6
Individual Permits for facilities not elsewhere classified that dispose of non-process wastewater **(NPDES-IW-B16)**	4
Municipal Separate Storm Sewer System Discharge Permit **(NPDES-DOM-MS4-1)** including CBWTP	1
Individual Permits for facilities that dispose of sewage (50 MGD or more) **(NPDES-DOM-A1)**	1

Notes:

CBWTP - Columbia Boulevard Wastewater Treatment Plant
MGD - million gallons per day
NPDES - National Pollutant Discharge Elimination System

Table 4.4-2. Discharge Monitoring Requirements in General NPDES Permits.

Type		No. in Study Area	Conventional Monitoring Parameters[a]	Chemicals Monitoring Requirements[a]	
				Parameter	Frequency
GEN01	Cooling water/heat pumps	9	Flow, temp, pH, total residual chlorine	---	---
GEN05	Boiler blowdown	2	Flow, temp, pH, TSS, total residual chlorine[b]	---	---
GEN12A	Stormwater: sand, gravel, and other non-metallic mining	1	pH, TSS, settleable solids, oil & grease; Oil & grease sheen, turbidity	---	Four times per year; once per month (when discharging)
GEN12C	Stormwater: construction activities - 1 or more acres	6	Inspection/visual characteristics	---	---
GEN12Z	Industrial stormwater	78	pH, TSS, oil & grease, E. coli[b], visual monitoring	Copper, lead, zinc	Four times per year
GEN15A	Petroleum hydrocarbon cleanups	4	Flow, pH, visual monitoring	TPH, BTEX, benzene, lead[b]	Weekly to quarterly

Notes:

[a] Permits for specific facilities may include other parameters.

[b] Not applicable to all facilities.

--- = not available

BTEX - benzene, toluene, ethylbenzene, and xylenes

NPDES - National Pollutant Discharge Elimination System

TPH - total petroleum hydrocarbons

TSS - total suspended solids

Table 4.4-3. Shared Conveyance System Basin Characteristics and Potential Sources.

Outfall ID	River Bank	Organization	Outfall Size (Inches)	Outfall Material[a]	Outfall Status	CSO[b]/SSO[c]	2008 Stormwater Basin Acreage and Zoning[d]	COIs within Outfall Basin Area Identified during Independent Investigations[e]	Other Potential Sources in the Outfall Basins and Associated COIs (in Addition to Sources Identified during Independent Investigations—see previous column)	Potential Sources Adjacent or Upstream and Associated COIs
OF10A	West	CITY OF PORTLAND	30"	Concrete	Active		5 - commercial and residential		No ECSI sites have been identified in this basin.	Albers Mill (ECSI #4590) - PAHs, TPH, and metals
OF11	West	CITY OF PORTLAND	78"	Concrete	Active	CSO	942 - open space and residential, some light industrial		Hoyt St. Railroad (former) (ECSI #1080) - none Hoyt St. Trainyard Parcel 1 (ECSI #1624) - none Pearl Block (ECSI #4960) - none Sylvan Cleaners (ECSI #1897) - PCE and TCE Union Station Agric. Marketing Ctr. (ECSI #1962) - PAHs, TPH, and metals Union Station Horse Barn (ECSI #2407) - Metals, PAHs, benzene, and benzo(a)pyrene Union Station Track #5 (ECSI #1414) - PAHs, TPH, and metals US Postal Processing & Distribution (ECSI #2183) - VOCs, PAHs, TPH, and metals *Dan Rasmussen Co (former) (ECSI #1684) - VOCs and TPH* *Dynagraphics Inc. (ECSI #4523) - TPH* *Esquire Motors (ECSI #4906) - VOCs and TPH* *Gender Machine Works (ECSI #2313) - PAHs, TPH, and metals* *Lu Yen Restaurant (former) (ECSI #2197) - TPH* *Pacific States Galvanizing (former) (ECSI #1024) - Cadmium, chromium, lead, zinc, PCE, and TPH* *RiverTec Property (ECSI #3067) - TPH and metals* *Unocal Service Station #0738 (ECSI #1396) - TPH* *Wilbur-Ellis Co. (ECSI #1331) - VOCs, SVOCs, PAHs, TPH, pesticides, PCBs, and metals*	Centennial Mills (ESCI #5136) - TPH, metals, PCBs, and asbestos
OF12	West	CITY OF PORTLAND	16"	Unknown	Abandoned	CSO	NA		No ECSI sites have been identified in this basin.	
OF13	West	CITY OF PORTLAND	24"	Concrete	Active	CSO	8 - residential and heavy industrial		No ECSI sites have been identified in this basin.	
OF14	West	CITY OF PORTLAND	30"	Concrete	Active	CSO	23 - heavy/light industrial and residential		Zehrung (ECSI #187) - Pentachlorophenol and 2,4-D	POP Terminal 1 South (ECSI #2642) - None
OF15	West	CITY OF PORTLAND	102"	Concrete	Active	CSO	1 - heavy industrial	Sulzer Pumps (ECSI #1235) - PAHs,TPH, arsenic, copper, chromium, and zinc	*PGE Substation E (ECSI #3976) - none* *Consolidated Freightways Inc. (ECSI #32) - VOCs and TPH* *Drew Paints Inc. (ECSI #4465) - VOCs* *ESCO Plant #3 (ECSI #112) - Phenols* *Groundwater - NW 22nd Ave. (ECSI #2015) - VOCs*	POP Terminal 1 North (ECSI #3317) - None
OF16	West	CITY OF PORTLAND	36"	Concrete	Active	CSO[f]	66 - mostly heavy industrial, some highway	Calbag - Nicolai (ECSI #5059) -TPH, PCBs, metals, phthalates, PAHs Front Ave MP (ECSI #4008) - VOCs, PAHs, TPH, PCBs, and metals	Guilds Lake (ECSI #404) - none Nudelman & Son (ECSI #966) - none	POP Terminal 2 (ECSI #2769) - TPH and PAHs
OF17	West	CITY OF PORTLAND	90"	Concrete	Active	CSO/SSO	1,895 - mostly open space and heavy industrial, small % of residential	GE-NW 28 (No ECSI #, TSCA site) - PCBs *Paco Pumps (ECSI #146) - PCBs and TPH* Galvanizers (ECSI #1196) - TPH, PAHs, phthalates, arsenic, chromium, copper, and zinc. GW infiltration. *SFI (ECSI #5103) - VOCs, PCBs, TPH, PAHs, chromium, cadmium, and lead* GE Decommissioning (ECSI #4003) - PAHs, PCBs, TPH, arsenic, chromium, copper, and zinc. GW infiltration.	Guilds Lake Yard (ECSI #100) - Antimony, arsenic, cadmium, chromium, copper, mercury, selenium, zinc, TPH, VOCs, sodium cyanide, ethylene glycol, and creosote constituents *Mogul Corp. (ECSI #1307) - No COIs listed in ECSI* *King Ries (ECSI #4560) - Lead* *Mercer (ECSI #144) - Chromium and TPH* *AM Machine (ECSI #2261) - PAHs and TPH* *Schmidt Forge (ECSI #1347) - TPH*	POP Terminal 2 (ECSI #2769) - TPH and PAHs

Table 4.4-3. Shared Conveyance System Basin Characteristics and Potential Sources.

Outfall ID	River Bank	Organization	Outfall Size (Inches)	Outfall Material[a]	Outfall Status	CSO[b]/SSO[c]	2008 Stormwater Basin Acreage and Zoning[d]	COIs within Outfall Basin Area Identified during Independent Investigations[e]	Other Potential Sources in the Outfall Basins and Associated COIs (in Addition to Sources Identified during Independent Investigations—see previous column)	Potential Sources Adjacent or Upstream and Associated COIs
OF18	West	CITY OF PORTLAND	72"	Concrete	Active	CSO[f]	465 - open space and heavy industrial	Columbia American Plating (ECSI #29) - VOCs, SVOCs, PCBs, metals, Other (e.g., cyanide), PAHs, Gunderson (ECSI #1155) - TPH, butyltins, PCBs, phthalates, arsenic, copper, chromium and zinc McWhorter Technologies (ECSI #135) - VOCs, SVOCs, PAHs, TPH, and phthalates Christenson Oil (ECSI #2426) - Cadmium, copper, lead, mercury, zinc, PAHs, VOCs, and TPH Container Recovery (ECSI #4015) - Cadmium, lead, zinc, PAHs, PCBs, and phthalates Wilhelm Trucking (ECSI #69) - PCBs, metals Trumbull (ECSI # 1160) - PAHs, PCBs, phthalates, arsenic, chromium, copper, and zinc Univar/Van Waters (ECSI #330) - VOCs, TPH, pesticide/herbicides, metals. GW infiltration. Container Management (ECSI #4784) - PAHs, TPH, PCBs, metals, phthalates, pesticides ANRFS (ECSI #1820) - Arsenic, chromium, copper, zinc, PCBs, PAHs, BEHP Ashland Chemical (ECSI #1076) - Arsenic, chromium, copper, zinc, PCBs, PAHs, BEHP Carson Oil (ECSI #1405) - VOCs, PAHs, TPH, arsenic, chromium, copper, zinc, PCBs, BEHP Texaco/Equilon - Bulk Terminal (ECSI #169) - PAHs, VOCs, and TPH. GW infiltration.	Texaco/Equilon - Pipeline (ECSI #2117) - PAHs, VOCs, and TPH PTRR (ECSI #100) - Antimony, arsenic, cadmium, chromium, copper, mercury, selenium, zinc, PAHs, PCBs, phenols, TPH, VOCs, sodium cyanide, ethylene glycol, and creosote constituents Schnitzer Investment - NW 35th (ECSI #2424) - VOCs, SVOCs, and metals	Gunderson (ECSI #1155) - Metals, butyltins, PCBs, phthalates, and TPH
OF19	West	CITY OF PORTLAND	42"	Concrete	Active	CSO[f]	486 - open space and heavy residential, small % of highway	Greenway Recycling (ECSI #4655) - VOCs, TPH, PCBs, arsenic, chromium, copper, and zinc PGE - Forest Park (ECSI #2406) - PCBs Calbag Metals (ECSI #2454) - Cadmium, lead, mercury, zinc, PCBs, and phthalates Conoco - Willbridge Terminal (ECSI #177) - VOCs, TPH, and metals Chevron Asphalt Refinery (ECSI #1281) - VOCs, PAHs, TPH, and metals. GW infiltration. Front Avenue LP (ECSI #1239)-Metals, PAHs, PCBs, VOCs, SVOCs, phthalates, and TPH Mt. Hood Chemical Corp. (ECSI #81) - methylene chloride (VOCs). GW infiltration. Anderson Brothers (ECSI #970) - VOCs, PAHs, TPH, PCBs, metals, pesticides, phthalates Brazil & Co (ECSI #1026) - PCBs	Chapel Steel (ECSI #4920) - Aluminum, antimony, lead, nickel, zinc, PAHs, PCBs, and BEHP Penske Truck Leasing - NW Yeon (ECSI #5055) - TPH, PAHs, VOCs, SVOCs, and metals Dura Industries (ECSI #111) - Cadmium, chromium, and lead Mt. Hood Chemical Property (ECSI #1328) - VOCs Kittridge (ECSI #2442) - Cadmium, lead, mercury, zinc, PCBs, VOCs, and TPH Willbridge Switching Yard (ECSI #3395) - Metals Christenson Oil (ECSI #2426) - VOCs, PAHs, TPH, and metals	Gunderson (ECSI #1155) - Metals, butyltins, PCBs, phthalates, and TPH Lakeside Industries (ECSI #2372) - VOCs, PAHs, TPH, and metals Shaver Transportation (ECSI #2377) - none Front Avenue LP (ECSI #1239) - Metals, PAHs, PCBs, VOCs, SVOCs, phthalates, and TPH
OF19A	West	CITY OF PORTLAND	60"	Concrete	Active		1.5 - heavy industrial		No ECSI sites have been identified in this basin.	Gunderson (ECSI #1155) - Metals, butyltins, PCBs, phthalates, and TPH Front Ave LP (ECSI #1239) - VOCs, SVOCs, PAHs, TPH, PCBs, metals, and phthalates Lakeside Industries (ECSI #2372) - VOCs, PAHs, TPH, and metals

Table 4.4-3. Shared Conveyance System Basin Characteristics and Potential Sources.

Outfall ID	River Bank	Organization	Outfall Size (Inches)	Outfall Material[a]	Outfall Status	CSO[b]/SSO[c]	2008 Stormwater Basin Acreage and Zoning[d]	COIs within Outfall Basin Area Identified during Independent Investigations[e]	Other Potential Sources in the Outfall Basins and Associated COIs (in Addition to Sources Identified during Independent Investigations—see previous column)	Potential Sources Adjacent or Upstream and Associated COIs
OF22	West	CITY OF PORTLAND	60"	Concrete	Active	CSO[f]	94 - mostly heavy industrial, some open space and highway	McCall Oil (ECSI #134) - PAHs, PCBs, butyltins, VOCs, SVOCs, BEHP, TPH, arsenic, chromium, copper, lead, and zinc Chevron Asphalt Refinery (ECSI #1281) - Metals, PAHs, VOCs, and TPH. GW infiltration. Willbridge Terminal (ECSI # 1549) - Metals, PAHs, pesticides/herbicides, phthalates, VOCs, and TPH		McCall Oil (ECSI #134) - Metals, PAHs, PCBs, VOCs, SVOCs, BEHP, and TPH
OF22B	West	CITY OF PORTLAND	48"	Concrete	Active	SSO	32 - heavy industrial	Arkema (ECSI #398) - DDx		Arkema (ECSI #398) - DDx
								Gould Inc./NL Industries Inc. (ECSI #49) - Arsenic, lead, zinc, PAHs, PCBs, pesticides/herbicides, and VOCs. Historical discharges from Doane Lake, and historical GW infiltration into OF22B. Schnitzer Investmentand Air Liquide - Doane Lake (ECSI #395) - Arsenic, Mercury, PCBs, and VOCs. Historical discharges from Doane Lake, historical GW infiltration into OF22B, and stormwater discharge into OF 22B. Rhone Poulenc–East Doane Lake (ECSI #155) - VOCs, pesticides/herbicides, metals, and dioxin/furans. Historical discharges from Doane Lake and historical GW infiltration into OF22B. Metro Central Transfer Station (ECSI #1398) - VOCs, SVOCs, pesticides, dioxin/furans, and metals. Historical GW infiltration into OF 22B and current stormwater discharges to OF 22B.		Gould Inc./NL Industries Inc. (ECSI #49) - Arsenic, lead, zinc, PAHs, PCBs, pesticides/herbicides, and VOCs. Historical discharges from Doane Lake. Schnitzer Investment and Air Liquide - Doane Lake (ECSI #395) - Arsenic, Mercury, PCBs, and VOCs. Historical discharges from Doane Lake. Rhone Poulenc–East Doane Lake (ECSI #155) - VOCs, pesticides/herbicides, metals, and dioxin/furans. Historical Discharges from Doane Lake, and the outfall for the former Rhone Poulenc property is located near RM 6.9.
OF22C	West	CITY OF PORTLAND	84"	Concrete	Active		1,107 - mostly open space, small % of heavy industrial, residential and highway	Koppers Industries Inc. (ECSI #1348) - See Gasco (ECSI #84) - VOCs, SVOCs, PAHs, TPH, and metals Gasco (ECSI #84) - PAHs and cyanide. GW infiltration Siltronic (ECSI # 183) - VOCs, SVOCs, PAHs, TPH, and metals Santa Fe Pacific Pipeline Co. (ECSI #2104) - none	St. Helens Road Petroleum (ECSI #2630) - VOCs, PAHs, and TPH V & K Services (ECSI #2423) - VOCs and TPH	
OF22D	West	CITY OF PORTLAND	48"	CSP	Active		240 - mostly open space, small % of residential and highway		No ECSI sites have been identified in this basin.	Foss Maritime/Brix Maritime (ECSI #2364) - VOCs, PAHs, and TPH
OF23	West	CITY OF PORTLAND	27"	RCP	Abandoned	CSO	NA - discharges to CBWTP		No ECSI sites have been identified in this basin.	ExxonMobil (ECSI #137) - VOCs, PAHs, TPH, and metals
OF24	West	CITY OF PORTLAND	12"	CMP	Emergency Overflow point	CSO/SSO	NA - discharges to CBWTP		*Babcock Land Co. (ECSI #2361) - No COIs listed in ECSI*	West Coast Adhesive (ECSI #333) - phenol, formaldehyde, and TPH
OF42	East	CITY OF PORTLAND	10"	STL	Active	CSO[f]	6 - commercial and open space		No ECSI sites have been identified in this basin.	
OF43	East	CITY OF PORTLAND	56"	Other	Active	CSO	51 - light industrial	Tucker Building (ECSI #3036) - Metals, PAHs, PCBs, and TPH Westinghouse/CBS (ECSI #4497) - PCBs	Master Chemical (ECSI #1302) - No COIs listed in ECSI *Mammal Survey & Control Service (ECSI #1301) - Pesticides* *Shopping Center Prop. - Nature's Fresh NW (ECSI #1855) - VOCs* *Steve Adams Prop. (ECSI #1500) - PCBs* *Union Ave - PBC Site (ECSI #991) - PCBs* *Wagstaff Battery Mrg. Co. (ECSI #1243) - TPH and lead*	

Table 4.4-3. Shared Conveyance System Basin Characteristics and Potential Sources.

Outfall ID	River Bank	Organization	Outfall Size (Inches)	Outfall Material[a]	Outfall Status	CSO[b]/SSO[c]	2008 Stormwater Basin Acreage and Zoning[d]	COIs within Outfall Basin Area Identified during Independent Investigations[e]	Other Potential Sources in the Outfall Basins and Associated COIs (in Addition to Sources Identified during Independent Investigations—see previous column)	Potential Sources Adjacent or Upstream and Associated COIs
OF44	East	CITY OF PORTLAND	12"	STL	Active	CSO[f]	17 - mostly light industrial, some heavy industrial	Tucker Bldg. (ECSI #3036) - Metals, PAHs, PCBs, and TPH PacifiCorp Albina Riverlots (ECSI #5117) - PCBs and TPH. GW infiltration.	Valvoline (ECSI #3215) - VOCs, PAHs, TPH, and metals Vermiculite NW Inc. (former) (ECSI #2761) - asbestos	
OF44A	East	CITY OF PORTLAND	72"	STL	Active	CSO/SSO	139 - mostly residential and light industrial, some open space and commercial	PacifiCorp Knott Substation (ECSI #5117) - None.	Tarr Inc. (ECSI #1139) - VOCs and TPH *Coverall Uniform Supply (ECSI #1775) - PCE* *Standard Dairy (ECSI #2055) - VOCs and TPH* *Abraham's Fabric Clinic (ECSI #4592) - No COIs listed in ECSI* *Grant Warehouse (ECSI #2385) - Asbestos, PAHs, TPH, and metals* *McCann/Lenske Property (ECSI #4711) - TPH and lead* *North Portland Bible College (ECSI #4354) - TPH* *Nurenberg Scientific Co. (ECSI #87) - VOCs and metals* *Portland Cleaning Works (ECSI #3529) - TPH and PCE*	
OF45	East	CITY OF PORTLAND	27"	Concrete	Active	CSO	10 - heavy and light industrial	UPRR (ECSI #178) - Arsenic, chromium, lead, zinc, PAHs, PCBs, phthalates, SVOCs, and TPH		
OF46	East	CITY OF PORTLAND	80"	Varies	Active	CSO	77 - residential, open space and heavy industrial	UPRR (ECSI #178) - Arsenic, chromium, lead, zinc, PAHs, PCBs, phthalates, SVOCs, and TPH	Industrial Battery Bldg (ECSI #935) - Metals *Abraham's Fabric Clinic (ECSI #4592) - No COIs listed in ECSI* *Betty Campbell Bldg. (ECSI #1902) - TPH and PAHs* *Flowers by Victor (ECSI #4712) - Pesticides* *Grant Warehouse (ECSI #2385) - Asbestos, PAHs, TPH, and metals* *Henry Wong (ECSI #989) - No COIs listed in ECSI* *McCann/Lenske Property (ECSI #4711) - TPH and lead* *North Portland Bible College (ECSI #4354) - TPH* *Nurnberg Scientific Co. (ECSI #87) - VOCs and metals* *Portland Cleaning Works (ECSI #3529) - VOCs* *PP&L Mason Station (ECSI #2136) - PCBs*	UPRR (ECSI #178) - Arsenic, chromium, lead, zinc, PAHs, PCBs, phthalates, SVOCs, and TPH
OF47	East	CITY OF PORTLAND	48"	CSP	Active	CSO	9.5 - light industrial	UPRR (ECSI #178) - Arsenic, chromium, lead, zinc, PAHs, PCBs, phthalates, SVOCs, and TPH	*Elks Cleaners (ECSI #4954) - TCE (VOCs)* *Sunny's Dry Cleaners (ECSI #2848) - No COIs listed in ECSI*	UPRR (ECSI #178) - Arsenic, chromium, lead, zinc, PAHs, PCBs, SVOCs, and TPH
OF48	East	CITY OF PORTLAND	30"	CMP	Active	CSO	6 - residential 1.5 - stormwater treatment facility		No ECSI sites have been identified in this basin.	Triangle Park (ECSI #277) - VOCs, SVOCs, PAHs, TPH, pesticides, PCBs, and metals McCormick & Baxter (ECSI # 74) - PAHs, metals, and creosote
OF49	East	CITY OF PORTLAND	15"	Concrete	Active	CSO	31 - mostly residential, some commercial and open space 1.5 acres - stormwater treatment facility		No ECSI sites have been identified in this basin.	Willamette Cove (ECSI #2066) - none
OF50	East	CITY OF PORTLAND	30"	Concrete	Active	CSO	39 - mix residential, commercial, and light industrial 1 acre- stormwater treatment facility		BES WPCL (ECSI #2452) - none Crawford Street Corp. (ECSI #2363) - VOCs, PAHs, TPH, PCBs, arsenic, chromium, copper, and zinc	
OF52	East	CITY OF PORTLAND	30"	Unknown	Active	CSO/SSO	23 - mostly light industrial with some residential and open space	Crawford Street Corp. (ECSI #2363) - VOCs, PAHs, TPH, PCBs, arsenic, chromium, copper, and zinc	*Unocal Service Station #3911 (ECSI #1593) - TPH and PCBs*	
OF52A	East	CITY OF PORTLAND	36"	Concrete	Active		25 - mostly light industrial and residential with some commercial and open space		No ECSI sites have been identified in this basin.	Mar Com North Parcel (ECSI #4797) - none Mar Com South Parcel (ECSI #2350) - VOCs, SVOCs, PAHs, TPH, PCBs, metals, butyltins, and phthalates

Table 4.4-3. Shared Conveyance System Basin Characteristics and Potential Sources.

Outfall ID	River Bank	Organization	Outfall Size (Inches)	Outfall Material[a]	Outfall Status	CSO[b]/SSO[c]	2008 Stormwater Basin Acreage and Zoning[d]	COIs within Outfall Basin Area Identified during Independent Investigations[e]	Other Potential Sources in the Outfall Basins and Associated COIs (in Addition to Sources Identified during Independent Investigations—see previous column)	Potential Sources Adjacent or Upstream and Associated COIs
OF52C	East	CITY OF PORTLAND	36"	Concrete	Active		22 - light industrial		Borden Packaging & Ind. Prod. (ECSI #1277) - chlorinated- and alcohol-based solvents	Port of Portland T4 Slip 1 (ECSI # 2356) - PAHs, TPH, pesticides/herbicides, PCBs, metals, and phthalates
OF53	East	CITY OF PORTLAND	48"	CMP	Active	CSO	21 - residential		*Multnomah County - St. Johns Site (ECSI #2421) - VOCs and TPH*	POP T4 Auto Storage (ECSI #172) - none
OF53A	East	CITY OF PORTLAND	48"	Concrete	Active	SSO	82 - heavy industrial	Consolidated Metco (ECSI #3295) - VOCs, PAHs, TPH, PCBs, phthalates, zinc, and copper. GW infiltration. EVRAZ (ECSI# 141) - Metals, PAHs, PCBs, and TPH	JR Simplot (ECSI #3343) - TPH S. Rivergate Industrial Park (ECSI #2980) - No COIs listed in ECSI Port of Portland Tract O (ECSI #5307) - none listed	EVRAZ (ECSI #141), during reverse flow - metals, PAHs, PCBs, and TPH
OFM-1	East (Mocks Bottom)	CITY OF PORTLAND	60"	CSP	Active	SSO	162 - light	Fred Devine Diving and Salvage (ECSI #2365) - Metals, PAHs, SVOCs, TPH, and phthalates Freightliner TMP (ECSI #2366) - Metals, PAHs, and PCBs	Roadway Express (ECSI #3807) - TPH, nitric acid, and methyl iodide US Navy and Marine Reserve Center (ECSI #5109) - TPH	Cascade General (ECSI #271) - VOCs, PAHs, TPH, PCBs, metals, butyltins, and phthalates
OFM-2	East (Mocks Bottom)	CITY OF PORTLAND	60"	CSP	Active		127 - light industrial		GI Trucking (ECSI #1840) - TPH	Cascade General (ECSI #271) - VOCs, PAHs, TPH, PCBs, metals, butyltins, and phthalates
OFM-3	East (Mocks Bottom)	CITY OF PORTLAND	60"	CSP	Active		111 - light industrial	Freightliner TMP Parts Plant (ECSI #115) - Metals Fred Meyer - Swan Island (ECSI #44) - PCBs		Cascade General (ECSI #271) - VOCs, PAHs, TPH, PCBs, metals, butyltins, and phthalates
OFS-1	East (Swan Island)	CITY OF PORTLAND	36"	CMP	Active		25 - heavy industrial, some light industrial	Cascade General (ECSI #271) - VOCs, PAHs, TPH, PCBs, metals, butyltins, and phthalates		Cascade General (ECSI #271) - VOCs, PAHs, TPH, PCBs, metals, butyltins, and phthalates
OFS-2	East (Swan Island)	CITY OF PORTLAND	36"	CSP	Active		27 - light industrial, some heavy industrial		AutoVending (ECSI #1430) - TPH Crosby & Overton (ECSI #877) - PCBs	Cascade General (ECSI #271) - VOCs, PAHs, TPH, PCBs, metals, butyltins, and phthalates
OFS-5	East (Swan Island)	CITY OF PORTLAND	36"	CSP	Active		39 - light industrial		No ECSI sites have been identified in this basin.	
OFS-6	East (Swan Island)	CITY OF PORTLAND	36"	CSP	Active		22 - heavy industrial, some light industrial			
Other Non-City Shared Conveyance Systems										
WR-121	East	Burgard Industrial Park	Unknown	Unknown	Active		19 - heavy industrial	Schnitzer Steel/Calbag (ECSI #2355) - VOCs, TPH, PCBs, and metals		
WR-123	East	Burgard Industrial Park	48"	Concrete	Active		101 - heavy industrial	Boydstun Metal Works (ECSI #2362) - PAHs, PCBs, and metals NW Pipe (ECSI #138) - VOCs, PAHs, TPH, PCBs, and metals Joseph Ryerson (ECSI #2441) - No COIs listed in ECSI		
WR-124	East	Burgard Industrial Park	48"	Concrete	Active	SSO	1.4 - heavy industrial	Schnitzer Steel/Calbag (ECSI #2355) - VOCs, PCBs, TPH, and metals NW Pipe (ECSI #138) - VOCs, PAHs, TPH, PCBs, and metals		
WR-517	East	Burgard Industrial Park	Unknown	Unknown	Active		10 - heavy industrial		Portland Container Repair (ECSI #2375) - TPH	Schnitzer Steel/Calbag (ECSI #2355) - VOCs, PCBs, TPH, and metals
WR-83	East	Burgard Industrial Park	30"	Unknown	Active		6 - heavy industrial		Jefferson Smurfit (ECSI #2371) - TPH and metals Premier Edible Oils (ECSI #2013) - VOCs, PAHs, TPH, and metals	Schnitzer Steel/Calbag (ECSI #2355) - VOCs, PCBs, TPH, and metals
WR-84	East	Burgard Industrial Park	30"	Unknown	Active		14 - heavy industrial		Jefferson Smurfit (ECSI #2371) - TPH and metals Premier Edible Oils (ECSI #2013) - VOCs, PAHs, TPH, and metals Schnitzer Steel/Calbag (ECSI #2355) - VOCs, PCBs, TPH, and metals Time Oil (ECSI #170) - PAHs, TPH, and metals	
WR-85	East	Burgard Industrial Park	10"	Concrete	Abandoned		Unknown - heavy industrial		Basin area has not been delineated.	Premier Edible Oils (ECSI #2013) - VOCs, PAHs, TPH, and metals Schnitzer Steel/Calbag (ECSI #2355) - VOCs, PCBs, TPH, and metals

Table 4.4-3. Shared Conveyance System Basin Characteristics and Potential Sources.

Outfall ID	River Bank	Organization	Outfall Size (Inches)	Outfall Material[a]	Outfall Status	CSO[b]/SSO[c]	2008 Stormwater Basin Acreage and Zoning[d]	COIs within Outfall Basin Area Identified during Independent Investigations[e]	Other Potential Sources in the Outfall Basins and Associated COIs (in Addition to Sources Identified during Independent Investigations—see previous column)	Potential Sources Adjacent or Upstream and Associated COIs
WR-21	East	Burgard Industrial Park	36"	Sump	Abandoned		Unknown - heavy industrial		Basin area has not been delineated.	Premier Edible Oils (ECSI #2013) - VOCs, PAHs, TPH, and metals Schnitzer Steel/Calbag (ECSI #2355) - VOCs, PCBs, TPH, and metals
WR-207	West	Unknown Multiparty	24"	STL	Active		Unknown - mostly highway		Basin area has not been delineated.	USACE Portland Moorings (ECSI #1641) - PAHs, TPH, metals, and butyltins
WR-514	East	ODOT	Unknown	Unknown	Inactive		NA - former drainage from St. Johns Bridge		Basin area has not been delineated.	
WR-306	East	ODOT	48"	Concrete	Active		Unknown - mostly highway		Basin area has not been delineated.	
WR-308	East	Unknown Multiparty	15"	Concrete	Active		Unknown - ~~mostly highway~~		Basin area has not been delineated.	
WR-307 (aka OF12A)	West	ODOT	48"	Concrete	Active	CSO	Unknown - mostly highway		Basin area has not been delineated.	
WR-510	West	ODOT	Unknown	Unknown	Active		Unknown		Basin area has not been delineated.	
WR-210	West	Unknown Multiparty	48"	CMP	Abandoned		Unknown		Basin area has not been delineated.	Foss Maritime/Brix Maritime (ECSI #2364) - VOCs, PAHs, and TPH
WR-126	East	Unknown Multiparty	36"	CMP	Active		Unknown		Basin area has not been delineated.	Linnton Plywood (ECSI #2373) - VOCs, SVOCs, PAHs, TPH, PCBs, metals, and phthalates
WR-79	West	Unknown Multiparty	36"	Concrete	Active		Unknown		Basin area has not been delineated.	Owens Corning Linnton (ECSI #1036) - none
WR-102	West	Unknown Multiparty	48"	Concrete	Active		Unknown		Basin area has not been delineated.	ARCO (ECSI #1528) - VOCs, PAHs, TPH, and metals
WR-202	East	Unknown Multiparty	60"	CMP	Active		Unknown		Basin area has not been delineated.	ExxonMobil (ECSI #137) - VOCs, PAHs, TPH, and metals
WR-205	West	Unknown Multiparty	24"	Concrete	Active		Unknown		Basin area has not been delineated.	Gasco (ECSI #84) - VOCs, SVOCs, PAHs, TPH, metals, and cyanide
WR-203	East	Unknown Multiparty	36"	CMP	Active		Unknown		Basin area has not been delineated.	
WR-204	East	Unknown Multiparty	24"	Unknown	Active		Unknown		Basin area has not been delineated.	
WR-211	West	Unknown Multiparty	36"?	CMP	Active		Unknown		Basin area has not been delineated.	Marine Finance (ECSI #2352) - VOCs, PAHs, TPH, metals, and butyltins
WR-209	West	Unknown Multiparty	48"	Unknown	Active		Unknown		Basin area has not been delineated.	ST Services/Shore Terminal (ECSI #1989) - none
WR-208	West	Unknown Multiparty	24"	STL	Active		Unknown		Basin area has not been delineated.	Marine Finance (ECSI #2352) - VOCs, PAHs, TPH, metals, and butyltins
WR-206	West	Unknown Multiparty	24"	STL	Active		Unknown		Basin area has not been delineated.	
Saltzman Creek[g]	West	Unknown Multiparty	96"	Concrete	Active		1,076 - open space and heavy industrial, small % of highway and residential		GS Roofing (ECSI #117) - VOCs, PAHs, TPH, and metals St. Helens Road Petroleum Contamination (ECSI # 2630) - VOCs, PAHs, and TPH V&K Services (ECSI # 2423) - VOCs, and TPH Willbridge Terminal (ECSI #1549) - VOCs, PAHs, TPH, pesticides/herbicides, metals, and phthalates	GS Roofing (ECSI #117) - VOCs, PAHs, TPH, and metals. Discharges through WR-390 and WR-391

Table 4.4-3. Shared Conveyance System Basin Characteristics and Potential Sources.

Outfall ID	River Bank	Organization	Outfall Size (Inches)	Outfall Material[a]	Outfall Status	CSO[b]/SSO[c]	2008 Stormwater Basin Acreage and Zoning[d]	COIs within Outfall Basin Area Identified during Independent Investigations[e]	Other Potential Sources in the Outfall Basins and Associated COIs (in Addition to Sources Identified during Independent Investigations—see previous column)	Potential Sources Adjacent or Upstream and Associated COIs

Notes:

This table is not an exhaustive list of current or historical sources of contamination. The table includes sites identified in DEQ's ECSI database and sites where TSCA cleanup documents could be located.
Identification and evaluation of potential sources is ongoing.
Italicized cells indicate upland areas within current or former CSO basins. Non-italicized text indicates upland areas within stormwater basins.

[a] Codes for outfall materials are as follows:

PVC - polyvinyl chloride	CSP - corrugated steel pipe
Metal	Plastic
STL - Steel	Ditch - drainage pipe, absent of hard-piping
Concrete	Other - variable not listed here
CMP - corrugated metal pipe	Unknown

[b] CSO listed if outfall is a current or historical CSO; see Table 3.2-3 for additional information.
[c] SSO listed if there is an emergency overflow connection from a sanitary pump station to the outfall.
[d] Separated stormwater basins. For CSO outfalls already controlled, these separated areas will continue to discharge stormwater to the river downstream of the diversion. For CSO outfalls controlled in 2011, some of these separated storm basins are diverted to the tunnel.
[e] COIs are identified based on recent investigations of up-the-pipe investigations and site summaries. These sources have known or likely stormwater pathways and therefore are included in the conceptual site model (see Section 10).
[f] Outfall historically drained combined flows before full separation. Contributions of sanitary and industrial wastewater unknown unless noted in Table 3.2-3.
[g] This outfall is not included in the outfall layer on the maps in Sections 3 and 4.

BEHP - bis(2-ethylhexyl)phthalate	ODOT - Oregon Department of Transportation	T4 - Port of Portland Terminal 4
BES - City of Portland Bureau of Environmental Services	PAH - polycyclic aromatic hydrocarbon	TCE - trichloroethene
CBWTP - Columbia Boulevard Wastewater Treatment Plant	PCB - polychlorinated biphenyl	TPH - total petroleum hydrocarbons
COI - chemical of interest	PCE - tetrachloroethene	TSCA - Toxic Substances Control Act
CSO - combined sewer overflow	PGE - Portland General Electric	UPRR - Union Pacific Railroad
ECSI - Environmental Cleanup Site Information	POP - Port of Portland	USACE - U.S. Army Corps of Engineers
GW - groundwater	SSO - sanitary sewer overflow	VOC - volatile organic compound
NA - not available	SVOC - semivolatile organic compound	WPCL - Water Pollution Control Laboratory

Table 4.4-4. LWG Summary Statistics for Sediment Trap and Stormwater Based on Land Use Type.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Heavy Industrial															
Solid															
Metals															
Arsenic	7440-38-2	mg/kg	13	13	100	3.53	58.6	23.4	22.6	52.5	3.53	58.6	23.4	22.6	52.5
Chromium	7440-47-3	mg/kg	13	13	100	15.5 T	726	165	107	540	15.5 T	726	165	107	540
Copper	7440-50-8	mg/kg	13	13	100	22.6 T	59400	4810	165	24300	22.6 T	59400	4810	165	24300
Zinc	7440-66-6	mg/kg	13	13	100	319	21000	3150	1280	12100	319	21000	3150	1280	12100
PCBs[c]															
Total PCBs	TOTPCBS	µg/kg	24	24	100	48.4 JT	9900 JT	977	288	2600	48.4 JT	9900 JT	977	288	2600
Pesticides															
Aldrin	309-00-2	µg/kg	18	3	16.7	2.4 J	48 NJ	18.8	5.9	43.8	0.76 U	48 NJ	5.82	2.38	17.8
Dieldrin	60-57-1	µg/kg	18	1	5.56	470 J	470 J	470	470		0.8 U	470 J	29.3	2.03	79
Total Chlordanes	TOTCHLDANE	µg/kg	18	10	55.6	1.3 JT	1000 JT	155	20.5	730	1.3 JT	5800 UT	251	16	1290
DDx	E966176	µg/kg	18	18	100	4.8 JT	160000 T	9070	81	24700	4.8 JT	160000 T	9070	81	24700
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/kg	14	14	100	960 JT	700000 T	117000	42000	427000	960 JT	700000 T	117000	42000	427000
Phthalates															
Bis(2-ethylhexyl)phthalate	117-81-7	µg/kg	14	14	100	280 J	120000	27200	13300	101000	280 J	120000	27200	13300	101000
Water															
Metals															
Arsenic (dissolved)	7440-38-2	µg/L	76	68	89.5	0.024 J	21.1	1.88	0.362	12.7	0.024 J	21.1	2.13	0.576	12
Arsenic	7440-38-2	µg/L	100	91	91	0.091 J	19.8	2.93	0.87	17.2	0.091 J	20 U	3.12	1.03	16.9
Chromium (dissolved)	7440-47-3	µg/L	76	60	78.9	0.3	13.6	1.95	0.865	6.97	0.23 U	13.6	1.6	0.78	6.93
Chromium	7440-47-3	µg/L	97	94	96.9	0.62	495	20	3.56	111	0.62	495	19.4	3.44	110
Copper (dissolved)	7440-50-8	µg/L	76	76	100	1.9	99.9	16.5	7.93	61.2	1.9	99.9	16.5	7.93	61.2
Copper	7440-50-8	µg/L	97	97	100	3.1	809	66.9	23.3	296	3.1	809	66.9	23.3	296
Zinc (dissolved)	7440-66-6	µg/L	76	71	93.4	1.3	2300	240	99.3	924	1.3	2300	226	94.1	745
Zinc	7440-66-6	µg/L	97	97	100	43.6	11900	547	233	2360	43.6	11900	547	233	2360
PCBs[c]															
Total PCBs (dissolved)	TOTPCBS	µg/L	21	20	95.2	0.00000409 JT	0.052 T	0.00875	0.00517	0.0262	0.00000409 JT	0.052 T	0.00833	0.00478	0.0248
Total PCBs	TOTPCBS	µg/L	88	88	100	0.000344 JT	11.6 JT	0.352	0.0526	1.04	0.000344 JT	11.6 JT	0.352	0.0526	1.04
Pesticides															
Aldrin (dissolved)	309-00-2	µg/L	12	1	8.33	0.00034 J	0.00034 J	0.00034	0.00034	--	0.00034 J	0.0061 U	0.00133	0.000775	0.00275
Aldrin	309-00-2	µg/L	25	6	24	0.00022 J	0.027	0.0118	0.0109	0.0255	0.00022 J	0.027	0.00389	0.00135	0.0208
Dieldrin (dissolved)	60-57-1	µg/L	12	1	8.33	0.0015	0.0015	0.0015	0.0015	--	0.00042 U	0.0059 U	0.00134	0.00113	0.0027
Dieldrin	60-57-1	µg/L	25	7	28	0.00079	0.25	0.11	0.089	0.244	0.0004 U	0.25	0.0328	0.0013	0.222
Total Chlordanes (dissolved)	TOTCHLDANE	µg/L	12	7	58.3	0.00054 JT	0.023 JT	0.01	0.013	0.0206	0.00054 JT	0.023 JT	0.00783	0.0054	0.0186
Total Chlordanes	TOTCHLDANE	µg/L	25	14	56	0.00098 JT	0.13 JT	0.0302	0.0122	0.101	0.00098 JT	0.54 UT	0.0336	0.0084	0.121
DDx (dissolved)	E966176	µg/L	12	11	91.7	0.00066 JT	0.35 JT	0.0382	0.0081	0.183	0.00066 JT	0.35 JT	0.0352	0.0065	0.166
DDx	E966176	µg/L	25	22	88	0.0048 JT	11 JT	0.858	0.0185	3.51	0.002 UJT	11 JT	0.755	0.015	3.22
Polycyclic Aromatic Hydrocarbons															
Total PAHs (dissolved)	130498-29-2	µg/L	28	20	71.4	0.0077 JT	15 JT	2.31	0.965	9.97	0.0077 JT	15 JT	1.68	0.154	7.84
Total PAHs	130498-29-2	µg/L	86	79	91.9	0.048 JA	37 JT	3.26	0.97	13	0.048 JA	37 JT	3.01	0.715	12
Phthalates															
Bis(2-ethylhexyl)phthalate (dissolved)	117-81-7	µg/L	16	4	25	0.38 J	0.82	0.638	0.675	0.802	0.23 U	2 UJ	0.543	0.648	0.865
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	48	32	66.7	0.37 J	10	2.77	1.75	8.14	0.19 UJ	10	2.07	0.985	7.97

Table 4.4-4. LWG Summary Statistics for Sediment Trap and Stormwater Based on Land Use Type.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Light Industrial															
Solid															
Metals															
Arsenic	7440-38-2	mg/kg	2	2	100	3.39	4.43	3.91	3.91	4.38	3.39	4.43	3.91	3.91	4.38
Chromium	7440-47-3	mg/kg	2	2	100	122 J	160 J	141	141	158	122 J	160 J	141	141	158
Copper	7440-50-8	mg/kg	2	2	100	65.8	68	66.9	66.9	67.9	65.8	68	66.9	66.9	67.9
Zinc	7440-66-6	mg/kg	2	2	100	442	517	480	480	513	442	517	480	480	513
PCBs[c]															
Total PCBs	TOTPCBS	µg/kg	2	2	100	264	661	463	463	641	264	661	463	463	641
Pesticides															
Aldrin	309-00-2	µg/kg	1	1	100	6.2 J	6.2 J	6.2	6.2	--	6.2 J	6.2 J	6.2	6.2	--
Dieldrin	60-57-1	µg/kg	1	0	0	--	--	--	--	--	29 UJ	29 UJ	14.5	14.5	--
Total Chlordanes	TOTCHLDANE	µg/kg	1	1	100	6.8 JT	6.8 JT	6.8	6.8	--	6.8 JT	6.8 JT	6.8	6.8	--
DDx	E966176	µg/kg	1	1	100	34 JT	34 JT	34	34	--	34 JT	34 JT	34	34	--
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/kg	2	2	100	20000 T	27000 T	23500	23500	26700	20000 T	27000 T	23500	23500	26700
Phthalates															
Bis(2-ethylhexyl)phthalate	117-81-7	µg/kg	2	2	100	17000	28000	22500	22500	27500	17000	28000	22500	22500	27500
Water															
Metals															
Arsenic (dissolved)	7440-38-2	µg/L	14	14	100	0.08	0.34	0.189	0.182	0.324	0.08	0.34	0.189	0.182	0.324
Arsenic	7440-38-2	µg/L	20	20	100	0.13	2.27	0.789	0.754	1.87	0.13	2.27	0.789	0.754	1.87
Chromium (dissolved)	7440-47-3	µg/L	14	12	85.7	0.24	1.76	0.804	0.67	1.72	0.24	1.76	0.714	0.57	1.71
Chromium	7440-47-3	µg/L	20	20	100	1.39	12.7	4.18	2.88	10.3	1.39	12.7	4.18	2.88	10.3
Copper (dissolved)	7440-50-8	µg/L	14	14	100	1.7	8.4	4.54	4.5	7.22	1.7	8.4	4.54	4.5	7.22
Copper	7440-50-8	µg/L	20	20	100	2.92	22.9	11.5	9.09	22.2	2.92	22.9	11.5	9.09	22.2
Zinc (dissolved)	7440-66-6	µg/L	14	14	100	15.4	88.8	40.8	34	85.4	15.4	88.8	40.8	34	85.4
Zinc	7440-66-6	µg/L	20	20	100	28.9	227	108	91.9	217	28.9	227	108	91.9	217
PCBs[c]															
Total PCBs (dissolved)	TOTPCBS	µg/L	5	5	100	0.000569	0.002	0.00121	0.00121	0.00186	0.000569	0.002	0.00121	0.00121	0.00186
Total PCBs	TOTPCBS	µg/L	20	20	100	0.0017 JT	0.594 J	0.0734	0.0136	0.382	0.0017 JT	0.594 J	0.0734	0.0136	0.382
Pesticides															
Aldrin (dissolved)	309-00-2	µg/L	3	0	0	--	--	--	--	--	0.00066 UJ	0.0055 U	0.00114	0.00034	0.00251
Aldrin	309-00-2	µg/L	6	0	0	--	--	--	--	--	0.00049 U	0.0088 U	0.00124	0.000318	0.00378
Dieldrin (dissolved)	60-57-1	µg/L	3	0	0	--	--	--	--	--	0.00048 U	0.0055 U	0.00113	0.000395	0.00251
Dieldrin	60-57-1	µg/L	6	0	0	--	--	--	--	--	0.00049 UJ	0.0088 U	0.00129	0.000925	0.00355
Total Chlordanes (dissolved)	TOTCHLDANE	µg/L	3	2	66.7	0.0007 T	0.0029 JT	0.0018	0.0018	0.00279	0.0007 T	0.0029 JT	0.00145	0.00075	0.00269
Total Chlordanes	TOTCHLDANE	µg/L	6	4	66.7	0.0012 JT	0.0052 JT	0.00235	0.0015	0.00466	0.0012 JT	0.0073 UT	0.00232	0.0015	0.00481
DDx (dissolved)	E966176	µg/L	3	0	0						0.0021 UJT	0.013 UJT	0.0031	0.00175	0.00603
DDx	E966176	µg/L	6	2	33.3	0.0071 JT	0.031 JT	0.0191	0.0191	0.0298	0.0011 UT	0.031 JT	0.00774	0.0036	0.025
Polycyclic Aromatic Hydrocarbons															
Total PAHs (dissolved)	130498-29-2	µg/L	7	7	100	0.06 JT	0.57 JT	0.326	0.35	0.543	0.06 JT	0.57 JT	0.326	0.35	0.543
Total PAHs	130498-29-2	µg/L	17	17	100	0.25 T	1.6 T	0.696	0.46	1.6	0.25 T	1.6 T	0.696	0.46	1.6
Phthalates															
Bis(2-ethylhexyl)phthalate (dissolved)	117-81-7	µg/L	2	2	100	0.17 J	0.18 J	0.175	0.175	0.18	0.17 J	0.18 J	0.175	0.175	0.18
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	14	14	100	1 J	4.2 J	1.93	1.6	4.14	1 J	4.2 J	1.93	1.6	4.14

Table 4.4-4. LWG Summary Statistics for Sediment Trap and Stormwater Based on Land Use Type.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Major Transportation															
Solid															
Metals															
Arsenic	7440-38-2	mg/kg	1	1	100	3.37	3.37	3.37	3.37	--	3.37	3.37	3.37	3.37	--
Chromium	7440-47-3	mg/kg	1	1	100	52.8	52.8	52.8	52.8	--	52.8	52.8	52.8	52.8	--
Copper	7440-50-8	mg/kg	1	1	100	148	148	148	148	--	148	148	148	148	--
Zinc	7440-66-6	mg/kg	1	1	100	799	799	799	799	--	799	799	799	799	--
PCBs[c]															
Total PCBs	TOTPCBS	µg/kg	3	3	100	125 JT	223 JT	163	142	215	125 JT	223 JT	163	142	215
Pesticides															
Aldrin	309-00-2	µg/kg	2	0	0	--	--	--	--	--	1.1 U	2.5 U	0.9	0.9	1.22
Dieldrin	60-57-1	µg/kg	2	0	0	--	--	--	--	--	4 U	4.1 U	2.03	2.03	2.05
Total Chlordanes	TOTCHLDANE	µg/kg	2	1	50	8.8 JT	8.8 JT	8.8	8.8	--	4.5 UT	8.8 JT	5.53	5.53	8.47
DDx	E966176	µg/kg	2	2	100	3.4 JT	17 JT	10.2	10.2	16.3	3.4 JT	17 JT	10.2	10.2	16.3
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/kg	2	2	100	8800 JT	11000 JT	9900	9900	10900	8800 JT	11000 JT	9900	9900	10900
Phthalates															
Bis(2-ethylhexyl)phthalate	117-81-7	µg/kg	2	2	100	19000	39000	29000	29000	38000	19000	39000	29000	29000	38000
Water															
Metals															
Arsenic (dissolved)	7440-38-2	µg/L	10	10	100	0.23	1.58	0.687	0.597	1.48	0.23	1.58	0.687	0.597	1.48
Arsenic	7440-38-2	µg/L	13	13	100	0.52	2.33	1.15	0.982	2.02	0.52	2.33	1.15	0.982	2.02
Chromium (dissolved)	7440-47-3	µg/L	10	8	80	0.7	5.52	1.96	1.62	4.38	0.7	5.52	1.66	1.28	4.05
Chromium	7440-47-3	µg/L	14	14	100	4.99	28.2	10.5	8.31	22	4.99	28.2	10.5	8.31	22
Copper (dissolved)	7440-50-8	µg/L	10	10	100	4.2	24.8	11.7	9.82	22	4.2	24.8	11.7	9.82	22
Copper	7440-50-8	µg/L	14	14	100	24.6	66	42.9	37.6	65.4	24.6	66	42.9	37.6	65.4
Zinc (dissolved)	7440-66-6	µg/L	10	10	100	39.1	525	118	64.5	375	39.1	525	118	64.5	375
Zinc	7440-66-6	µg/L	14	14	100	113	1140	364	254	871	113	1140	364	254	871
PCBs[c]															
Total PCBs (dissolved)	TOTPCBS	µg/L	1	1	100	0.00407 JT	0.00407 JT	0.00407	0.00407	--	0.00407 JT	0.00407 JT	0.00407	0.00407	--
Total PCBs	TOTPCBS	µg/L	11	11	100	0.0085 T	0.185 JT	0.0517	0.0395	0.135	0.0085 T	0.185 JT	0.0517	0.0395	0.135
Polycyclic Aromatic Hydrocarbons															
Total PAHs (dissolved)	130498-29-2	µg/L	1	1	100	0.12 JT	0.12 JT	0.12	0.12		0.12 JT	0.12 JT	0.12	0.12	
Total PAHs	130498-29-2	µg/L	12	12	100	0.9 JT	12 T	2.96	2.35	7.32	0.9 JT	12 T	2.96	2.35	7.32
Phthalates															
Bis(2-ethylhexyl)phthalate (dissolved)	117-81-7	µg/L	1	1	100	1.8 J	1.8 J	1.8	1.8	--	1.8 J	1.8 J	1.8	1.8	--
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	4	4	100	2.6	17	9.95	10.1	16.1	2.6	17	9.95	10.1	16.1
Multiple Land Uses															
Solid															
Metals															
Arsenic	7440-38-2	mg/kg	5	5	100	2.36	5.6	3.37	2.89	5.19	2.36	5.6	3.37	2.89	5.19
Chromium	7440-47-3	mg/kg	5	5	100	22.5	74.3	40.2	37.5	67.6	22.5	74.3	40.2	37.5	67.6
Copper	7440-50-8	mg/kg	5	5	100	32.3	164	64.3	38	141	32.3	164	64.3	38	141
Zinc	7440-66-6	mg/kg	5	5	100	229	1020	556	289	1010	229	1020	556	289	1010
PCBs[c]															
Total PCBs	TOTPCBS	µg/kg	7	7	100	74.5 JT	696 JT	232	140	578	74.5 JT	696 JT	232	140	578

Table 4.4-4. LWG Summary Statistics for Sediment Trap and Stormwater Based on Land Use Type.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Pesticides															
Aldrin	309-00-2	µg/kg	6	3	50	2.5	21 J	9.27	4.3	19.3	0.78 U	21 J	5.25	2.28	16.8
Dieldrin	60-57-1	µg/kg	6	4	66.7	1.3 J	3.6	2.6	2.75	3.5	1.3 J	13 U	3.16	2.75	5.78
Total Chlordanes	TOTCHLDANE	µg/kg	6	6	100	11 JT	94 JT	32.2	21.5	78.8	11 JT	94 JT	32.2	21.5	78.8
DDx	E966176	µg/kg	6	6	100	6.3 JT	180 JT	55.6	39.5	147	6.3 JT	180 JT	55.6	39.5	147
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/kg	6	6	100	520 JT	19000 JT	7350	3500	18000	520 JT	19000 JT	7350	3500	18000
Phthalates															
Bis(2-ethylhexyl)phthalate	117-81-7	µg/kg	6	6	100	890 J	27000	9830	4450	25300	890 J	27000	9830	4450	25300
Water															
Metals															
Arsenic (dissolved)	7440-38-2	µg/L	11	11	100	0.305	1.37 J	0.744	0.449	1.37	0.305	1.37 J	0.744	0.449	1.37
Arsenic	7440-38-2	µg/L	15	15	100	0.49	2.22	1.39	1.44	2.21	0.49	2.22	1.39	1.44	2.21
Chromium (dissolved)	7440-47-3	µg/L	11	7	63.6	0.48	1.18	0.739	0.67	1.15	0.48	1.18	0.588	0.49	1.13
Chromium	7440-47-3	µg/L	15	15	100	2.84	11.6	7.34	6.41	11.5	2.84	11.6	7.34	6.41	11.5
Copper (dissolved)	7440-50-8	µg/L	11	11	100	2.88	12.7	6.67	6.87	11.8	2.88	12.7	6.67	6.87	11.8
Copper	7440-50-8	µg/L	15	15	100	10.3	55.6	26.6	24.3	48.7	10.3	55.6	26.6	24.3	48.7
Zinc (dissolved)	7440-66-6	µg/L	11	10	90.9	49.8	115	74.2	70.1	105	49.6 U	115	69.7	61.4	104
Zinc	7440-66-6	µg/L	15	15	100	83.6	391	217	220	387	83.6	391	217	220	387
PCBs[c]															
Total PCBs (dissolved)	TOTPCBS	µg/L	1	1	100	0.000661 JT	0.000661 JT	0.000661	0.000661	--	0.000661 JT	0.000661 JT	0.000661	0.000661	--
Total PCBs	TOTPCBS	µg/L	12	12	100	0.00949 JT	0.503 T	0.0836	0.0231	0.295	0.00949 JT	0.503 T	0.0836	0.0231	0.295
Polycyclic Aromatic Hydrocarbons															
Total PAHs (dissolved)	130498-29-2	µg/L	1	1	100	0.014 JT	0.014 JT	0.014	0.014		0.014 JT	0.014 JT	0.014	0.014	
Total PAHs	130498-29-2	µg/L	12	12	100	0.083 JT	2.6 JT	0.986	0.865	2.22	0.083 JT	2.6 JT	0.986	0.865	2.22
Phthalates															
Bis(2-ethylhexyl)phthalate (dissolved)	117-81-7	µg/L	1	0	0	--	--	--	--	--	0.44 U	0.44 U	0.22	0.22	--
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	4	4	100	1.8 J	8.9	5.03	4.7	8.41	1.8 J	8.9	5.03	4.7	8.41
Open Space															
Solid															
Metals															
Arsenic	7440-38-2	mg/kg	1	1	100	1.5	1.5	1.5	1.5	--	1.5	1.5	1.5	1.5	--
Chromium	7440-47-3	mg/kg	1	1	100	17.9	17.9	17.9	17.9	--	17.9	17.9	17.9	17.9	--
Copper	7440-50-8	mg/kg	1	1	100	12.2	12.2	12.2	12.2	--	12.2	12.2	12.2	12.2	--
Zinc	7440-66-6	mg/kg	1	1	100	48.9 J	48.9 J	48.9	48.9	--	48.9 J	48.9 J	48.9	48.9	--
PCBs[c]															
Total PCBs	TOTPCBS	µg/kg	1	1	100	4.13 JT	4.13 JT	4.13	4.13	--	4.13 JT	4.13 JT	4.13	4.13	--
Pesticides															
Aldrin	309-00-2	µg/kg	1	0	0	--	--	--	--	--	0.24 U	0.24 U	0.12	0.12	--
Dieldrin	60-57-1	µg/kg	1	0	0	--	--	--	--	--	0.4 U	0.4 U	0.2	0.2	--
Total Chlordanes	TOTCHLDANE	µg/kg	1	0	0	--	--	--	--	--	0.4 UT	0.4 UT	0.2	0.2	--
DDx	E966176	µg/kg	1	1	100	3.9 JT	3.9 JT	3.9	3.9	--	3.9 JT	3.9 JT	3.9	3.9	--
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/kg	1	1	100	300 JT	300 JT	300	300		300 JT	300 JT	300	300	
Phthalates															
Bis(2-ethylhexyl)phthalate	117-81-7	µg/kg	1	0	0	--	--	--	--	--	30 U	30 U	15	15	--

Table 4.4-4. LWG Summary Statistics for Sediment Trap and Stormwater Based on Land Use Type.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Water															
Metals															
Arsenic (dissolved)	7440-38-2	µg/L	2	2	100	0.124 J	0.138	0.131	0.131	0.137	0.124 J	0.138	0.131	0.131	0.137
Arsenic	7440-38-2	µg/L	3	3	100	0.196	0.228 J	0.209	0.202	0.225	0.196	0.228 J	0.209	0.202	0.225
Chromium (dissolved)	7440-47-3	µg/L	2	2	100	0.54	0.76	0.65	0.65	0.749	0.54	0.76	0.65	0.65	0.749
Chromium	7440-47-3	µg/L	3	3	100	0.87	3.05	1.71	1.22	2.87	0.87	3.05	1.71	1.22	2.87
Copper (dissolved)	7440-50-8	µg/L	2	2	100	0.74 J	1.23	0.985	0.985	1.21	0.74 J	1.23	0.985	0.985	1.21
Copper	7440-50-8	µg/L	3	3	100	1.01 J	3.07	1.75	1.16	2.88	1.01 J	3.07	1.75	1.16	2.88
Zinc (dissolved)	7440-66-6	µg/L	2	2	100	3.96	12.3 J	8.13	8.13	11.9	3.96	12.3 J	8.13	8.13	11.9
Zinc	7440-66-6	µg/L	3	3	100	3.69 J	13.1 J	8.46	8.59	12.6	3.69 J	13.1 J	8.46	8.59	12.6
PCBs[c]															
Total PCBs	TOTPCBS	µg/L	5	3	60	0.0000808 JT	0.000641 JT	0.00031	0.000208	0.000598	0.0000524 UT	0.000641 JT	0.000197	0.0000808	0.000554
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/L	5	1	20	0.02 JT	0.02 JT	0.02	0.02		0.015 UA	0.02 JT	0.0105	0.0085	0.0177
Phthalates															
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	5	1	20	0.83 J	0.83 J	0.83	0.83	--	0.071 U	0.83 J	0.206	0.055	0.677
Residential															
Solid															
Metals															
Arsenic	7440-38-2	mg/kg	2	2	100	2.38 T	8.69	5.54	5.54	8.37	2.38 T	8.69	5.54	5.54	8.37
Chromium	7440-47-3	mg/kg	2	2	100	29.2 JT	71.8	50.5	50.5	69.7	29.2 JT	71.8	50.5	50.5	69.7
Copper	7440-50-8	mg/kg	2	2	100	49.6 T	128	88.8	88.8	124	49.6 T	128	88.8	88.8	124
Zinc	7440-66-6	mg/kg	2	2	100	334 T	856	595	595	830	334 T	856	595	595	830
PCBs[c]															
Total PCBs	TOTPCBS	µg/kg	2	2	100	66.7 JT	377	222	222	361	66.7 JT	377	222	222	361
Pesticides															
Aldrin	309-00-2	µg/kg	3	0	0	--	--	--	--	--	0.22 U	40 U	11.9	15.5	19.6
Dieldrin	60-57-1	µg/kg	3	1	33.3	4 NJ	4 NJ	4	4		4 NJ	31 UT	8.17	5	14.5
Total Chlordanes	TOTCHLDANE	µg/kg	3	2	66.7	9.1 JT	22 JT	15.6	15.6	21.4	9.1 JT	29 UT	15.2	14.5	21.3
DDx	E966176	µg/kg	3	2	66.7	36 JT	260 JT	148	148	249	36 JT	260 JT	115	48.5	239
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/kg	1	1	100	8200 JT	8200 JT	8200	8200		8200 JT	8200 JT	8200	8200	
Phthalates															
Bis(2-ethylhexyl)phthalate	117-81-7	µg/kg	1	1	100	8200 JT	8200 JT	8200	8200	--	8200 JT	8200 JT	8200	8200	--
Water															
Metals															
Arsenic (dissolved)	7440-38-2	µg/L	4	4	100	0.245	0.41	0.321	0.315	0.4	0.245	0.41	0.321	0.315	0.4
Arsenic	7440-38-2	µg/L	6	6	100	0.255	1.36	0.556	0.415	1.17	0.255	1.36	0.556	0.415	1.17
Chromium (dissolved)	7440-47-3	µg/L	4	3	75	0.28	0.73	0.53	0.58	0.715	0.28	0.73	0.481	0.458	0.708
Chromium	7440-47-3	µg/L	6	6	100	0.83	31.8	6.78	1.59	24.8	0.83	31.8	6.78	1.59	24.8
Copper (dissolved)	7440-50-8	µg/L	4	4	100	3.44	6.94	5.52	5.84	6.93	3.44	6.94	5.52	5.84	6.93
Copper	7440-50-8	µg/L	6	6	100	6.92	83.5	21.5	9.28	65.8	6.92	83.5	21.5	9.28	65.8
Zinc (dissolved)	7440-66-6	µg/L	4	4	100	19.6	69.1	35	25.7	63.4	19.6	69.1	35	25.7	63.4
Zinc	7440-66-6	µg/L	6	6	100	30.7	609	142	49.6	477	30.7	609	142	49.6	477
PCBs[c]															
Total PCBs (dissolved)	TOTPCBS	µg/L	1	1	100	0.00264	0.00264	0.00264	0.00264	--	0.00264	0.00264	0.00264	0.00264	--
Total PCBs	TOTPCBS	µg/L	6	6	100	0.00114 JT	0.134 J	0.0376	0.0118	0.117	0.00114 JT	0.134 J	0.0376	0.0118	0.117

Table 4.4-4. LWG Summary Statistics for Sediment Trap and Stormwater Based on Land Use Type.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Pesticides															
Aldrin (dissolved)	309-00-2	µg/L	3	0	0	--	--	--	--	--	0.00073 UJ	0.0056 UJ	0.00136	0.0009	0.00261
Aldrin	309-00-2	µg/L	3	0	0	--	--	--	--	--	0.00077 UJ	0.0053 UJ	0.00125	0.0007	0.00246
Dieldrin (dissolved)	60-57-1	µg/L	3	0	0	--	--	--	--	--	0.00049 U	0.0056 U	0.00111	0.00027	0.00255
Dieldrin	60-57-1	µg/L	3	0	0	--	--	--	--	--	0.0005 U	0.0053 U	0.00115	0.00055	0.00244
Total Chlordanes (dissolved)	TOTCHLDANE	µg/L	3	1	33.3	0.0011 T	0.0011 T	0.0011	0.0011	--	0.0011 T	0.012 UT	0.00255	0.0011	0.00551
Total Chlordanes	TOTCHLDANE	µg/L	3	3	100	0.00054 T	0.0039 JT	0.00198	0.0015	0.00366	0.00054 T	0.0039 JT	0.00198	0.0015	0.00366
DDx (dissolved)	E966176	µg/L	3	0	0						0.0012 UJT	0.023 UJT	0.00443	0.0012	0.0105
DDx	E966176	µg/L	3	1	33.3	0.00081 T	0.00081 T	0.00081	0.00081	--	0.00081 T	0.011 UJT	0.0028	0.0021	0.00516
Polycyclic Aromatic Hydrocarbons															
Total PAHs (dissolved)	130498-29-2	µg/L	3	3	100	0.26 JT	0.45 JT	0.357	0.36	0.441	0.26 JT	0.45 JT	0.357	0.36	0.441
Total PAHs	130498-29-2	µg/L	7	7	100	0.074 JT	1.4 JT	0.445	0.1	1.19	0.074 JT	1.4 JT	0.445	0.1	1.19
Phthalates															
Bis(2-ethylhexyl)phthalate (dissolved)	117-81-7	µg/L	1	1	100	0.2 J	0.2 J	0.2	0.2	--	0.2 J	0.2 J	0.2	0.2	--
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	6	6	100	1	6.7	3.78	3.6	6.45	1	6.7	3.78	3.6	6.45

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available, regardless of their qualification.

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

-- data not available.

DL - detection limit

PCB - polychlorinated biphenyl

PCDD/F - dioxin/furan

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Survey ID	Included in Stats?	Study Objective	River Mile(s)	Begin Date	End Date	Number of Samples	Composite (Y/N)	QA Category	Conv.	Metals	SVOCs (includes PAH & Phthalates)	PAH only	Phthalates Only	PCBs (Aroclors)	Pest.	VOCs	TPH-Gas	TPH-Diesel & Oil	Other
ABF Freight	WLCAFF07	Yes	Catch basin solids	9.1	6/4/2007	6/4/2007	2 Catch basin solids	N	Cat 1 QA 1 TOC & Pesticides Cat 2	X	X		X	X	X	X				X
Advanced American Construction Property	WLCAAE06	Yes	Stormwater sampling	5.6	5/26/2006	5/2/2007	3 Stormwaters	N	Cat 1 QA1 Some TPH data Cat 2		X		X					X	X	
Anderson Bros., Stormwater, March 2007	WLCABL06	Yes	Stormwater sampling	7.8, 7.9	12/26/2006	3/7/2007	4 Stormwaters	N	Cat 1 QA 1 VOCs Cat 2		X	X			X	X	X		X	
Ashland Chemical	WLCALF07	Yes	Catch basin solids	9.2	6/21/2007	6/21/2007	1 Catch basin solid	N	Cat 1 QA 1 TOC Cat 2	X	X		X	X	X	X				
Boydstun Metal Works at Burgard Industrial Park	WLCBSA02	No, too old	Catch basin solids	4.2	1/28/2002	1/28/2002	1 Catch basin solid	N	Cat 1 QA 1		X		X				X	X	X	
Calbag Metals/Former ACME Supply and Trading Company	WLCCBA05	Yes	Stormwater and catch basin solids	8.3 - 8.5	1/4/2005	1/6/2005	7 Catch basin solids 10 Stormwaters	Y	Cat 1 QA1 Oil & Grease & some Aroclor & PAH data Cat 2	X	X	X			X			X	X	
Chapel Steel	WLCCSJ05	Yes	Catch basin solids	8.7	6/11/2007	6/11/2007	1 Catch basin solid	N	Cat 1 QA 1 Pesticides Cat 2	X	X		X	X	X	X				X
Christenson Oil	WLCCHK01	Yes	Stormwater and catch basin solids	8.8	11/19/2001	6/9/2007	1 Catch basin solid 6 Stormwaters	N	Mixture of Cat1 QA1 & Cat 2	X	X	X			X		X	X	X	
Consolidated Metco-Rivergate-Response	WLCCMJ04	Yes	Stormwater sampling	2.8 - 3	10/26/2004	4/10/2006	9 Stormwaters	N	Cat 1 QA 1	X	X									
Container Recovery	WLCCRL06	Yes	Catch basin solids	8.9 - 9	6/5/2007	6/5/2007	2 Catch basin solids	N	Cat 1 QA 1 Pesticides Cat 2	X	X		X	X	X	X				X
Fred Devine Diving & Salvage, Inc.	WLCFDB01	No, too old	Stormwater and catch basin solids	8.2 - 8.4	2/21/2002	4/30/2002	4 Catch basin solids 1 Stormwater	N	Cat 2	X	X	X			X					
Freightliner Truck Manufacturing	WLCFLL06	Yes	Stormwater and catch basin solids	9.3	12/20/2006	6/5/2007	2 Catch basin solids 6 Stormwaters	Y	Cat 1 QA 1	X	X		X	X	X					
Galvanizers Company	WLCGLC07	Yes	Stormwater and catch basin solids	9.7	11/2/2006	6/24/2007	3 Catch basin solids 17 Stormwaters	N	Cat 1 QA 1 Grain size & some PAH Cat 2	X	X		X	X	X					
Stormwater-PGE-Forest Park	WLCGFE06	Yes	Source tracing	8.4 - 8.5	5/2/2006	10/11/2006	15 In-line solids	N	Cat 1 QA 1						X	X				
Linnton Plywood Association	WLCLPJ01	No, too old	Catch basin solids	4.5 - 4.6	10/16/2001	10/16/2001	4 Catch basin solids	N	Cat 2		X	X			X		X	X	X	
McCall Oil, RI, July 2004	WLCMOL00	Yes	Stormwater and catch basin solids	7.8 - 7.9	12/15/2000	5/2/2007	6 Catch basin solids 19 Stormwaters	N	Mixture of Cat1 QA1 & Cat 2	X	X	X			X			X	X	
Northwest Pipe Company	WLCNPI03	No, too old and Cat2	Stormwater source control efforts	3.9 - 4.3	9/9/2003	7/8/2005	8 Stormwaters	N	2003 PCBs, metals, TSS, & oil & grease Cat 1 QA 1 All else Cat 2	X	X		X		X			X		
Zidell Property at 5200 NW Front Avenue	WLCZDJ89	No, too old	One drain sediment	8.1	10/2/1989	10/2/1989	1 Catch basin solid	N	Metals Cat 1 QA1 Aroclors & TPH Cat2		X				X			X	X	
Oregon Steel Mill	WLCOSJ96	No, too old	Stormwater and catch basin solids	2 - 2.4	10/14/1996	10/23/2002	23 Catch basin solids 17 Stormwaters	N	CBSO Cat 1 QA2 Waters Cat 1 QA1	X	X	X			X		X	X	X	

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Survey ID	Included in Stats?	Study Objective	River Mile(s)	Begin Date	End Date	Number of Samples	Composite (Y/N)	QA Category	Conv.	Metals	SVOCs (includes PAH & Phthalates)	PAH only	Phthalates Only	PCBs (Aroclors)	Pest.	VOCs	TPH-Gas	TPH-Diesel & Oil	Other
Owens Corning Linnton Site	WLCOLB01	Yes	Stormwater and catch basin solids	3.6 - 3.8	2/2/2001	7/18/2007	2 Catch basin solids 13 Stormwaters	N	Cat 1 QA1 oil & grease & some pH Cat2	X	X		X	X	X			X	X	
Carson Oil	WLCCOF07	Yes	Catch basin solids	9.2	6/7/2007	6/7/2007	2 Catch basin solids	N	Cat 1 QA 1 TOC & pesticides Cat 2	X	X		X	X	X	X				X
Owens-Corning, 3750 N.W. Yeon Avenue	WLCOCF07	Yes	Catch basin solids	9.1	6/15/2007	6/15/2007	1 Catch basin solid	N	Cat 1 QA 1 Pesticides Cat 2	X	X		X	X	X	X				X
Paco / Sulzer Pumps	WLCPPF07	Yes	Stormwater and catch basin solids	9.6 - 10.4	1/28/2004	6/20/2007	23 Catch basin solids 16 Stormwaters	Y	Mixture of Cat1 QA1 & Cat 2	X	X	X			X				X	
USCG catch basin sampling	WLCCGD06	Yes	Stormwater and catch basin solids	8 - 8.1	4/14/2006	6/1/2006	14 Catch basin solids 18 Stormwaters	N	Cat 1 QA 1 SVOC & some VOC Cat 2	X	X	X			X			X	X	X
UPRR Albina	WLCAYH00	No, too old	XPA stormwater and catch basin data	9.9 - 10.8	8/9/2000	8/17/000	4 Catch basin solids 9 Stormwaters	N	Mixture of Cat1 QA1 & Cat 2		X	X			X		X	X	X	
GE 2007 stormwater outfall monitoring	WLCGED07	Yes	Stormwater sampling	9.6	4/12/2007	6/10/2007	16 Stormwaters	Y	Cat 1 QA2	X	X		X	X	X				X	X
City Outfall Basin 19 Inline Solids Sampling at the Former Calbag Metals	WLCOFJ02	Yes	Source tracing	8.3	6/18/2007	6/18/2007	1 Sediment trap	N	QA1Cat1						X					
City Outfall Basin 22B Inline Solids Evaluation	WLCOFJ02	Yes	Source tracing	6.9	9/30/2003	11/8/2006	4 In-line solids	Y	NWTPH-Dx & PAH data Cat 1 QA1 All other data Cat 2	X	X	X			X	X	X	X	X	X
City Outfall Basin 22C Northwest Drainage Pond Evaluation	WLCOFJ02	No, Cat2	Source tracing	6.7 - 6.8	11/24/2003	12/19/2003	4 Soils	N	Cat 2		X	X				X	X	X	X	X
City Outfall Basin 22C, Inline Solids Sampling in the Vicinity of Kopp	WLCOFJ02	Yes	Source tracing	6.3 - 6.4	11/5/2003	9/11/2006	7 In-line solids	Y	Cat1 QA1 Some Cat 2 data	X	X	X			X			X	X	
City Outfall Basin 46 Inline Solids Sampling in the Vicinity of the Union Pacific Railroad Albina Yard	WLCOFJ02	Yes	Source tracing	10.4 - 10.7	8/9/2000	8/2/2005	5 In-line solids	N	QA1Cat1	X	X	X			X			X	X	
City Outfall Basin 47 Inline Solids Sampling	WLCOFJ02	Yes	Source tracing	9.8 - 9.9	6/28/2006	6/28/2006	4 In-line solids	N	Cat 1 QA1 Grain size Cat 2	X					X					
City Outfall Basin 48 Inline Solids Sampling	WLCOFJ02	Yes	Source tracing	7.2	6/20/2006	6/20/2006	1 In-line solid	N	Cat 1 QA1 Grain size & metals Cat 2	X	X		X	X	X	X				
City Outfall Basin 49 Inline Solids Sampling and Basin Priority Reassessment	WLCOFJ02	Yes	Source tracing	6.3 - 6.4	7/25/2005	7/25/2005	2 In-line solids	N	Cat 1 QA1		X									
City Outfall Basin 52A Catch Basin Solids Sampling Adjacent to Mar Com	WLCOFJ02	Yes	Source tracing	5.5 - 5.6	7/25/2005	7/25/2005	2 In-line solids	N	Cat 1 QA1 Metals Cat 2		X	X			X			X	X	
City Outfall Basin M-2 Dry-Weather Flow Sampling	WLCOFJ02	No, Cat2	Source tracing	8.8	9/19/2002	8/3/2005	4 Waters	N	Cat 2		X									
City Outfall Basin M-3 Dry-Weather Flow Sampling	WLCOFJ02	No, Cat2	Source tracing	9.1 - 9.3	9/19/2002	9/1/2005	5 Waters	N	Cat 2		X									

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Survey ID	Included in Stats?	Study Objective	River Mile(s)	Begin Date	End Date	Number of Samples	Composite (Y/N)	QA Category	Conv.	Metals	SVOCs (includes PAH & Phthalates)	PAH only	Phthalates Only	PCBs (Aroclors)	Pest.	VOCs	TPH-Gas	TPH-Diesel & Oil	Other
City Outfall Basin S-5 Inline Solids Sampling	WLCOFJ02	Yes	Source tracing	9 - 9.3	7/26/2005	7/26/2005	2 In-line solids	N	Cat 1 QA1 Phthalates & metals Cat 2		X		X	X						
City Outfall Basin S-6 Inline Solids Sampling	WLCOFJ02	Yes	Source tracing	8.4 - 8.6	6/20/2006	7/19/2006	4 In-line solids	N	Cat 1 QA1 Grain size & metals Cat 2	X	X		X	X	X					
Basin 19 Stormwater sampling	WLCOFJ02	Yes	Source tracing	8.3	3/8/2006	2/14/2007	8 Waters	Y	All 8082 data QA1Cat1 8270 data, except FY05/06 Event 3 data QA1Cat1 All else Cat 2 Will probably need reports to determine which 8270 data is Cat 1/2	X	X	X			X					
Basin 53 Stormwater sampling	WLCOFJ02	Yes	Source tracing	5.1	1/25/2008	3/13/2008	3 Composite waters plus one duplicate	Y	8270 & TOC data Cat 1 QA 1 All else Cat 2	X	X	X			X					X
Port of Portland Terminal 1 North Catch Basin Solids Data	WLCOFJ02	Yes	Source tracing	10.5 - 10.6	5/18/2007	5/18/2007	2 Catch basin solids	N	SVOC Cat 1 QA 1 All other data Cat 2	X	X	X			X					
Siltronic catch basin and stormwater - June 2001, Nov 2006, Feb 2007	WLCSLF01	Yes	Stormwaters and 1 catch basin solid	6.4 - 6.7	6/19/2001	2/14/2007	9 Stormwaters 1 Catch basin solid	Y	TOC & Metals Cat 1 QA 1 All other data Cat 2	X	X		X	X	X		X		X	
Gunderson Outfall Effluent and Seep Monitoring (additional data)	WLCGND05	Yes	Outfall and seep monitoring	8.5 - 9.1	1/28/1999	2/16/2007	55 Waters 132 Catch basin solids	N	Cat 1 QA1		X		X	X	X		X	X	X	X
T4 Spring 2007 outfall monitoring	WLCT4C07	Yes	Stormwater sampling	4.2 - 5.1	3/24/2007	5/20/2007	29 Stormwaters from 7 locations	N	Cat 1 QA 1 except 1668 data which is Cat 2	X	X		X	X	X	X				X
City of Portland 1200Z TSS monitoring data	WLC1200Z	No, Cat2	Outfall monitoring	2.1 - 10.8	05/21/1993	11/16/2007	777 Samples from 71 locations	N	Cat 2	X										
Chevron Willbridge Distribution Center catch basin monitoring	WLCCWK06	Yes	Catch basin solids	7.6 - 7.7	11/16/2006	11/21/2006	5 Catch basin solids	Y	Cat 1 QA 1 except 8081 data which is Cat 2	X	X	X			X	X	X			
Former Chevron Willbridge Asphalt Plant Catch Basin	WLCCAI06	Yes	Catch basin monitoring	7.8 - 8.1	9/5/2006	2/22/2007	2 Stormwaters, 7 catch basin solids, & 2 in-line solids	Y	Catch Basins Cat 2 Waters Cat 1 QA1	X	X	X	X	X	X	X	X	X	X	
Kinder Morgan Linnton catch basin (10/06) and stormwater (2007)	WLCKLJ06	Yes	Catch basin and stormwater monitoring	4.0 - 4.2	10/12/2006	10/24/2007	3 Waters 5 Catch basin solids	N	CBSO 8270 (PAH & phthalates) Cat 2 All else Cat1 QA 1	X	X		X	X	X		X	X	X	
Kinder Morgan Willbridge stormwater and catch basin - May 2007	WLCKWE07	Yes	Catch basin and stormwater monitoring	7.4 - 7.5	5/11/2007	11/13/2007	4 Waters 3 Catch basin solids	N	Grain size & 8270 Cat 2 All else Cat 1 QA 1		X		X	X	X	X	X	X	X	
2005 stormwater sampling at the Arco/BP site	WLCARD05	Yes	Source control	4.8 - 4.9	4/25/2005	7/28/2005	2 Waters 3 Catch basin solids	N	Cat 1 QA1 Except Water TPH-G & -D data which is Cat 2		X		X				X	X	X	

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Survey ID	Included in Stats?	Study Objective	River Mile(s)	Begin Date	End Date	Number of Samples	Composite (Y/N)	QA Category	Conv.	Metals	SVOCs (includes PAH & Phthalates)	PAH only	Phthalates Only	PCBs (Aroclors)	Pest.	VOCs	TPH-Gas	TPH-Diesel & Oil	Other
Arkema Stormwater February 15, 2007	C250-0101_WO1	Yes	Stormwater monitoring	7.1 - 7.3	2/15/2007	2/15/2007	4 Stormwaters	N	QA2Cat1	X	X		X			X				
Arkema Stormwater March 2, 2007	C250-0101_WO2	Yes	Stormwater monitoring	7.1 - 7.3	3/2/2007	3/2/2007	4 Stormwaters	N	QA1Cat1	X	X		X			X				
Arkema Stormwater March 19, 2007	C250-0101_WO3	Yes	Stormwater monitoring	7.1 - 7.3	3/19/2007	3/19/2007	4 Stormwaters	N	QA1Cat1	X	X		X			X				
Arkema Stormwater June 5, 2007	C250-0101_WO4	Yes	Stormwater monitoring	7.1 - 7.3	6/5/2007	6/5/2007	2 Stormwaters	N	QA1Cat1	X	X		X			X				
Arkema Stormwater August 14, 2007	C250-0101_WO5	No, missing XY	Stormwater monitoring	7.1 - 7.3	8/14/2007	8/14/2007	1 Stormwater	N	QA1Cat1	X	X		X			X	X			X
Rhône-Poulenc Outfalls 22B and 22C Effluent	WLCRPI04	Yes	Stormwater monitoring	6.8 - 6.9	10/1/1993	9/23/2004	2 Stormwaters	N	QA2Cat1, except diesel & oil: QA2Cat2	X	X	X				X	X		X	
Willbridge Terminals Catch Basin Solids for Stormwater Source Control	WLCWTI07	Yes	Source control	7.7	9/24/2007	9/26/2007	12 Catch basin solids	N	Cat1	X	X	X			X	X	X	X	X	

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Comment	Reference[a]	Phase Code
ABF Freight	Conventionals: TOC, Grain Size. Herbicides also analyzed	Oregon Department of Environmental Quality ABF Freight Site Discovery file	ODEQ0005
Advanced American Construction Property		MFA, 2007	MFA0006
Anderson Bros., Stormwater, March 2007		Wohlers Environmental Services, Inc., 2007	WOH0003
Ashland Chemical	Conventionals: TOC, Grain Size. Herbicides also analyzed	Oregon Department of Environmental Quality Ashland Chemical Site Discovery file	ODEQ0006
Boydstun Metal Works at Burgard Industrial Park	VOC limited to PCE & breakdown product.	Bridgewater Group, Inc. 2002	BGI0001
Calbag Metals/Former ACME Supply and Trading Company	Some samples composited, not all. Conventionals: pH, TSS, oil & grease TPH results from NWTPH-HCID	Creekside Environmental Consulting, LLC. 2005, 2006	CEC0001, CEC0002
Chapel Steel	Conventionals: TOC. Herbicides also analyzed	Oregon Department of Environmental Quality Chapel Steel Site Discovery file	ODEQ0008
Christenson Oil	Conventionals: pH, TSS, Oil & Grease	Wohlers Environmental Services, Inc. 2007	WOH0001, WOH0002
Consolidated Metco-Rivergate-Response	Conventionals: pH, TSS, Oil & Grease Metals: Cu, Pb, Zn only	Kennedy/Jenks Consultants, 2007	KJC0003
Container Recovery	Conventionals: TOC, Grain Size. Herbicides also analyzed	Oregon Department of Environmental Quality Container Recovery Site Discovery file	ODEQ0009
Fred Devine Diving & Salvage, Inc.	Conventionals: TSS, COD, pH, Oil & Grease, temperature	EVREN Northwest 2007; Evergreen Environmental Management, Inc.	EVN0001, EEM0001
Freightliner Truck Manufacturing	CBSO are composites, SW are not. Conventionals: TSS, Hexavalent chrome	Maul Foster & Alongi, 2007	MFA0008
Galvanizers Company	Conventionals: TOC	Anchor Environmental, LLC. 2007	AEL0006
Stormwater-PGE-Forest Park		City of Portland, 2007	COP0002
Linnton Plywood Association	Only TPH-Gas & diesel ranges reported	CH2M Hill, 2002	CH20006
McCall Oil, RI, July 2004	Conventionals: TOC, TSS	Anchor Environmental, LLC., 2004	AEL0005
Northwest Pipe Company	Conventionals: TSS, Oil & grease	CH2M Hill, 2005	CH20007
Zidell Property at 5200 NW Front Avenue	Only TPH-Gas & diesel ranges reported	Maul Foster Alongi, 1989	MFA0009
Oregon Steel Mill	Conventionals: TSS, pH, DO, Redox, conductivity, pH, Redox potential, temperature, turbidity.	Exponent, 2003 Hart Crowser 1998	EXP0003, HCI0014

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Comment	Reference[a]	Phase Code
Owens Corning Linnton Site	Conventionals: TSS, oil & grease, pH, TOC. TPH-Gas result from NWTPH-HCID	Kennedy/Jenks Consultants, 2001, 2002, & 2007	KJC0001, KJC0002
Carson Oil	Conventionals: TOC, grain size Herbicides also analyzed	Oregon Department of Environmental Quality Carson Oil Site Discovery file	ODEQ0007
Owens-Corning, 3750 N.W. Yeon Avenue	Conventionals: TOC, Grain Size. Herbicides also analyzed	Oregon Department of Environmental Quality Site Discovery file	ODEQ0010
Paco / Sulzer Pumps	Some CBSO samples composited, not all. Conventionals: TSS, TOC, grain size, oil & grease.	Sterling Technologies, 2006; GeoDesign 2007; City of Portland 2007	STT0001, GDI0001, COP0001
USCG catch basin sampling	Conventionals: pH, flow, conductivity, temperature, turbidity, Na & K	TEC Inc., 2006	TEC0001
UPRR Albina	TPH-Gas result from NWTPH-HCID Butyltins also analyzed	Jacobs Engineering, 2000	JBE0003
GE 2007 stormwater outfall monitoring	Conventionals: TOC, DOC, TSS TPH - Only diesel range reported PCB congeners also reported.	AMEC, 2008	AMEC0001
City Outfall Basin 19 Inline Solids Sampling at the Former Calbag Metals		City of Portland, 2008	COP0004
City Outfall Basin 22B Inline Solids Evaluation	1 of the 4 samples is a composite. Conventionals: TOC. Herbicides also analyzed.	City of Portland, 2008	COP0008
City Outfall Basin 22C Northwest Drainage Pond Evaluation	Conventionals: TOC, volatile residue PCDD/Fs & Herbicides also reported	City of Portland, 2007	COP0007
City Outfall Basin 22C, Inline Solids Sampling in the Vicinity of Kopp	1 of the 7 samples is a composite. Conventionals: TOC, Cyanide	City of Portland, 2007	COP0006
City Outfall Basin 46 Inline Solids Sampling in the Vicinity of the Union Pacific Railroad Albina Yard	Conventionals: TOC Butyltins also analyzed	City of Portland, 2006	COP0010
City Outfall Basin 47 Inline Solids Sampling	Conventionals: TOC, grain size	City of Portland, 2007	COP0017
City Outfall Basin 48 Inline Solids Sampling	Conventionals: TOC, grain size	City of Portland, 2008	COP0011
City Outfall Basin 49 Inline Solids Sampling and Basin Priority Reassessment	Mercury only	City of Portland, 2006	COP0009
City Outfall Basin 52A Catch Basin Solids Sampling Adjacent to Mar Com		City of Portland, 2006	COP0012
City Outfall Basin M-2 Dry-Weather Flow Sampling	Zinc only	City of Portland, 2006	COP0013
City Outfall Basin M-3 Dry-Weather Flow Sampling	Metals: Cu, Pb, Zn	City of Portland, 2006	COP0014

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Comment	Reference[a]	Phase Code
City Outfall Basin S-5 Inline Solids Sampling		City of Portland, 2006	COP0015
City Outfall Basin S-6 Inline Solids Sampling	Conventionals: TOC, grain size	City of Portland, 2008	COP0016
Basin 19 Stormwater sampling	7 of the 8 samples are composites Conventionals: Oil & grease, nitrate, N-ammonia, total kjeldahl nitrogen, orthophosphate, total phosphorus, hardness, conductivity, TDS, TSS, temperature, pH, BOD, COD, hardness, E. Coli	City of Portland, 2008	COP0003
Basin 53 Stormwater sampling	4 of the 6 samples are composites Conventionals: TSS, TOC, pH, conductivity, temperature PCB Congeners also reported	City of Portland, 2008	COP0018
Port of Portland Terminal 1 North Catch Basin Solids Data	Conventionals: Grain size, TOC	City of Portland, 2007	COP0005
Siltronic catch basin and stormwater - June 2001, Nov 2006, Feb 2007	CBSO was a composite, stormwaters were not. Conventionals: TDS, cyanide, TOC	AMEC, 2003, 2004, 2005	AMEC0003
Gunderson Outfall Effluent and Seep Monitoring (additional data)	Tributyl tin (only) also analyzed	Kleinfelder, 2008	KFI0008
T4 Spring 2007 outfall monitoring	Conventionals: TOC, DOC, turbidity, Oil & Grease PCB congeners also analyzed	Ash Creek Assoc., 2007	
City of Portland 1200Z TSS monitoring data	TSS data	City of Portland data	
Chevron Willbridge Distribution Center catch basin monitoring	Conventionals: Grain size, cyanide	Arcadis, 2007	ARCB0002
Former Chevron Willbridge Asphalt Plant Catch Basin	Solid samples were composites Conventionals: TSS, grain size, cyanide. Some SVOCs full list, others PAH/Phthalates only	Arcadis, 2007	ARCB0001
Kinder Morgan Linnton catch basin (10/06) and stormwater (2007)	Conventionals: TSS, TOC VOC: Benzene only	Delta Environmental Assoc.	
Kinder Morgan Willbridge stormwater and catch basin - May 2007	Conventionals: TSS, TOC VOC: BTEX, n-, sec-butlybenzenes, n-propylbenzene, & 1,2,4-trimethylbenzene only	Delta Environmental Assoc.	
2005 stormwater sampling at the Arco/BP site		URS, 2006	URS0003

Table 4.4-5. Stormwater and Catch Basin Investigations under the JSCS Program.

Survey Name	Comment	Reference[a]	Phase Code
Arkema Stormwater February 15, 2007	TSS, perchlorate, Mg, hexchrome, PAH, pesticides	ESI 1/10/2007, Arkema Report 2_stormwater	
Arkema Stormwater March 2, 2007	TSS, perchlorate, Mg, hexchrome, PAH, pesticides	ESI 1/10/2007, Arkema Report 3_stormwater	
Arkema Stormwater March 19, 2007	TSS, perchlorate, Mg, hexchrome, PAH, pesticides	ESI 1/10/2007, Arkema Report 4_stormwater	
Arkema Stormwater June 5, 2007	TSS, perchlorate, pH, Mg, hexchrome, PAH, pesticides	ESI 1/10/2007, Arkema Report 6 & 7_stormwater	
Arkema Stormwater August 14, 2007	Solids, Hg, PCDD/Fs, PAH, PCP, pesticides, herbicides, VOC	ESI 1/10/2007, Arkema Report 9_stormwater	
Rhône-Poulenc Outfalls 22B and 22C Effluent		Rhône-Poulenc Outfalls 22B and 22C Effluent	AMEC0001
Willbridge Terminals Catch Basin Solids for Stormwater Source Control		Upland Stormwater Source Control Status Report	DLT0001

Notes:

[a]See Appendix A1.

BOD - biological oxygen demand
BTEX - benzene, toluene, ethylbenzene, and xylenes
CBSO - catch basin solid
COD - chemical oxygen demand
DO - dissolved oxygen
DOC - dissolved organic carbon
FY - fiscal year
JSCS - Joint Source Control Strategy
NWTPH - Northwest total petroleum hydrocarbons
QA - quality assurance
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
PCP - pentachlorophenol
SVOC - semivolatile organic compound
TDS - total dissolved solids
TOC - total organic carbon
TPH - total petroleum hydrocarbon
TSS - total suspended solids
VOC - volatile organic compound
XPA - expanded preliminary assessment

Table 4.4-6. Non-LWG Summary Statistics for Sediment Trap and Stormwater.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Solid															
Metals															
Arsenic	7440-38-2	mg/kg	138	134	97.1	1.38	259	21.6	9.61	65.1	1.38	259	21.1	9.53	62.7
Chromium	7440-47-3	mg/kg	176	176	100	15.1	517	117	91.8	301	15.1	517	117	91.8	301
Copper	7440-50-8	mg/kg	184	184	100	23.9	13200	1370	413	5550	23.9	13200	1370	413	5550
Zinc	7440-66-6	mg/kg	184	184	100	135	17300	2410	1240	8000	135	17300	2410	1240	8000
Butyltins															
Tributyltin ion	36643-28-4	µg/kg	16	14	87.5	21	77	39.9	34.5	64.7	1.19 U	77	35	32.5	62.8
PCBs[c]															
Total PCBs	TOTPCBS	µg/kg	192	127	66.1	11 T	16700	764	266	3350	1.55 UT	16700	514	94.5	2510
Pesticides															
Aldrin	309-00-2	µg/kg	36	2	5.56	1.1	70.2	35.7	35.7	66.7	1.1	144 U	16.4	2.74	55.1
Dieldrin	60-57-1	µg/kg	36	5	13.9	4.42	47.1	24	12	47.1	1.9 U	463 U	21.4	3.94	47.8
Total Chlordanes	TOTCHLDANE	µg/kg	36	4	11.1	2.8 A	18 JT	9.38	8.35	17.3	0.93 UA	144 UA	16.9	4.34	47.2
DDx	E966176	µg/kg	36	15	41.7	8.91 A	360 A	58	37.4	163	3.95 UA	718 UA	72.9	39.8	277
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/kg	146	138	94.5	213 A	755000 A	26300	4900	66000	213 A	755000 A	24900	4690	61300
Phthalates															
Bis(2-ethylhexyl) phthalate	117-81-7	µg/kg	154	145	94.2	150	475000	34500	20900	101000	60 U	475000	32700	17500	99100
Water															
Metals															
Arsenic (dissolved)	7440-38-2	µg/L	30	3	10	1.08	5.49	3.42	3.7	5.31	0.028 U	1000 U	33.9	0.425	277
Arsenic	7440-38-2	µg/L	87	42	48.3	0.18 J	20.2	2.9	1.5	8.04	0.028 U	1000 U	7.36	0.5	6.88
Chromium (dissolved)	7440-47-3	µg/L	32	11	34.4	0.2	5	1.24	0.9	3.16	0.129 U	5 U	1.35	0.98	2.5
Chromium	7440-47-3	µg/L	113	82	72.6	0.512	88.7	7.91	3	40	0.129 U	88.7	6.03	2.32	29
Copper (dissolved)	7440-50-8	µg/L	40	28	70	2.46	48	12.8	8.27	36.7	0.788 U	48	10.4	5.95	32.4
Copper	7440-50-8	µg/L	139	128	92.1	0.81	1400	72.3	20.5	242	0.81	1400	66.9	18.4	207
Zinc (dissolved)	7440-66-6	µg/L	40	39	97.5	2.34	24000	1980	240	8640	2.34	24000	1930	232	8620
Zinc	7440-66-6	µg/L	144	141	97.9	2.87 J	48200	1670	260	7650	0.193 U	48200	1640	255	7550
Butyltins															
Tributyltin ion	36643-28-4	µg/L	2	1	50	0.00544	0.00544	0.00544	0.00544	--	0.000424 U	0.00544	0.00283	0.00283	0.00518
PCBs[c]															
Total PCBs	TOTPCBS	µg/L	64	2	3.13	0.029 JT	1.4 T	0.715	0.715	1.33	0.00946 UT	1.72 UT	0.197	0.195	0.5
PCDD/Fs															
TCDD TEQ (ND = 0)	TEQ_DIOXIN.0	pg/l	2	1	50	0.042 T	0.042 T	0.042	0.042	--	0.042 T	8.9 UT	2.25	2.25	4.23
Pesticides															
Aldrin	309-00-2	µg/L	10	2	20	0.00021 J	0.00026 J	0.000235	0.000235	0.000258	0.00011 UJ	0.0976 U	0.0108	0.00195	0.0381
Dieldrin	60-57-1	µg/L	10	0	0	--	--	--	--	--	0.0004 U	0.0976 U	0.0108	0.00195	0.0381
Total Chlordanes	TOTCHLDANE	µg/L	10	1	10	0.0017 JT	0.0017 JT	0.0017	0.0017	--	0.00073 UT	0.0976 UA	0.0109	0.00158	0.0381
DDx (dissolved)	E966176	µg/L	14	13	92.9	0.00213 A	0.247 A	0.0415	0.0286	0.128	0.00213 A	0.247 A	0.0387	0.0272	0.118
DDx	E966176	µg/L	24	18	75	0.00044 JT	4.48 A	0.592	0.314	1.85	0.00044 JT	4.48 A	0.456	0.264	1.3

Table 4.4-6. Non-LWG Summary Statistics for Sediment Trap and Stormwater.

						Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**CAS RN**	**Units**	**N**	**N Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Polycyclic Aromatic Hydrocarbons															
Total PAHs	130498-29-2	µg/L	108	85	78.7	0.00509 T	31.8 JA	0.923	0.221	2.09	0.00509 T	31.8 JA	0.79	0.127	2.09
Phthalates															
Bis(2-ethylhexyl) phthalate	117-81-7	µg/L	87	63	72.4	0.734	40 J	3.6	2.2	9.24	0.27 U	40 J	2.9	1.8	9.17

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier or descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, the average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available regardless of their qualification.

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

-- data not available.
BaPEq - benzo(a)pyrene equivalent
cPAH- carcinogenic polycyclic aromatic hydrocarbon
DL - detection limit
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan

Table 4.4-7. Pretreatment Permittees where Industrial Wastewater Could Overflow to Portland Harbor through Control Structures — Status as of February 2011.

Type	Permittee	Address	Outfall[a]	RM	Permit Period	Basis of Permit Limits	COIs[b]
Food and Beverage-Related Industries	Bridgeport Brewing Co.[c]	1313 NW Marshall	11	11.4W	1990-current[d]	Local	pH, BOD, TSS
	Ocean Beauty Northwest Inc	2450 NW 28th	17	9.8W	2001-current	Local	pH, BOD, TSS
	Portland Brewing Co / Pyramid Brewing Inc	2730 NW 31st	17	9.8W	1990-current	Local	pH, BOD, TSS
Industrial Laundries	Aramark Uniform Services/ Aratex Industrial Laundry	1848 NW 23rd Ave	15	10.4W	1994-current[d]	Local	pH, oil & grease, metals, volatile organics
	Coverall Uniform Supply (Old)	2522 NE MLK Jr Blvd	44A	11.2E	1991-1993	Local	pH, oil & grease, metals, volatile organics
	Hospital Linen Svc.	1804 NW Northrup	11	11.4W	1993-1998	Local	pH, oil & grease, BOD, metals
	Portland Hospital Svc.	1804 NW Northrup	11	11.4W	1999-2000	Local	pH, oil & grease
Rubber Processing Industries	Cascade Rubber Products	1828 NW Quimby	11	11.4W	1989-1995	Local	pH, oil & grease, metals
	Griffith Rubber Mills	2439 NW 22nd Ave	15	10.4W	1989-1990	Local	pH, oil & grease, metals
Bag Manufacturing	Chase Packaging Corp/ Union Camp Corporation	2550 NW Nicolai	15	10.4W	1989-1996	Local	pH, oil & grease, metals
Photographic Processing, Printing and Press-Related Industries	Fred Meyer Photo Service	124 NW 20th Ave	11	11.4W	1990-1992	Local	pH, metals
	Graphic Arts Center	2000 NW Wilson	15	10.4W	1997-2001	Local	pH, metals
	Oregonian Publishing Co	1621 SW Taylor St	11	11.4W	1997-current[d]	Local	pH, oil & grease, metals
Battery Repair	Wagstaff Battery	2124 N Williams Ave	NA	NA	1992-1996	Non-Discharger[e]	NA - industrial wastewater discharges are prohibited
Paint Formulation	Ameritone Paint Corp	2100 NW 22nd Ave	NA	NA	1993-1995	Non-Discharger[f]	NA - industrial wastewater discharges are prohibited
	Drew Paints	1525 NW 23rd	NA	NA	1998-current	Non-Discharger[f]	NA - industrial wastewater discharges are prohibited
Transportation-Related Industries	Boise Cascade Trucking	2017 NW Vaughn	13	11.0W	1988-1995?[g]	Local	pH, oil & grease
	Consolidated Freightways (NW)	1633 NW 21st Ave	15	10.4W	1988-1997	Local	pH, oil & grease
Groundwater-Related Discharges	Don Rasmussen Co BMW	2001 SW Jefferson	11	NA	2005-2010[d]	Remediation Site	Permitted but no discharge occurred
	Trimet Butler Blocks	1715 SW Salmon	11	11.4W	1994-1998	Remediation Site	pH, oil & grease, lead
	Trimet Light Rail	2140 SW Jefferson	11	11.4W	1993-1997	Construction Dewatering	pH, oil & grease
	Terra Vac	330 NW 23rd	15	10.4W	1996-1998	Remediation Site	pH, oil & grease, BTEX, lead
	Unocal 4548	1747 SW Jefferson	11	11.4W	1993-1998	Remediation Site	pH, oil & grease, BTEX, metals
Metals-Related Industries (Foundries, Metals Coating, etc)	Blackline Inc	2424 NW St Helens	17	9.8W	1994-current	Categorical	pH, oil & grease, metals, cyanide, TTOs
	ESCO Corporation	2141 NW 25th Ave	15	10.4W	1998-current[d]	Non-Discharger[e]	NA - industrial wastewater discharges are prohibited; however, batch discharges have been approved in the past. COIs are pH, oil & grease, metals and TTOs
	ESCO Corporation (Plant #3)	2211 NW Brewer	15	10.4W	1993-current[d]	Non-Discharger[f]	NA - industrial wastewater discharges are prohibited; however, batch discharges have been approved in the past. COIs are pH, oil & grease, metals and TTOs
	Galvanizers	2406 NW 30th	NA	NA	<1988-current	Non-Discharger[e]	NA - industrial wastewater discharges are prohibited
	King Cycle Group	2801 NW Nela	NA	NA	2006 - current	Non-Discharger[e]	NA - industrial wastewater discharges are prohibited
	Oregon Retinners	2712 N Mississippi	NA	NA	1993-2007	Non-Discharger[e]	NA - industrial wastewater discharges are prohibited
	Pacific States Galvanizing	820 NW 15th Ave / 805 NW 14th Ave.	NA	NA	1986-1996	Non-Discharger[e]	NA - industrial wastewater discharges are prohibited
	Rejuvenation Inc	2550 NW Nicolai	15	10.4W	2000-current[d]	Categorical	pH, oil & grease, metals, cyanide, TTOs
	Specialty Finishes Inc	3805 N Mississippi	46	10.5E	1999-2003	Categorical	pH, oil & grease, metals, cyanide, TTOs
	Wade Manuf. Co. Foundry	2420 NW 31st	NA	NA	1992-2002	Non-Discharger[e]	Process wastewater discharges are prohibited except for air compressor condensate

Source: City of Portland Annual Pretreatment Reports from 1983 - 2009. Additional pretreatment records consulted to identify permit period and COIs.

Table 4.4-7. Pretreatment Permittees where Industrial Wastewater Could Overflow to Portland Harbor through Control Structures — Status as of February 2011.

Type	Permittee	Address	Outfall[a]	RM	Permit Period	Basis of Permit Limits	COIs[b]

Notes:

[a]Outfall where potential diversion could discharge to river

[b]COIs identified as those chemicals for which pretreatment permit limits were established

[c]Location of connection to City system uncertain, may not discharge to pipe with a downstream diversion structure

[d]Site discharge directed to tunnel in 2006

[e]Permitted based on procedures contained in the CoP's approved pretreatment program. NOTE: these facilities elect not to discharge

[f]Federal mandate to permit this facility based on its regulated process and zero-discharge limitation (i.e., mandated not to discharge wastewater from its process)

[g]Non-Significant Industrial Users not included in 1993-1995 Annual Reports; no records of when permit was terminated but facility not listed in 1996 Annual Report

BOD - biological oxygen demand
BTEX - benzene, toluene, ethylbenzene, and xylenes
COI - contaminant of interest
COP - City of Portland
NA - not applicable
RM - river mile
TSS - total suspended solids
TTO - total toxic organics

Table 4.5-1. Active NPDES Permitted Discharges to the Lower Willamette River, Outside the Study Area.[a]

		Location		Permit		River
File No.	**Facility**	**Latitude**	**Longitude**	**Category**	**Type**	**Mile**
Major NPDES - Individual Permit						
84069	BOISE WHITE PAPER, L.L.C.	45.85	-122.8	DOM	NPDES-DOM-A2	MC
16590	CLACKAMAS COUNTY SERVICE DISTRICT #1	45.4398	-122.6424	DOM	NPDES-DOM-A3	18.6
70735	PORTLAND, CITY OF	45.4213	-122.6579	DOM	NPDES-DOM-Ba	20.1
89700	TRI-CITY SERVICE DISTRICT	45.3759	-122.5892	DOM	NPDES-DOM-Ba	25.1
108013	GRESHAM, CITY OF; FAIRVIEW, CITY OF; MULTNOMAH COUNTY	45.5164	-122.5353	STM	NPDES-DOM-MS4-1	multiple
72634	BLUE HERON PAPER COMPANY	45.3562	-122.6105	IND	NPDES-IW-B01	25.9
21489	WEST LINN PAPER COMPANY	45.3564	-122.6154	IND	NPDES-IW-B01	26.0
Minor NPDES - Individual Permit						
30554	FOREST PARK MOBILE VILLAGE LLC	45.3382	-122.641	DOM	NPDES-DOM-Da	26.0
78980	SCAPPOOSE, CITY OF	45.7526	-122.8559	DOM	NPDES-DOM-Da	MC
109444	ANKROM MOISAN ASSOCIATED ARCHITECTS, INC.	45.479	-122.6728	IND	NPDES-IW-B15	15.4
110220	GSL PROPERTIES, INC.	45.5174	-122.6726	IND	NPDES-IW-B16	12.7
113611	I. WATER SERVICES, INC.	45.4994	-122.6706	IND	NPDES-IW-B16	14.0
General Permits						
104545	NORCREST CHINA COMPANY; WHEAT MARKETING CENTER, INC.	45.5292	-122.673	IND	GEN01	11.8
38192	HERCULES INCORPORATED	45.5473	-122.709	IND	GEN01	12.0
48480	LAKE OSWEGO, CITY OF	45.3859	-122.6325	IND	GEN02	23.2
78985	GLACIER NORTHWEST, INC.	45.75	-122.8755	IND	GEN10	MC
14700	NORTHWEST AGGREGATES CO.	45.787	-122.8506	IND	GEN10	MC
76839	ROSS ISLAND SAND & GRAVEL CO.	45.4927	-122.6564	IND	GEN10	14.5
113907	SCAPPOOSE SAND AND GRAVEL CO.	45.765	-122.8744	IND	GEN10	MC
107335	EAGLE STAR ROCK PRODUCTS, LLC	45.8706	-122.84	STM	GEN12A	MC
107661	LAKE SHORE CONCRETE CO.	45.4204	-122.6613	STM	GEN12A	20.0
120282	ACC OP (PSU COLLEGE STATION) LLC	45.5091	-122.6833	STM	GEN12C	13.2
119758	ANDERSEN CONSTRUCTION COMPANY	45.4197	-122.6725	STM	GEN12C	20.7
114072	CHESAPEAKE HOLDINGS MAC, LLC	45.3626	-122.6374	STM	GEN12C	24.1
118241	CITY LIGHTS DEVELOPMENT, LLC	45.5085	-122.688	STM	GEN12C	13.1
120538	CITY OF OREGON CITY PUBLIC WORKS	45.3709	-122.5855	STM	GEN12C	25.1
119537	CITY OF PORTLAND - BUREAU OF ENVIRONMENTAL SERVICES	45.4622	-122.6608	STM	GEN12C	16.7
119547	CITY OF PORTLAND, BES	45.423	-122.6591	STM	GEN12C	20.0
120514	COLUMBIA COUNTY TRANSIT DIVISION	45.87	-122.8144	STM	GEN12C	MC
115892	D.R. HORTON, INC. - PORTLAND	45.3617	-122.6344	STM	GEN12C	24.1
119796	DAN OBRIST EXCAVATION, INC.	45.7523	-122.8783	STM	GEN12C	MC
117004	DOUGLAS PARK, LLC	45.3539	-122.6457	STM	GEN12C	26.0
109884	ELK MEADOW DEVELOPMENT LLC	45.8706	-122.8343	STM	GEN12C	MC
117160	FIVE STAR BUILDERS	45.8607	-122.8383	STM	GEN12C	MC
117811	HOFFMAN CONSTRUCTION COMPANY OF OREGON	45.5195	-122.6812	STM	GEN12C	12.8
117139	ICON CONSTRUCTION & DEVELOPMENT, LLC	45.3375	-122.6111	STM	GEN12C	26.0
117931	ICON CONSTRUCTION & DEVELOPMENT, LLC	45.3379	-122.6236	STM	GEN12C	26.0
120223	KEN LEAHY CONSTRUCTION	45.7441	-122.8751	STM	GEN12C	MC
115102	KIEWIT - BILFINGER BERGER, AJV (KBB)	45.5074	-122.6627	STM	GEN12C	13.5
116690	LARRY OLSON	45.8485	-122.8213	STM	GEN12C	MC
118277	LEGACY HEALTH SYSTEM	45.5445	-122.6701	STM	GEN12C	11.3
119822	N CLACKAMAS PARKS & RECREATION DISTRICT	45.4394	-122.6413	STM	GEN12C	18.6
111942	NORTH MACADAM INVESTORS, LLC	45.4971	-122.6689	STM	GEN12C	14.2
119240	NURTURE 247 LIMITED PARTNERSHIP	45.5341	-122.6852	STM	GEN12C	11.1
116446	OLSON, LARRY	45.7685	-122.8803	STM	GEN12C	MC
119663	PACIFIC REALTY OF OREGON, LLC	45.3727	-122.5955	STM	GEN12C	25.0
111958	PARK PLACE DEVELOPMENT, INC.	45.3723	-122.5851	STM	GEN12C	25.1
113966	RENAISSANCE DEVELOPMENT CORPORATION	45.3648	-122.6321	STM	GEN12C	24.1
109786	RIDGECREST DEVELOPMENT III, LLC	45.8492	-122.8545	STM	GEN12C	MC
118889	ROSS ISLAND SAND & GRAVEL CO.	45.4818	-122.6631	STM	GEN12C	15.2
120368	SEMLING CONSTRUCTION INC	45.8383	-122.82	STM	GEN12C	MC
118952	SK COMPANY OF OREGON LLC	45.5044	-122.6637	STM	GEN12C	13.7
115743	SOUTH ROSE, LLC	45.3325	-122.6303	STM	GEN12C	26.0
119332	STACY AND WITBECK, INC.	45.53	-122.6605	STM	GEN12C	12.1
120333	THE KROGER CO	45.4709	-122.6874	STM	GEN12C	16.1
117303	THE LANDING AT MACADAM, LLC	45.4943	-122.6702	STM	GEN12C	14.4
116453	TRAMMELL CROW NW DEVELPMENT, INC.	45.6313	-122.769	STM	GEN12C	0.8
120332	TURNER CONSTRUCTION CO	45.5211	-122.6916	STM	GEN12C	11.2
120213	ZRZ REALTY COMPANY	45.5	-122.6702	STM	GEN12C	14.0
70725	PORTLAND, CITY OF	45.5975	-122.719	STM	GEN12C	multiple
111942	NORTH MACADAM INVESTORS, LLC	45.4971	-122.6689	STM	GEN12C	14.2
119542	MARTHA'S GREEN, INC.	45.4231	-122.6377	STM	GEN12C(AGENT)	19.4

Table 4.5-1. Active NPDES Permitted Discharges to the Lower Willamette River, Outside the Study Area.[a]

		Location		Permit		River
File No.	**Facility**	**Latitude**	**Longitude**	**Category**	**Type**	**Mile**
62795	OAK LODGE SANITARY DISTRICT	45.4241	-122.6518	STM	GEN12C(AGENT)	19.8
112041	PARKER PROPERTIES, INC.	45.3754	-122.5997	STM	GEN12C(AGENT)	24.8
119162	RIVERSIDE AT FINLEY, LLC	45.3875	-122.6202	STM	GEN12C(AGENT)	23.3
109995	ARCHER-DANIELS-MIDLAND COMPANY	45.4848	-122.6438	STM	GEN12Z	15.0
118557	BLOUNT, INC.	45.4018	-122.622	STM	GEN12Z	22.7
111529	BOISE WHITE PAPER, L.L.C.	45.8508	-122.884	STM	GEN12Z	MC
110997	CALAWAY PROPERTIES, LLC	45.8505	-122.8195	STM	GEN12Z	MC
118130	CALEDONIAN ALLOYS	45.4532	-122.6439	STM	GEN12Z	18.3
113927	COLUMBIA COUNTY LAND DEVELOPMENT SERVICES	45.8426	-122.8161	STM	GEN12Z	MC
111283	COLUMBIA GRAIN, INC.	45.6358	-122.769	STM	GEN12Z	0.8
117429	COLUMBIA RIVER STONE INC	45.3753	-122.585	STM	GEN12Z	25.1
107211	DARIGOLD, INC.	45.503	-122.6597	STM	GEN12Z	13.8
106750	EAST SIDE PLATING, INC.	45.5134	-122.663	STM	GEN12Z	13.1
107331	ESCO CORPORATION	45.6261	-122.8074	STM	GEN12Z	2.9
64905	EVRAZ INC. NA	45.6256	-122.7794	STM	GEN12Z	2.5
112645	FIRST STUDENT, INC.	45.7775	-122.8775	STM	GEN12Z	MC
107733	HARDER MECHANICAL CONTRACTORS INC	45.451	-122.637	STM	GEN12Z	18.3
103594	ICTSI OREGON, INC.	45.6319	-122.748	STM	GEN12Z	MC
70613	KINDER MORGAN BULK TERMINALS, INC.	45.6346	-122.771	STM	GEN12Z	1.2
109196	MCCORMICK PILING & LUMBER CO.	45.834	-122.8249	STM	GEN12Z	MC
116824	METRO	45.3711	-122.5886	STM	GEN12Z	25.1
100515	MILES FIBERGLASS & COMPOSITES INC.	45.363	-122.6007	STM	GEN12Z	25.4
62795	OAK LODGE SANITARY DISTRICT	45.4241	-122.6518	STM	GEN12Z	19.8
111331	OLDCASTLE APG WEST, INC.	45.5402	-122.6798	STM	GEN12Z	11.0
113693	OREGON TRANSFER CO.	45.4527	-122.6373	STM	GEN12Z	18.3
112042	PACIFIC COAST FRUIT COMPANY	45.5237	-122.6643	STM	GEN12Z	12.3
115817	PCC STRUCTURALS, INC.	45.4494	-122.6345	STM	GEN12Z	18.3
117878	RECOLOGY OREGON MATERIAL RECOVERY, INC.	45.3741	-122.5856	STM	GEN12Z	25.1
101733	STANLEY WORKS, THE	45.3996	-122.6234	STM	GEN12Z	22.7
110122	TRI-CITY SERVICE DISTRICT	45.3759	-122.5892	STM	GEN12Z	25.1
102121	UNION PACIFIC RAILROAD COMPANY	45.5436	-122.6811	STM	GEN12Z	10.9
108162	UNION PACIFIC RAILROAD COMPANY	45.4867	-122.6442	STM	GEN12Z	14.9
107609	US POSTAL SERVICE	45.5294	-122.6789	STM	GEN12Z	11.5
21489	WEST LINN PAPER COMPANY	45.3564	-122.6154	STM	GEN12Z	26.0
112909	WILSON OIL, INC.	45.8469	-122.8215	STM	GEN12Z	MC
104861	ZIDELL MARINE CORPORATION	45.5002	-122.6705	STM	GEN12Z	14.0
100103	PACIFIC SAW AND KNIFE COMPANY - DBA	45.465	-122.6355	STM	GEN12Z	14.2
107631	EDWARDS, MARJORIE L	45.4624	-122.7029	IND	GEN15A	20.2

Notes:

[a] DEQ Wastewater permits database accessed February 2011 (http://www.deq.state.or.us/wq/sisdata/facilitycriteria.asp)

Definitions:

DOM - Domestic
GEN01 - Cooling water/heat pumps
GEN02 - Filter backwash
GEN10 - Industrial wastewater - WPCF sand & gravel mining
GEN12A - Stormwater from gravel mining
GEN12C - Stormwater - NPDES construction more than 1 acre disturbed ground
GEN12C(AGENT) - Construction that disturbs more than one acre, issued by agent
GEN12Z - Stormwater - NPDES specific SIC codes
GEN15A - Petroleum hydrocarbon cleanups
IND - Industrial
MC - Multnomah Channel
NPDES-DOM-A1 - Sewage - 50 MGD or more
NPDES-DOM-A2 - Sewage - 25 MGD or more, but less than 50 MGD
NPDES-DOM-A3 - Sewage - 10 MGD or more but less than 25 MGD
NPDES-DOM-Ba - Sewage - 5 MGD or more but less than 10 MGD
NPDES-DOM-Da - Sewage - less than 1 MGD
NPDES-DOM-MS4-1 - Municipal Stormwater Permit
NPDES-IW-B01 - Pulp, paper, or other fiber pulping industry
NPDES-IW-B08 - Primary smelting and/or refining, ferrous and non-ferrous metals not elsewhere classified
NPDES-IW-B15 - Facilities not elsewhere classified which dispose of process wastewater (includes remediated groundwater)
NPDES-IW-B16 - Facilities not elsewhere classified which dispose of non-process wastewaters
STM - Stormwater

Table 4.5-2. Major Historical Sources of Industrial Wastes in the Willamette River Basin Upriver from Portland Harbor (OSSA 1967b).

Source	Receiving Stream	RM	Type of Waste	Present Treatment	Sanitary Waste Disposal	Needed Action
Weyerhaeuser Company Lumber and Plywood	Coast Fork	187	Glue wastes and log pond overflow	Discharge to log pond	Septic tank, drainfield	(4) (5)
Bohemia Lumber Co.	Row River (Culp Creek)	187	Glue wastes and log pond overflow	Waste through 400-yard settling ditch	Septic tank, drainfield	(4) (5)
Hines Lumbar Co. (Westfir)	N. Fork of Middle Fork Willamette	187	Glue wastes and log pond (in river)	None	Septic tank, drainfield	(4) (5)
Springfield Slaughter Plant	Willamette	184	Slaughterhouse wastes	Screening and holding pond		Study by OSSA to determine adequacy of treatment.
Wildish Sand and Gravel Co.	Willamette	184	Gravel removal and process wash water	10-acre holding pond for silt removal and gravel removal operations confined to areas inside berms (provides adequate interim control).	Septic tank, drainfield	Permanent waste control facilities for all waste waters by June 1967.
Natron Plywood	Willamette	184	Glue wastes	50' x 50' lagoon with discharge to slough 1.5 miles from main Willamette	Septic tank, drainfield	(5)
Georgia Pacific Co. (Springfield)	Willamette	184	Glue wastes and log pond overflow	Glue wastes to city	City	(4) (5)
Weyerhaeuser Corp. (Springfield)	McKenzie	172	Kraft mill wastes and log pond discharge	Settling ponds, aerated lagoon, land disposal, aerated log pond	City	Continued surveillance
Georgia Pacific Corp. (Junction City)	Willamette	164	Glue wastes	Settling channels to Flat Creek	Septic tank, drainfield	(5)
Barker-Willamette Lumber Co.	Amazon Creek	146	Glue wastes	Disposal field	Septic tank, drainfield	(5)
International Paper Company	Long Tom	146	Glue wastes and log pond overflow	Settling tank to Noel Creek	Septic tank, drainfield	(4) (5)
Evans Products Co. (Corvallis)	Willamette	132	Hardboard plant wastes batter separator plant wastes	Primary settling pond	Septic tank, drainfield	Secondary treatment or equivalent control of all waste discharges by May 1968 (engineering study underway) (8)

Table 4.5-2. Major Historical Sources of Industrial Wastes in the Willamette River Basin Upriver from Portland Harbor (OSSA 1967b).

Source	Receiving Stream	RM	Type of Waste	Present Treatment	Sanitary Waste Disposal	Needed Action
Brown and Company (Corvallis)	Willamette	132	Process water from repulping of newsprint for production of bituminous pipe	None	Septic tank, drainfield	Secondary treatment or equivalent control of all waste discharges by May 1968 (plans underway for development of completely closed system)
Vancouver Plywood Corp. (Albany)	Calapooya	120	Glue wastes	Waste washed to storm drain	City	(5)
Steen Bros. Meat Co.	Calapooya	120	Slaughterhouse wastes	Septic tank and drainfield	Septic tank, drainfield	Study by OSSA to determine adequacy of present facilities.
Oregon Metallurgical Co. (Albany)	Willamette	119	Zirconium processing	pH adjustment, discharge to Oak Cr.	Septic tank, drainfield	OSSA study to determine needs (have retained engineering consultant to design treatment and control facilities for proposed expansion). (8)
Wah Chang Corp. (Albany)	Willamette	119	Process water from production of rare earth metals	pH adjustment and chemical sludge removal	Septic tank, drainfield	Program approved by OSSA for improved control of toxic waste discharges and chemical sludge handling by October 1967 (engineering plans underway and equipment on order) (8)
Western Kraft Corp. (Albany)	Willamette	117	Kraft mill wastes	Primary sedimentation	Septic tank, drainfield	Secondary treatment or equivalent control of total mill wastes by May 1968.
Crown Zellerbach Corp. (Lebanon)	South Santiam	109	Sulfite mill wastes and linerboard production wastes	Primary sedimentation. Evaporation of SWL and burning or by-production recovery	City	Secondary treatment or equivalent control of total mill wastes by May 1968.
U.S. Plywood Corp. (Lebanon)	South Santiam	109	Glue wastes and log pond overflow	None	Septic tank, chlorination to log pond	(4) (5)

Table 4.5-2. Major Historical Sources of Industrial Wastes in the Willamette River Basin Upriver from Portland Harbor (OSSA 1967b).

Source	Receiving Stream	RM	Type of Waste	Present Treatment	Sanitary Waste Disposal	Needed Action
Western Veneer Plywood (Lebanon)	South Santiam	109	Glue wastes	Settling tank to log pond		(5)
Jefferson Woolen Mill	Morgan Creek	109	Dye and wool fibers	None	Septic tank, drainfield	Secondary treatment or equivalent control by May 1968.
Willamette Valley Lumber (Dallas)	Ask Creek to Rickreall Cr.	88	Glue wastes and log pond overflow	Glue wastes to city sewer	City	(4) (5)
Boise Cascade Corp. (Salem)	Willamette	85	Sulfite mill wastes	Storage of all SWL during summer months	City	Primary settling facilities under construction. Chemical recovery and secondary treatment or equivalent control by July 1972.
U.S. Plywood (Willamina)	South Yamhill	55	Glue wastes	None	Septic tank, drainfield	(5)
Les' Poultry (McMinnville)	North Yamhill	55	Poultry slaughterhouse wastes	Septic tank and inadequate land disposal	Septic tank, drainfield	Connection to city sewer
Publishers Paper Co. (Newberg)	Willamette	50	Sulfite mill wastes	Primary sedimentation year-round and storage of SWL during low flow months (June 1 - November 1)	City	Chemical recovery and secondary treatment or equivalent control of total mill wastes by July 1972.
Butler Farms (formerly Phillips Bros.)	Pudding	36	Silage wastes	Collection ponds and irrigation	Septic tank, drainfield	Continued surveillance
West Food Co. (Salem)	Pudding	36	Mushroom growing and processing water	Lagoon and land irrigation	Septic tank, drainfield	Connect to city sewer (engineering study underway)
Birds Eye Div., General Foods (Woodburn)	Pudding	36	Fruit and vegetable processing	Screens, pre-aeration, oxidation lagoons, land disposal	City	Continued surveillance
Forest Fiber Products	Scoggins Cr.	29	Hardboard mill wastes	Primary settling, land disposal during low flow months	Septic tank, drainfield	OSSA study to determine adequacy of existing facilities during summer 1967.
Arrow Meat Co. (Cornelius)	Council Creek	29	Slaughterhouse wastes	Screening, grease removal, blood removal, land disposal low flow	Septic tank, drainfield	Continued surveillance

Table 4.5-2. Major Historical Sources of Industrial Wastes in the Willamette River Basin Upriver from Portland Harbor (OSSA 1967b).

Source	Receiving Stream	RM	Type of Waste	Present Treatment	Sanitary Waste Disposal	Needed Action
Tektronix (Beaverton)	Beaverton Cr.	29	Metal plating	pH adjustment, chemical treatment, settling and oxidation lagoons	Oxidation ditch	Continued surveillance
Kummer Meat Co.	Dairy Creek	29	Slaughterhouse wastes	Screening, grease removal, blood removal, lagooning (non-over-flow in low flow)	Septic tank, drainfield	Continued surveillance
Permapost Products Company	Rock Creek	29	Phenols and osmose salts	Baffled oil separation tank, lagoon for holding osmose salts	Septic tank, drainfield	Improved in-plant and process control and continued surveillance
Hervin Dog Food Co.	Tualatin R.	29	Processing of animals for pet food	Activated sludge plant for industrial wastes	Septic tank, drainfield	Improved plant operation and continued surveillance. (8)
Alpenrose Dairy	Fanno Creek	29	Dairy barn wastes, milk and cheese processing wastes	Extended aeration and aerated lagoon irrigation during summer months	Septic tank, disinfection and to IW system	Connect to city sewer.
The Dickinson Co.	Fanno Creek	29	Wastes from processing jams and jellies	Settling pond	Septic tank, drainfield	Connect to city sewer.
Crown Zellerbach Corp. (West Linn)	Willamette	26	Sulfite mill wastes	Primary sedimentation year-round and SWL stored in lagoons during low flow months	City	Reduce load equal to chemical recovery and secondary treatment or equivalent control of total mill wastes by June 1968.
Publishers Paper Co. (Oregon City)	Willamette	26	Sulfite mill wastes	SWL barged to Columbia River during low flow (primary sedimentation facilities under construction)	City	Reduce load equal to chemical recovery and secondary treatment or equivalent control of total mill wastes by June 1968; no barging to Columbia after 1969.
Logan Egg Farm	Foster Creek (Clackamas)	25	Chicken manure and egg washing	Lagoon, land disposal by sprinkle irrigation	Septic tank, drainfield	Continued surveillance
Bigger and Better Poultry	Kellogg Creek	18	Chicken processing waste	Settling and spray irrigation	Septic tank, drainfield	Continued surveillance (contemplating re-location)

Table 4.5-2. Major Historical Sources of Industrial Wastes in the Willamette River Basin Upriver from Portland Harbor (OSSA 1967b).

Source	Receiving Stream	RM	Type of Waste	Present Treatment	Sanitary Waste Disposal	Needed Action

Notes:

Action for Municipalities of the Willamette Basin

(1) Injunctive action filed in Polk County Circuit Court, 12/19/66.

(2) Seven private properties connected to private sewer. Program under way to abate private discharges. No progress by city for providing municipal sewerage system.

(3) A portion of the area (industrial and domestic) is connected to area storm sewers. Program under way to collect and pump area wastes to Portland sewage treatment plant.

General Treatment, Studies, or Other Action

(4) Study requested by OSSA of FWPCA Water Laboratory, Corvallis, Oregon, to determine the effects of log storage and handling practices and to recommend possible alternate procedures.

(5) Study in progress by FWPCA Water Laboratory, Corvallis to recommend methods of treatment or disposal of glue wastes.

(6) Secondary treatment of sewage wastes by July 1972.

(7) Application has been filed for 702 planning funds from HUD. Engineering plans under way for small segment of study area.

(8) Monthly reports needed.

Table 4.5-3. Summary of Willamette River Sub-basin TMDLs.

		Parameter					
Sub-basin	**Approval Date**	**Temperature**	**Dissolved Oxygen**	**Bacteria**	**pH**	**Toxics**	**Other**
Willamette Basin	September 29, 2006	X		X		Mercury	
Lower Willamette Subbasin		X		X		Mercury DDT and dieldrin [a]	
Clackamas Subbasin		X		X		Mercury	
Middle Willamette Subbasin		X		X		Mercury	
North Santiam Subbasin		X		X		Mercury	
South Santiam Subbasin		X		X		Mercury	
Upper Willamette Subbasin		X	X [b]	X		Mercury	Turbidity [c]
McKenzie Subbasin		X		X		Mercury	
Middle Fork Subbasin		X		X		Mercury	
Coast Fork Subbasin		X		X		Mercury	Ammonia & nutrients (phosphorus) [d]
Columbia Slough Watershed	November 25, 1998	X	X	X	X	DDE/DDT, PCBs, lead, dieldrin, and 2,3,7,8-TCDD	Chlorophyll *a* , phosphorus
Mollala-Pudding Subbasin	December 31, 2008	X		X		Iron, chlordane, dieldrin, and DDT	Nitrate
Pudding River	December 18, 1993		X				
Tualatin Subbasin	August 7, 2001	X	X	X			Ammonia, phosphorus, volatile solids
Yamhill Subbasin	March 16, 1992						Phosphorus

Source: Oregon Department of Environmental Quality (www.deq.state.or.us/wq/tmdls/tmdls.htm); accessed in February 2011.

Notes:

TMDL - total maximum daily load

[a] TMDL for DDT and dieldrin established in 1998 for Johnson Creek.

[b] TMDL developed for the Amazon Diversion Channel and Coyote Creek.

[c] TMDL developed for the Fern Ridge Reservoir.

[d] TMDL developed in 1995 for the Coast Fork Willamette.

Table 5.1-1 Summary of Detected COIs or Chemical Classes by In-river Media

Analytes	Surface Sediment	Subsurface Sediment	Sediment Traps	Surface Water	TZW	Biota
Butyltins						
Butyltin ion	X	X	X	X	X	X
Dibutyltin dichloride	X					
Dibutyltin ion	X	X	X	X	X	X
Monobutyltin trichloride	X					
Tetrabutyltin	X	X				X
Tributyltin	X	X				
Tributyltin chloride	X					
Tributyltin ion	X	X	X	X		X
PCDD/Fs						
Heptachlorodibenzofurans	X	X	X	X	X	X
Heptachlorodibenzo-p-dioxins	X	X	X	X	X	X
Hexachlorodibenzofurans	X	X	X	X	X	X
Hexachlorodibenzo-p-dioxins	X	X	X	X	X	X
Octachlorodibenzofuran	X	X	X	X		X
Octachlorodibenzo-p-dioxin	X	X	X	X		X
Pentachlorodibenzofurans	X	X	X	X	X	X
Pentachlorodibenzo-p-dioxins	X	X	X	X		X
Tetrachlorodibenzofurans	X	X	X	X	X	X
Tetrachlorodibenzo-p-dioxins	X	X	X	X	X	X
Herbicides						
2,4,5-T	X					
2,4-D	X	X	X	X	X	
2,4-DB	X	X	X	X		
Dalapon		X		X	X	
Dicamba		X				
Dichloroprop	X				X	
MCPA	X	X				
MCPP	X	X		X		
Silvex	X	X			X	
Inorganics						
Cyanide	X	X		X	X	
Perchlorate	X			X	X	
Metals						
Aluminum	X	X	X	X	X	X
Antimony	X	X	X	X	X	X
Arsenic	X	X	X	X	X	X
Barium	X	X			X	X
Beryllium	X	X			X	
Cadmium	X	X	X	X	X	X
Chromium	X	X	X	X	X	X
Cobalt	X	X			X	X
Copper	X	X	X	X	X	X
Iron	X	X		X	X	X
Lead	X	X	X	X	X	X
Magnesium	X	X		X	X	X
Manganese	X	X		X	X	X

Table 5.1-1 Summary of Detected COIs or Chemical Classes by In-river Media

Analytes	Surface Sediment	Subsurface Sediment	Sediment Traps	Surface Water	TZW	Biota
Mercury	X	X	X	X	X	X
Nickel	X	X	X	X	X	X
Selenium	X	X	X	X	X	X
Silver	X	X	X	X	X	X
Thallium	X	X		X	X	X
Tin	X	X				
Titanium	X	X		X		
Vanadium	X	X			X	
Zinc	X	X	X	X	X	X
PAHs						
Acenaphthene	X	X	X	X	X	X
Acenaphthylene	X	X	X	X	X	X
Anthracene	X	X	X	X	X	X
Benzo(a)anthracene	X	X	X	X	X	X
Benzo(a)pyrene	X	X	X	X	X	X
Benzo(b)fluoranthene	X	X	X	X	X	X
Benzo(b+k)fluoranthene	X	X	X			
Benzo(e)pyrene	X	X	X			X
Benzo(g,h,i)perylene	X	X	X	X	X	X
Benzo(j+k)fluoranthene	X			X		X
Benzo(k)fluoranthene	X	X	X	X	X	X
Benzofluoranthenes	X					
Crysene	X	X	X	X	X	X
Dibenzo(a,h)anthracene	X	X	X	X	X	X
Dibenzothiophene	X	X	X			X
2,6-Dimethylnaphthalene	X	X	X			
Fluoranthene	X	X	X	X	X	X
Fluorene	X	X	X	X	X	X
Indeno(1,2,3-cd)pyrene	X	X	X	X	X	X
2-Methylnapthalene	X	X	X	X	X	X
1-Methylphenanthrene	X	X	X			
Naphthalene	X	X	X	X	X	X
Perylene	X	X	X			X
Phenanthrene	X	X	X	X	X	X
Pyrene	X	X	X	X	X	X
Retene		X				
1,6,7-Trimethylnaphthalene	X	X	X			
PBDEs						
Congeners		X				X
PCBs						
Aroclor 1016	X					
Aroclor 1221	X		X			
Aroclor 1232	X	X				X
Aroclor 1242	X	X	X			
Aroclor 1248	X	X	X	X		X
Aroclor 1254	X	X	X	X		
Aroclor 1260	X	X	X	X		X

Table 5.1-1 Summary of Detected COIs or Chemical Classes by In-river Media

Analytes	Surface Sediment	Subsurface Sediment	Sediment Traps	Surface Water	TZW	Biota
Aroclor 1262		X				
Aroclor 1268	X	X				
Congeners	X	X	X	X		X
Pesticides						
Aldrin	X	X	X	X		X
Chlordanes	X	X	X	X		X
Dieldrin	X	X	X	X		X
DDx (DDD, DDE, DDT)	X	X	X	X	X	X
Endosulfans	X	X	X	X		X
Endrin	X	X	X	X		X
Endrin aldehyde	X	X	X	X		X
Endrin ketone	X	X		X		X
Heptachlor	X	X	X	X		X
Heptachlor epoxide	X	X	X	X		X
alpha-Hexachlorocyclohexane	X	X		X		X
beta-Hexachlorocyclohexane	X	X	X	X		X
delta-Hexachlorocyclohexane	X	X	X	X		X
gamma-Hexachlorocyclohexane (Lindane)	X	X	X	X		X
Methoxyclor	X	X	X	X		X
Mirex	X	X	X			X
Nonachlors	X	X	X	X		X
Oxychlordane	X	X	X	X		X
Toxaphene	X	X				
Petroleum						
Fuel oil No.2	X					
Heavy oil	X					
Hydrocarbon, aliphatics	X	X				
Hydrocarbon, aromatics	X	X				
Hydrocarbons, diesel range	X	X	X		X	
Hydrocarbons, gasoline range	X	X	X		X	
Hydrocarbons, heavy oil range	X	X				
Hydrocarbons, residual range	X	X	X		X	
Lube oil	X	X				
Motor oil	X	X				
Pencil pitch	X	X				
Phytane	X					
Pristane	X					
TPH	X	X	X		X	
Phenols						
4-Chloro-3-methylphenol	X	X		X		X
2-Chlorophenol	X	X				
2,4-Dichlorophenol	X	X				
2,4-Dimethylphenol	X	X			X	
4,6-Dinitro-2-methylphenol						
2,4-Dinitrophenol		X				
2-Methylphenol	X	X	X		X	X
4-Methylphenol	X	X	X			X

Table 5.1-1 Summary of Detected COIs or Chemical Classes by In-river Media

Analytes	Surface Sediment	Subsurface Sediment	Sediment Traps	Surface Water	TZW	Biota
2-Nitrophenol						
4-Nitrophenol		X				X
Pentachlorophenol	X	X	X			X
Phenol	X	X	X	X	X	X
2,3,4,5-Tetrachlorophenol	X	X	X			
2,3,4,6-Tetrachlorophenol		X				
2,3,5,6-Tetrachlorophenol	X	X	X			
2,4,5-Trichlorophenol	X	X				
2,4,6-Trichlorophenol	X	X				
Phthalates						
Bis(2-ethylhexyl) phthalate	X	X	X	X	X	X
Butylbenzyl phthalate	X	X	X	X		X
Dibutyl phthalate	X	X	X	X	X	X
Diethyl phthalate	X	X	X	X		X
Dimethyl phthalate	X	X	X	X	X	X
Di-n-oxtyl phthalate	X	X	X	X		X
SVOCs						
Aniline	X	X	X	X		
Azobenzene		X				
Benzoic Acid	X	X	X	X		X
Benzyl Alcohol	X	X	X			X
Bis(2-chloro-1-methylethyl) ether		X				
Bis(2-chloroethoxy) methane	X					X
Bis(2-chloroethyl) ether	X					
Bis(2-chloroisopropyl) ether	X	X				
4-Bromophenyl phenyl ether						
Carbazole	X	X	X	X	X	
4-Chloroaniline	X	X		X		
2-Chloronaphthalene	X	X				
4-Chlorophenyl phenyl ether						
Dibenzofuran	X	X	X	X	X	X
1,2-Dichlorobenzene	X	X			X	
1,3-Dichlorobenzene	X	X			X	
1,4-Dichlorobenzene	X	X	X	X	X	
3,3'-Dichlorobenzidine	X	X				
Diphenyl	X	X	X			
1,2-Diphenylhydrazine						
2,4-Dinitrotoluene		X				
2,6-Dinitrotoluene						
Hexachlorobenzene	X	X	X	X		X
Hexachlorobutadiene	X	X	X	X		X
Hexachlorocyclopentadiene						
Hexachloroethane	X	X				X
Isophorone		X	X	X		X
2-Nitroaniline						
3-Nitroaniline	X	X				
4-Nitroaniline	X	X				

Table 5.1-1 Summary of Detected COIs or Chemical Classes by In-river Media

Analytes	Surface Sediment	Subsurface Sediment	Sediment Traps	Surface Water	TZW	Biota
Nitrobenzene						X
N-Nitrosodimethylamine	X					
N-Nitrosodiphyenylamine	X	X				X
N-Nitrosodipropylamine	X	X				
1,2,4-Trichlorobenzene	X	X	X		X	
VOCs						
Acetone	X	X	X		X	
Acrolein		X			X	
Acrylonitrile		~~X~~				
Benzene	X	X		X	X	
Bromochloromethane					X	
BTEX	X	X	X	X	X	
Butylbenzenes	X	X		X	X	
Carbon disulfide	X	X			X	
Chlorobenzene	X	X	X		X	
Chloroethane	X	X			X	
Chloroform	X	X			X	
Chloromethane		X			X	
Dichlorodifluoromethane	X					
1,1-Dichloroethane	X	X			X	
1,2-Dichloroethane	X	X			X	
1,1-Dichloroethene		X		X	X	
Ethybenzene	X	X	X	X	X	
Isopropylbenzene	X	X			X	
Methylcyclohexane		X				
Methyl n-butyl ketone	X	X			X	
Methyl tert-butyl ether	X	X			X	
Methylene chloride	X	X			X	
Methylene ketone	X	X	X		X	
Methyl iodide		X				
Methy isobutyl ketone	X	X			X	
n-Propylbenzene	X	X			X	
Styrene	X	X			X	
Tetrachloroethenes	X	X			X	
Toluene	X	X	X	X	X	
Trichloroethenes	X	X		X	X	
1,2,3-Trichloropropane	X	X			X	
1,2,4-Trimethylbenzene	X	X		X	X	
1,3,5-Trimethylbenzene		X		X	X	
Vinyl chloride	X	X		X	X	
Xylenes	X	X	X	X	X	

Notes:

BTEX - benzene, ethylene, toluene, xylenes
COI - contaminant of interest
PAH - polycyclic aromatic hydrocarbon
PBDE - polybrominated diphenyl ether

Table 5.1-1 Summary of Detected COIs or Chemical Classes by In-river Media

Analytes	Surface Sediment	Subsurface Sediment	Sediment Traps	Surface Water	TZW	Biota

PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
TCDD - tetrachlorodibenzodioxin
TPH - total petroleum hydrocarbon
TZW - transition zone water
VOC - volatile organic compound

Table 5.1-2 Screening of COIs by In-river Media for Discussion and Presentation in the RI

	Detected In-river Media						BRA		Screen 1		Screen 2	
Detected Analytes	**Surface Sediment**	**Subsurface Sediment**	**Sediment Traps**	**Surface Water**	**TZW**	**Biota**	**BHHRA SCREEN[a]**	**BERA SCREEN[b]**	**Screening Code**	**Contaminant**	**Screening Code**	**Indicator Contaminants**
Butyltins												
Butyltin ion	X	X	X	X	X	X			1			
Dibutyltin dichloride	X								1			
Dibutyltin ion	X	X	X	X	X	X			1			
Monobutyltin trichloride	X							X[c]	3, 7			
Tetrabutyltin	X	X	X						1			
Tributyltin	X	X						X	3, 4			
Tributyltin chloride	X								1			
Tributyltin ion	X	X	X	X	X	X		X		X		X
PCDD/Fs												
Total PCDD/Fs	X	X	X	X	X	X	X[d]	X[d]	6	X		X
TCDD TEQ	X	X	X	X	X	X	X	X	6	X		X
Herbicides												
2,4,5-T	X								1			
2,4-D	X	X	X	X	X				1			
2,4-DB	X	X	X	X					1			
Dalapon	X	X		X	X				1			
Dicamba		X							1			
Dichloroprop	X				X				1			
MCPA	X	X							1			
MCPP	X	X		X			X		3, 7			
Silvex	X	X	X	X	X				1			
Inorganics												
Cyanide	X	X			X			X	3			
Perchlorate	X			X	X			X	3			
Metals												
Aluminum	X	X	X		X	X			1			
Antimony	X	X	X	X	X	X	X	X	7			
Arsenic	X	X	X	X	X	X	X	X		X		X
Barium	X	X		X	X			X	3			
Beryllium	X	X		X	X			X	7			
Cadmium	X	X	X	X	X	X		X		X	5, 7	
Chromium	X	X	X	X	X	X	X	X		X		X
Cobalt	X	X		X	X	X		X	7			
Copper	X	X	X	X	X	X		X		X		X
Iron	X	X		X	X	X		X	3			
Lead	X	X	X	X	X	X	X	X		X	4	
Magnesium	X	X		X	X	X		X	3, 7			
Manganese	X	X		X	X	X		X	7			
Mercury	X	X	X	X	X	X	X	X		X	7	
Nickel	X	X	X	X	X	X		X		X	7	
Selenium	X	X	X	X	X	X			1			
Silver	X	X	X	X	X	X			1			
Thallium	X	X		X	X	X			1			
Tin	X	X							1			

Table 5.1-2 Screening of COIs by In-river Media for Discussion and Presentation in the RI

	Detected In-river Media						BRA		Screen 1		Screen 2	
Detected Analytes	**Surface Sediment**	**Subsurface Sediment**	**Sediment Traps**	**Surface Water**	**TZW**	**Biota**	**BHHRA SCREEN[a]**	**BERA SCREEN[b]**	**Screening Code**	**Contaminant**	**Screening Code**	**Indicator Contaminants**
Titanium	X	X							1			
Vanadium	X	X		X	X			X	7			
Zinc	X	X	X	X	X	X		X		X		X
PAHs												
Total PAHs	X	X	X	X	X	X		X		X	6	X
Total cPAHs	X	X	X	X	X	X	X			X	4, 6	
Total LPAHs	X	X	X	X	X	X		X		X	4,6	
Total HPAHs	X	X	X	X	X	X		X		X	4, 6	
Benzo(a)pyrene	X	X	X	X	X	X	X	X		X	6	
Naphthalene	X	X	X	X	X	X				X	6	
Phenanthrene	X	X	X	X	X	X		X		X	6	
PBDEs												
Congeners						X	X		3			
PCBs												
Total PCBs (Congeners + Aroclors)	X	X	X	X	X	X	X	X		X		X
PCB TEQ	X	X	X	X	X	X	X	X		X	4	
Pesticides												
Aldrin	X	X	X	X		X	X			X		X
Total Chlordanes	X	X	X	X		X	X	X		X		X
Dieldrin	X	X	X	X		X	X	X		X		X
DDx (DDD, DDE, DDT)	X	X	X	X	X	X	X	X		X	6	X
Endosulfans	X	X	X	X		X			1			
Endrin	X	X	X	X		X			1			
Endrin aldehyde	X	X	X	X		X			1			
Endrin ketone	X	X		X		X			1			
Heptachlor	X	X	X	X		X			1			
Heptachlor epoxide	X	X	X	X		X		X	2, 7			
alpha-Hexachlorocyclohexane	X	X		X		X			1			
beta-Hexachlorocyclohexane	X	X	X	X		X			1			
delta-Hexachlorocyclohexane	X	X	X	X		X			1			
gamma-Hexachlorocyclohexane (Lindane)	X	X	X	X		X		X		X	5	
Methoxyclor	X	X	X	X		X			1			
Mirex	X	X	X						1			
Nonachlors	X	X	X			X			1			
Oxychlordane	X	X	X			X			1			
Toxaphene	X	X							1			
Petroleum												
Fuel oil No.2	X								1			
Heavy oil	X								1			
Hydrocarbon, aliphatics	X	X						X	3			
Hydrocarbon, aromatics	X	X						X	3			
Hydrocarbons, diesel range	X	X	X		X			X		X	3	
Hydrocarbons, gasoline range	X	X	X		X			X	4, 5, 7			
Hydrocarbons, heavy oil range	X	X							1			
Hydrocarbons, residual range	X	X	X		X			X		X	3	

Table 5.1-2 Screening of COIs by In-river Media for Discussion and Presentation in the RI

	Detected In-river Media						BRA		Screen 1		Screen 2	
Detected Analytes	**Surface Sediment**	**Subsurface Sediment**	**Sediment Traps**	**Surface Water**	**TZW**	**Biota**	**BHHRA SCREEN[a]**	**BERA SCREEN[b]**	**Screening Code**	**Contaminant**	**Screening Code**	**Indicator Contaminants**
Lube oil	X	X							1			
Motor oil	X	X							1			
Pencil pitch	X	X							1			
Phytane	X								1			
Pristane	X								1			
TPH	X	X	X							X	6	
Phenols												
4-Chloro-3-methylphenol	X	X		X					1			
2-Chlorophenol	X	X							1			
2,4-Dichlorophenol	X	X							1			
2,4-Dimethylphenol	X	X							1			
4,6-Dinitro-2-methylphenol	X								1			
2,4-Dinitrophenol	X	X							1			
2-Methylphenol	X	X	X			X			1			
4-Methylphenol	X	X	X			X			1			
2-Nitrophenol	X								1			
4-Nitrophenol	X	X				X			1			
Pentachlorophenol	X	X	X		X	X	X			X	7	
Phenol	X	X	X	X		X			1			
2,3,4,5-Tetrachlorophenol	X	X	X						1			
2,3,4,6-Tetrachlorophenol	X								1			
2,3,5,6-Tetrachlorophenol	X	X	X						1			
2,4,5-Trichlorophenol	X	X							1			
2,4,6-Trichlorophenol	X	X							1			
Phthalates												
Bis(2-ethylhexyl) phthalate	X	X	X	X		X	X	X		X		X
Butylbenzyl phthalate	X	X	X	X		X				X[c]	1	
Dibutyl phthalate	X	X	X	X		X			1			
Diethyl phthalate	X	X	X	X					1			
Dimethyl phthalate	X	X	X	X					1			
Di-n-oxtyl phthalate	X	X		X					1			
SVOCs												
Aniline	X	X	X	X		X			1			
Azobenzene	X	X							1			
Benzoic Acid	X	X	X	X		X			1			
Benzyl Alcohol	X	X	X			X			1			
Bis(2-chloro-1-methylethyl) ether	X								1			
Bis(2-chloroethoxy) methane	X					X			1			
Bis(2-chloroethyl) ether	X								1			
Bis(2-chloroisopropyl) ether	X	X							1			
4-Bromophenyl phenyl ether	X								1			
Carbazole	X	X	X	X					1			
4-Chloroaniline	X	X		X					1			
2-Chloronaphthalene	X	X							1			
4-Chlorophenyl phenyl ether	X								1			

Table 5.1-2 Screening of COIs by In-river Media for Discussion and Presentation in the RI

	Detected In-river Media						BRA		Screen 1		Screen 2	
Detected Analytes	**Surface Sediment**	**Subsurface Sediment**	**Sediment Traps**	**Surface Water**	**TZW**	**Biota**	**BHHRA SCREEN[a]**	**BERA SCREEN[b]**	**Screening Code**	**Contaminant**	**Screening Code**	**Indicator Contaminants**
Dibenzofuran	X	X	X	X	X	X		X	7			
1,2-Dichlorobenzene	X	X			X			X	3			
1,3-Dichlorobenzene	X	X			X				1			
1,4-Dichlorobenzene	X	X	X	X	X			X	3			
3,3'-Dichlorobenzidine	X	X							1			
Diphenyl	X	X							1			
1,2-Diphenylhydrazine	X								1			
2,4-Dinitrotoluene	X								1			
2,6-Dinitrotoluene	X								1			
Hexachlorobenzene	X	X	X	X		X	X			X	2	
Hexachlorobutadiene	X	X	X	X		X			1			
Hexachlorocyclopentadiene	X								1			
Hexachloroethane	X	X	X						1			
Isophorone	X	X	X	X		X			1			
2-Nitroaniline	X								1			
3-Nitroaniline	X								1			
4-Nitroaniline	X	X							1			
Nitrobenzene	X					X			1			
N-Nitrosodimethylamine	X								1			
N-Nitrosodiphyenylamine	X	X							1			
N-Nitrosodipropylamine	X								1			
1,2,4-Trichlorobenzene	X	X	X						1			
VOCs												
Acetone	X	X	X		X				1			
Acrolein		X			X				3			
Acrylonitrile	X	X							1			
Benzene	X	X		X	X			X	3			
Bromochloromethane	X	X	X		X				1			
BTEX	X	X	X						1			
Butylbenzenes	X			X	X				1			
Carbon disulfide	X	X			X			X	3			
Chlorobenzene	X	X	X		X			X	3			
Chloroethane	X	X			X			X	3			
Chloroform	X	X			X			X	3			
Chloromethane		X			X				1			
Dichlorodifluoromethane	X								1			
1,1-Dichloroethene	X	X		X	X			X	3			
cis-1,2-Dichloroethene	X	X		X	X			X	3			
1,1-Dichloroethene	X	X		X	X				1			
Ethybenzene	X	X	X	X	X			X	3			
Isopropylbenzene	X	X			X			X	3			
Methylcyclohexane		X							1			
Methyl n-butyl ketone	X	X							1			
Methyl tert-butyl ether	X	X							1			
Methylene chloride	X	X			X				1			

Table 5.1-2 Screening of COIs by In-river Media for Discussion and Presentation in the RI

	Detected In-river Media						BRA		Screen 1		Screen 2	
Detected Analytes	**Surface Sediment**	**Subsurface Sediment**	**Sediment Traps**	**Surface Water**	**TZW**	**Biota**	**BHHRA SCREEN[a]**	**BERA SCREEN[b]**	**Screening Code**	**Contaminant**	**Screening Code**	**Indicator Contaminants**
Methylene ketone	X	X	X						1			
Methyl iodide		X	X						1			
Methy isobutyl ketone	X	X			X				1			
n-Propylbenzene	X	X			X				1			
Styrene	X	X			X				1			
Tetrachloroethenes	X	X							1			
Toluene	X	X	X	X	X			X	3			
Trichloroethene~~s~~	X	X		X	X			X	3			
1,2,3-Trichloropropane	X	X							1			
1,2,4-Trimethylbenzene	X	X		X	X			X	3			
1,3,5-Trimethylbenzene		X		X	X			X	3			
Vinyl chloride	X	X		X	X				1			
Total xylenes	X	X	X	X	X			X	3			

Notes:

[a] See Appendix F
[b] See Appendix G
[c] This COI is included as a contaminant because it originally screened in from the Round 2 screening BERA, but does not in the Final BERA.
[d] Total PCDD/Fs screened in based on TCDD TEQ risk evaluations.
BERA - Baseline Ecological Risk Assessment
BTEX - benzene, ethylene, toluene, xylenes
BHHRA - Baseline Human Health Risk Assessment
COI - contaminant of interest
PAH - polycyclic aromatic hydrocarbon
PBDE - polybrominated diphenyl ether
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RI - remedial investigation
SVOC - semivolatile organic compound
TCDD - tetrachlorodibenzodioxin
TPH - total petroleum hydrocarbon
TZW - transition zone water
VOC - volatile organic compound

Screening Codes:

1 - COI not a BHHRA or BERA COPC
2 - COI frequency of detection <20%
3 - COI not detected in multiple media
4 - COI represented by other COI (collocation)
5 - COI is not a widespread source
6 - COI represents the combining of individual contaminants into a group.
7 - COI has low exceedance or contribution of risk (HQ<10; 10^{-6} risk)

Table 5.1-3 Basis for Screening of COIs Due to Collocation.

Analyte	Basis for Screening	r^2
Butyltins		
Tributyltin	Tributyltin is represented by tributyltin ion.	NA
Metals		
Lead	Lead is collocated with zinc.	0.72
PAHs		
Total cPAHs	Total cPAHs are collocated with total PAHs.	0.95
Total LPAHs	Total LPAHs are collocated with total PAHs.	0.95
Total HPAHs	Total HPAHs are collocated with total PAHs.	0.98
PCBs		
PCB TEQ	PCB TEQ is computed from same data used to compute total PCBs.	0.82

Notes:

COI - contaminant of interest
HPAH - high molecular weight polycyclic aromatic hydrocarbon
LPAH - low molecular weight polycyclic aromatic hydrocarbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - toxicity equivalent

Table 5.2-1. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Grain Size																
Fines	percent	1420	1420	100	0	105 T	DG01	53.75	61	92.1	0	105 T	DG01	53.75	61	92.1
Conventionals																
Total organic carbon	percent	1698	1694	99.8	0.00715 J	27	G006	1.7892	1.74	3.1535	0.00433 U	27	G006	1.7851	1.735	3.1515
Metals																
Arsenic	mg/kg	1551	1426	91.9	0.7	132	RB08	4.86	3.71 J	8.995	0.7	132	RB08	4.685	3.6	8.69 J
Chromium	mg/kg	1536	1530	99.6	4.07 J	819 J	RB06	35.37	29.3	57.48	4.07 J	819 J	RB06	35.3	29.3	57.33
Copper	mg/kg	1552	1548	99.7	6.19 J	2830	UG01	60.8	38.8 J	171.3	6.19 J	2830	UG01	60.67	38.7	170.9
Zinc	mg/kg	1581	1581	100	3.68 J	4220	HA-43	154	106 J	375	3.68 J	4220	HA-43	154	106 J	375
Butyltins																
Tributyltin ion	µg/kg	358	333	93	0.45 J	47000	SD012	466.2	22	753.6	0.079 U	47000	SD012	433.7	17.5	650.5
PCBs[c]																
Total PCBs	µg/kg	1318	1052	79.8	0.851 JT	35400 T	--	220.2	26.85 J	736.2	0.851 JT	35400 T	--	183.4	19.65 J	600.9
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	237	237	100	2.48 T	264000 T	07R006	2407	412 T	5580 J	2.48 T	264000 T	07R006	2407	412 T	5580 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	238	238	100	0.00803 JT	14100 JT	07R006	67.938	1.395 J	40.49 J	0.00803 JT	14100 JT	07R006	67.938	1.395 J	40.49 J
Pesticides																
Aldrin	µg/kg	1146	268	23.4	0.00333 J	691 J	G355	4.8871	0.503 J	10.156 J	0.00333 J	691 J	G355	1.9569	0.17 U	5 U
Dieldrin	µg/kg	1190	252	21.2	0.00834 J	356 J	G453	2.5619	0.28 J	6.0135 J	0.00834 J	356 J	G453	1.9188	0.19 U	4.092 J
Total chlordanes	µg/kg	1193	761	63.8	0.031 JT	669 NJT	G355	5.035	0.84 NJT	12.4 NJT	0.031 JT	700 UT	G778	4.771	0.85 UA	13.64 J
DDx	µg/kg	1249	1130	90.5	0.051 NJT	84909 A	OSS002	267.96	7.495 J	459.55 J	0.051 NJT	84909 A	OSS002	242.76	6.69 NJT	371.08 J
PAHs																
Total PAHs	µg/kg	1661	1640	98.7	3.3 JT	7260000 T	G225	27166.6	1180	66630 J	3.3 JT	7260000 T	G225	26824.3	1150 JT	66100 T
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	1513	932	61.6	7 J	440000 J	G367	1050	140	2200	2 U	440000 J	G367	751	94 J	1720

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT

DL - detection limit

ND - not detected

PAH - polycyclic aromatic hydrocarbon

PCB - polychlorinated biphenyl

PCDD/F - dioxin/furan

RM - river mile

TCDD - tetrachlorodibenzo-p-dioxin

TEQ - toxic equivalent concentration

TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-2. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Grain Size																
Fines	percent	1588	1588	100	0.12 T	101 T	C380	52.2	59.61	91	0.12 T	101 T	C380	52.2	59.61	91
Conventionals																
Total organic carbon	percent	2036	1923	94.4	0.02 J	35.5	C302	1.551	1.46	3.467	0.02 J	35.5	C302	1.466	1.3	3.4 J
Metals																
Arsenic	mg/kg	1553	1489	95.9	0.5 J	51.4	C708	4.08	3.56	7.33 J	0.5 J	51.4	C708	4	3.51	7.16
Chromium	mg/kg	1530	1524	99.6	6.41 J	464	HA-42	28.8	27 J	46.7	6.41 J	464	HA-42	28.8	26.9	46.7
Copper	mg/kg	1541	1541	100	9.42 J	3290	C384	55.2	35.9	107	9.42 J	3290	C384	55.2	35.9	107
Zinc	mg/kg	1581	1581	100	24	9000	HA-42	147	105 J	333	24	9000	HA-42	147	105 J	333
Butyltins																
Tributyltin ion	µg/kg	433	223	51.5	0.32 J	90000	PSY30C	1410	29	4040	0 U	90000	PSY30C	729	2.1	1120
PCBs[c]																
Total PCBs	µg/kg	1543	939	60.9	0.00138 JT	36800 T	C455	351.21186	70 T	1000 J	0.00138 JT	150000 UT	SD092	282.16061	22.6 JT	666.2 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	327	325	99.4	0.0578 JT	425000 JT	WB-36	9052.084	290 T	28240 J	0.0578 JT	425000 JT	WB-36	8996.728	281 T	28160 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	331	313	94.6	0.000262 JT	24400 JT	WB-36	433.575	1.35 JT	1124 J	0.000262 JT	24400 JT	WB-36	409.997	1.12 JT	864 J
Pesticides																
Aldrin	µg/kg	1172	135	11.5	0.11 J	1340 J	C356	23.33	0.88 J	72.96 J	0.0269 UJ	14000 U	WB-36	20.87	0.11 U	17.23 U
Dieldrin	µg/kg	1208	77	6.4	0.038 NJ	100 J	C092	3.595	0.43	13.36 J	0.03 U	12000 U	WB-36	17.15	0.1693 UJ	8 J
Total chlordanes	µg/kg	1195	648	54.2	0.038 JT	2330 JT	C455	19.53	1.57 J	55.33 J	0.0359 UT	10000 UA	WB-36	25.41	0.95 UJT	55 J
DDx	µg/kg	1659	1374	82.8	0.058 JT	3643000 A	WB-24	11367	15.4 J	4938.2 J	0.049 UJT	3643000 A	WB-24	9414.2	9.9 JT	3050.6 J
PAHs																
Total PAHs	µg/kg	1696	1624	95.8	0.15 JT	53300000 T	C302	248670	1390 J	288550	0.15 JT	53300000 T	C302	238120	1174 J	280000
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	1591	635	39.9	2.4 J	18000	WR-VC-110	345	95 J	1100	2 U	40000 U	HA-43	227	40.5 U	740

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - non-detect
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-3. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Study Area																		
Grain Size																		
Fines	percent	568	568	100	0	105 T	DG01	48.6	52.1	31.8	94.5	0	105 T	DG01	48.6	52.1	31.8	94.5
Conventionals																		
Total organic carbon	percent	714	710	99	0.00715 J	27	G006	1.69	1.6	1.7	2.97	0.00433 U	27	G006	1.68	1.6	1.7	2.96
Metals																		
Arsenic	mg/kg	650	600	92	0.7	132	RB08	5.1	3.84	8.07	9.31	0.7	132	RB08	5.1	3.92	7.75	9
Chromium	mg/kg	638	635	100	7.17	819 J	RB06	40.3	29.3	63.3	91.8	7.17	819 J	RB06	40.3	29.3	63.1	91.7
Copper	mg/kg	638	638	100	8.8 J	2830	UG01	72.7	41	150	231	8.8 J	2830	UG01	72.7	41	150	231
Zinc	mg/kg	667	667	100	3.68 J	2050 J	T4-UP13	178	114	198	468	3.68 J	2050 J	T4-UP13	178	114	198	468
Butyltins																		
Tributyltin ion	µg/kg	183	171	93	0.45 J	47000	SD012	848	66	5080	1500	0.079 U	47000	SD012	792	48	4910	1390
PCBs[c]																		
Total PCBs	µg/kg	572	497	87	1.05 JT	12500 JT	G393	303	43	1030	1470	1.05 JT	12500 JT	G393	267	39	965	1260
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	103	103	100	32.2 JT	27700 JT	G426	1690	510	3640	7070	32.2 JT	27700 JT	G426	1690	510	3640	7070
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	104	104	100	0.034 JT	88.7 NJT	06R002	5.52	1.33	12.4	35.1	0.034 JT	88.7 NJT	06R002	5.52	1.33	12.4	35.1
Pesticides																		
Aldrin	µg/kg	442	95	21	0.00333 J	6	PSY01	0.635	0.44	0.813	1.68	0.00333 J	20 UJ	HC-S-16; HC-S-28; HC-S-36; HC-S-39; HC-S-43	0.9	0.225	2.46	2.56
Dieldrin	µg/kg	459	83	18	0.00834 J	22.3	M0201	1.14	0.21	3.08	5.93	0.00834 J	67 U	G036	1.23	0.26	4.23	5.7
Total chlordanes	µg/kg	460	290	63	0.0349 JT	60 NJT	GCA11E	2.03	0.771	5.28	7.28	0.0349 JT	97 UT	G026	2.76	0.915	7.29	11
DDx	µg/kg	512	425	83	0.051 NJT	430 JT	GCA11E	13.5	5.81	34.2	39.3	0.051 NJT	430 JT	GCA11E	12	5.33	31.4	36.9
PAHs																		
Total PAHs	µg/kg	714	703	98	4.92 JT	478000 T	T4-UP13	8960	1080	34000	41900	4.92 JT	478000 T	T4-UP13	8820	1060	33800	41300
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	653	428	66	7 J	440000 J	G367	1940	180	21400	3080	4.2 U	440000 J	G367	1350	120	17400	2210
RM 01.9-03																		
Grain Size																		
Fines	percent	68	68	100	0.69 T	105 T	DG01	54.7	68	38.6	98.6	0.69 T	105 T	DG01	54.7	68	38.6	98.6
Conventionals																		
Total organic carbon	percent	71	70	99	0.11	27	G006	2.07	2.14	3.17	2.88	0.05 U	27	G006	2.05	2.13	3.16	2.88
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	13	13	100	32.2 JT	1700 NJT	02R001	277	130	447	939	32.2 JT	1700 NJT	02R001	277	130	447	939
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	13	13	100	0.034 JT	5.57 NJT	02R001	0.923	0.302	1.46	2.93	0.034 JT	5.57 NJT	02R001	0.923	0.302	1.46	2.93
Pesticides																		
Aldrin	µg/kg	43	18	42	0.0206 J	2.59 NJ	G022	0.872	0.878	0.631	1.8	0.0206 J	10 U	02R001	0.966	0.38	2.05	2.5
Dieldrin	µg/kg	57	22	39	0.0348 J	9.28 J	G009	0.826	0.334	1.91	1.38	0.0348 J	20 U	02R015	1.14	0.262	3.37	4.9
Total chlordanes	µg/kg	57	45	79	0.084 JA	11 JT	G609	1.15	0.82	1.64	2.4	0.0387 UT	16 UT	02R001; 02R015	1.54	0.81	3.16	4.34
DDx	µg/kg	57	55	96	0.311 NJT	39.2 NJT	G009	7.88	6.23	6.82	20.1	0.311 NJT	39.2 NJT	G009	8.38	6.24	7.23	23.3
PAHs																		
Total PAHs	µg/kg	72	67	93	24 T	240000 T	G609	5160	460	29800	3010	19 UT	240000 T	G609	4800	439	28800	2910
Phthalates																		
Metals																		
Arsenic	mg/kg	72	71	99	1.8	132	RB08	5.76	3.88	15.3	6.7	1.8	132	RB08	5.71	3.88	15.2	6.69
Chromium	mg/kg	72	70	97	13.1 J	819 J	RB06	99.9	35.3	165	519	13.1 J	819 J	RB06	98.3	36.1	163	514
Copper	mg/kg	72	72	100	11.1	148	RB13	42	41	24.1	87.2	11.1	148	RB13	42	41	24.1	87.2
Zinc	mg/kg	72	72	100	43.1	823	RB08	190	119	170	595	43.1	823	RB08	190	119	170	595
Butyltins																		
Tributyltin ion	µg/kg	2	1	50	3.7	3.7	BT002	3.7	3.7	--	3.7	3.2 U	3.7	BT002	3.45	3.45	0.354	3.68
PCBs[c]																		
Total PCBs	µg/kg	72	65	90	6.3 JT	9780 T	G025	663	74	1700	1970	6.3 JT	9780 T	G025	607	73.5	1630	1880
Bis(2-ethylhexyl) phthalate	µg/kg	72	37	51	27	270	G017	115	98	60.7	220	5.6 U	2000 U	RB08	142	105	232	210
RM 03-04																		
Grain Size																		
Fines	percent	81	81	100	0.33 T	84.7 T	03R041	40.3	39.6	26.3	77.7	0.33 T	84.7 T	03R041	40.3	39.6	26.3	77.7
Conventionals																		
Total organic carbon	percent	85	84	99	0.11	12	SD006	1.52	1.3	1.42	3.24	0.07 U	12	SD006	1.5	1.3	1.42	3.21

Table 5.2-3. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Metals																		
Arsenic	mg/kg	66	60	91	1.8	9.72	G062	3.96	3.57	1.45	6.37	1.8	9.72	G062	4.04	3.71	1.41	6.22
Chromium	mg/kg	66	66	100	10.1	117	G092	30.7	26.9	17.7	49.6	10.1	117	G092	30.7	26.9	17.7	49.6
Copper	mg/kg	66	66	100	10.6	134	G094	38	32.5	24.1	82.9	10.6	134	G094	38	32.5	24.1	82.9
Zinc	mg/kg	80	80	100	49.4	786	SED01	159	111	145	506	49.4	786	SED01	159	111	145	506
Butyltins																		
Tributyltin ion	µg/kg	33	31	94	0.53 J	47000	SD012	1570	37	8430	215	0.23 U	47000	SD012	1480	36	8170	212
PCBs[c]																		
Total PCBs	µg/kg	72	63	88	1.83 T	3700 NJT	SED01	369	52	815	2110	1.83 T	3700 NJT	SED01	325	38	771	1910
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	17	17	100	88.8 T	6420 NJT	03R005	1170	370	1620	3790	88.8 T	6420 NJT	03R005	1170	370	1620	3790
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	17	17	100	0.16 JT	19 NJT	03R005	2.95	0.906	4.63	9.69	0.16 JT	19 NJT	03R005	2.95	0.906	4.63	9.69
Pesticides																		
Aldrin	µg/kg	55	29	53	0.00333 J	1.65 J	G068	0.517	0.327	0.461	1.46	0.00333 J	2 U	SD11; SD12	0.476	0.255	0.524	1.67
Dieldrin	µg/kg	60	11	18	0.00834 J	1.2 NJ	G784	0.205	0.105	0.338	0.706	0.00834 J	2 U	SD11; SD12	0.324	0.0883	0.517	1.9
Total chlordanes	µg/kg	58	41	71	0.0349 JT	14 JT	C094	1.48	0.465	2.82	7.47	0.0349 JT	21 UA	03R005	1.54	0.411	3.55	7.97
DDx	µg/kg	60	56	93	0.051 NJT	76.2 JT	C094	9.85	5.13	14.6	39.8	0.051 NJT	76.2 JT	C094	9.57	4.93	14.3	37.9
PAHs																		
Total PAHs	µg/kg	81	81	100	20.8 JT	67200 JT	03R005	3850	985	10700	17700	20.8 JT	67200 JT	03R005	3850	985	10700	17700
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	66	40	61	7 J	17000	G099	1310	120	3450	9860	5.9 UJ	17000	G099	835	88	2740	3100
RM 04-05																		
Grain Size																		
Fines	percent	44	44	100	0.32 T	94.5	SD027	59.5	69.3	29.3	93.4	0.32 T	94.5	SD027	59.5	69.3	29.3	93.4
Conventionals																		
Total organic carbon	percent	109	108	99	0.00715 J	3.95	BT010	1.57	1.73	0.819	2.74	0.00715 J	3.95	BT010	1.55	1.72	0.827	2.74
Metals																		
Arsenic	mg/kg	93	85	91	1.2	15.5 J	G111	4.5	4	2.26	7	1.2	15.5 J	G111	4.56	4.14	2.17	7
Chromium	mg/kg	93	93	100	7.17	238	52C01	29.3	24.3	27.9	48.1	7.17	238	52C01	29.3	24.3	27.9	48.1
Copper	mg/kg	93	93	100	8.8 J	216	G111	38.1	37.5	24.2	62.8	8.8 J	216	G111	38.1	37.5	24.2	62.8
Zinc	mg/kg	116	116	100	3.68 J	2050 J	T4-UP13	234	126	329	849	3.68 J	2050 J	T4-UP13	234	126	329	849
Butyltins																		
Tributyltin ion	µg/kg	11	11	100	1.7	72	SD034	28.8	22.3	21.2	65.5	1.7	72	SD034	28.8	22.3	21.2	65.5
PCBs[c]																		
Total PCBs	µg/kg	68	56	82	2.9 JT	1530 T	G111	103	31.2	245	397	2 UT	1530 T	G111	88.2	25.3	224	288
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	10	10	100	34.8 JT	4400 JT	B010	1640	1780	1340	3690	34.8 JT	4400 JT	B010	1640	1780	1340	3690
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	10	10	100	0.0687 JT	13.3 JT	B009	4.84	3.38	4.79	12	0.0687 JT	13.3 JT	B009	4.84	3.38	4.79	12
Pesticides																		
Aldrin	µg/kg	29	8	28	0.0267 J	3.18 NJ	G111	0.683	0.135	1.07	2.4	0.0266 UJ	20 UJ	HC-S-16; HC-S-28; HC-S-36; HC-S-39; HC-S-43	4.55	0.857	7.59	20
Dieldrin	µg/kg	29	5	17	0.0622 J	0.21 NJ	B010	0.133	0.152	0.0598	0.199	0.0435 U	20 UJ	HC-S-16; HC-S-28; HC-S-36; HC-S-39; HC-S-43	4.55	1	7.41	20
Total chlordanes	µg/kg	29	10	34	0.39 JT	3.11 JT	BT010	1.16	1.07	0.795	2.42	0.0354 UT	23.2 UT	52C01	6.03	1.3	8.6	21.9
DDx	µg/kg	77	64	83	0.39 JT	74.5 T	T4-VC13	12.9	9.9	13.8	36.3	0.39 JT	74.5 T	T4-VC13	11.7	8.1	13.2	35.4
PAHs																		
Total PAHs	µg/kg	121	121	100	4.92 JT	478000 T	T4-UP13	35100	8240	71100	137000	4.92 JT	478000 T	T4-UP13	35100	8240	71100	137000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	122	65	53	21	14000	G111	792	260	2240	2790	4.2 U	19000 U	03R004	653	115	2360	1570
RM 05-06																		
Grain Size																		
Fines	percent	52	52	100	0.55 T	78.7 T	WR-PG-17	38.6	39.7	22.2	75.9	0.55 T	78.7 T	WR-PG-17	38.6	39.7	22.2	75.9
Conventionals																		
Total organic carbon	percent	69	69	100	0.0648	4.87	52A02	1.47	1.5	0.897	2.73	0.0648	4.87	52A02	1.47	1.5	0.897	2.73

Table 5.2-3. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Metals																		
Arsenic	mg/kg	72	67	93	1.92	105	SED02	7.05	3.88	13.2	20.1	1.92	105	SED02	6.88	4	12.8	19
Chromium	mg/kg	72	71	99	11.5 J	220	SED02	45.1	29.9	45.7	156	11.5 J	220	SED02	44.8	29.6	45.5	155
Copper	mg/kg	72	72	100	13.2 J	1150	SED02	135	59.4	189	503	13.2 J	1150	SED02	135	59.4	189	503
Zinc	mg/kg	72	72	100	42.5 J	2010	SED02	192	128	248	372	42.5 J	2010	SED02	192	128	248	372
Butyltins																		
Tributyltin ion	µg/kg	26	26	100	6.6	819	SED02	173	119	189	475	6.6	819	SED02	173	119	189	475
PCBs[c]																		
Total PCBs	µg/kg	48	43	90	1.3 JT	250 T	05R003; G218; WR-PG-27	73	46.3	76.2	246	1.3 JT	250 T	05R003; G218; WR-PG-27	67.4	39.5	74.1	236
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	5	5	100	351 T	3950 JT	GCA05E	1300	637	1500	3370	351 T	3950 JT	GCA05E	1300	637	1500	3370
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	5	5	100	0.553 JT	11.5 JT	G192	4.4	2.08	4.66	10.6	0.553 JT	11.5 JT	G192	4.4	2.08	4.66	10.6
Pesticides																		
Aldrin	µg/kg	64	10	16	0.0178 J	2.57 NJ	G232	0.899	0.72	0.69	2.04	0.0178 J	2.83 U	52A03	0.593	0.36	0.589	1.38
Dieldrin	µg/kg	64	11	17	0.038 J	5.3 J	G651	1.17	0.297	1.74	4.49	0.038 J	9.1 U	05R003	0.829	0.361	1.49	3.42
Total chlordanes	µg/kg	65	44	68	0.163 NJT	18.5 JT	52A04	2.37	1.09	3.44	9.75	0.0427 UT	18.5 JT	52A04	2.44	1.67	3.15	9.63
DDx	µg/kg	65	54	83	0.82 JT	234 NJT	G206	16.6	7.76	33.4	47.2	0.39 UT	234 NJT	G206	14.4	7.2	30.8	38.4
PAHs																		
Total PAHs	µg/kg	72	72	100	45.1 T	27200 T	52A05	5170	3930	5030	14100	45.1 T	27200 T	52A05	5170	3930	5030	14100
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	69	44	64	46.1	830	G209	252	201	193	579	13 U	830	G209	197	130	176	550
RM 06-07																		
Grain Size																		
Fines	percent	73	73	100	0	96 T	G310	39.6	32	32.1	92.5	0	96 T	G310	39.6	32	32.1	92.5
Conventionals																		
Total organic carbon	percent	63	63	100	0.0268	19.3	C524	2.32	1.63	3.36	5.41	0.0268	19.3	C524	2.32	1.63	3.36	5.41
Metals																		
Arsenic	mg/kg	63	60	95	1.7	15.8 T	GWC1	4.11	3.72	2.18	6.69	1.7	15.8 T	GWC1	4.18	3.74	2.16	6.51
Chromium	mg/kg	59	59	100	9.75	77	06B030	26.1	25.9	10.7	38	9.75	77	06B030	26.1	25.9	10.7	38
Copper	mg/kg	59	59	100	13.5	606	06B030	53.6	40.3	87.3	86.2	13.5	606	06B030	53.6	40.3	87.3	86.2
Zinc	mg/kg	59	59	100	9.7	1090 T	GWC1	123	104	135	196	9.7	1090 T	GWC1	123	104	135	196
Butyltins																		
Tributyltin ion	µg/kg	14	13	93	4.4	350 J	SD060	67.1	32	96.9	248	0.079 U	350 J	SD060	62.3	29	94.8	240
PCBs[c]																		
Total PCBs	µg/kg	48	43	90	1.05 JT	5870 JT	BT016	223	41.6	914	217	1.05 JT	5870 JT	BT016	201	36.8	867	208
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	15	15	100	152 JT	15000 JT	G671	3440	624	5020	12300	152 JT	15000 JT	G671	3440	624	5020	12300
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	15	15	100	0.344 JT	88.7 NJT	06R002	16.1	1.72	26.6	62.9	0.344 JT	88.7 NJT	06R002	16.1	1.72	26.6	62.9
Pesticides																		
Aldrin	µg/kg	50	8	16	0.0864 J	1.71 J	G255	0.574	0.432	0.518	1.4	0.0264 UJ	1.71 J	G255	0.335	0.198	0.375	1.03
Dieldrin	µg/kg	48	6	12	0.097 J	0.966 NJ	G280	0.251	0.111	0.351	0.755	0.0432 U	3.9 UJ	C533	0.413	0.195	0.629	0.922
Total chlordanes	µg/kg	50	32	64	0.09 JT	3.91 NJT	C533	1.14	0.917	0.955	2.84	0.0352 UT	3.91 NJT	C533	1.15	0.948	0.942	2.62
DDx	µg/kg	52	42	81	0.21 JT	370 JA	SD074	18.2	7.04	56.2	34.1	0.21 JT	370 JA	SD074	15.3	6.05	50.7	33.4
PAHs																		
Total PAHs	µg/kg	79	75	95	33 A	103000 T	06R040	3870	1170	12800	8120	13.4 UA	103000 T	06R040	3680	994	12500	7550
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	59	26	44	23	612 J	DM-L	154	97.5	155	523	8 U	612 J	DM-L	106	61	124	323
RM 07-08																		
Grain Size																		
Fines	percent	58	58	100	2.35 T	93.5	SED10	55.2	70	28.8	85.9	2.35 T	93.5	SED10	55.2	70	28.8	85.9
Conventionals																		
Total organic carbon	percent	48	48	100	0.0469	3.47	4806	1.61	1.58	0.654	2.63	0.0469	3.47	4806	1.61	1.58	0.654	2.63
Metals																		
Arsenic	mg/kg	62	47	76	1.3	75.6	4803	7.16	3.93	13	21.8	1.3	75.6	4803	6.63	4.27	11.3	8.57
Chromium	mg/kg	54	54	100	9.81	173	4806	34.9	31.7	22.1	42.4	9.81	173	4806	34.9	31.7	22.1	42.4
Copper	mg/kg	54	54	100	13.8 J	314 J	4806	53	43	40.7	93.6	13.8 J	314 J	4806	53	43	40.7	93.6
Zinc	mg/kg	46	46	100	58.3	492 J	4806	114	98.8	66.7	180	58.3	492 J	4806	114	98.8	66.7	180

Table 5.2-3. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Butyltins																		
Tributyltin ion	µg/kg	30	30	100	3	1600	BT019	193	135	284	349	3	1600	BT019	193	135	284	349
PCBs[c]																		
Total PCBs	µg/kg	32	22	69	4.52 T	200 T	SD096	32.9	18.3	41.9	80.6	2.2 UT	200 T	SD096	32.6	28.1	35.3	64.3
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	3	3	100	112 T	2600 T	GSP07E	1510	1810	1270	2520	112 T	2600 T	GSP07E	1510	1810	1270	2520
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	4	4	100	0.404 JT	37.5 JT	SD086	11.9	4.91	17.2	32.7	0.404 JT	37.5 JT	SD086	11.9	4.91	17.2	32.7
Pesticides																		
Aldrin	µg/kg	29	4	14	0.0692 JT	0.46 J	G6841	0.273	0.281	0.19	0.452	0.0295 UJ	1.87 U	4806	0.429	0.19	0.545	1.76
Dieldrin	µg/kg	29	6	21	0.038 J	0.35	G680	0.171	0.125	0.129	0.34	0.032 U	2.3 U	GRAB-07	0.378	0.12	0.581	1.77
Total chlordanes	µg/kg	29	21	72	0.044 NJT	3.9 NJT	G6841	0.761	0.6	0.854	2.26	0.044 NJT	4.34 UT	4806	1.08	0.626	1.18	3.62
DDx	µg/kg	29	25	86	0.474 NJT	39.3 JT	4806	6.04	3.78	7.6	11.7	0.474 NJT	39.3 JT	4806	5.72	3.78	7.09	11.5
PAHs																		
Total PAHs	µg/kg	62	61	98	49 T	38900 JT	07R004	1420	408	4990	2610	10 UA	38900 JT	07R004	1390	390	4950	2600
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	46	30	65	17 J	7330 J	DM-I	573	145	1570	3130	14 U	7330 J	DM-I	413	130	1280	601
RM 08-09																		
Grain Size																		
Fines	percent	17	17	100	5.21 T	86.7 T	PSY45	56.3	61.9	23.3	82.5	5.21 T	86.7 T	PSY45	56.3	61.9	23.3	82.5
Conventionals																		
Total organic carbon	percent	18	18	100	0.24	2.45	PSY45	1.69	1.78	0.552	2.31	0.24	2.45	PSY45	1.69	1.78	0.552	2.31
Metals																		
Arsenic	mg/kg	17	15	88	1.67	5	PSY47	3.61	3.56	0.77	4.46	1.67	5	PSY47; SD138	3.71	3.86	0.798	5
Chromium	mg/kg	17	17	100	14.8	48.6	S0601	32.9	33.2	7.52	41.1	14.8	48.6	S0601	32.9	33.2	7.52	41.1
Copper	mg/kg	17	17	100	24.2 J	75.6 J	G419	44.9	40.1	14.4	73.6	24.2 J	75.6 J	G419	44.9	40.1	14.4	73.6
Zinc	mg/kg	17	17	100	76.6	131	G420	107	112	15	124	76.6	131	G420	107	112	15	124
Butyltins																		
Tributyltin ion	µg/kg	5	5	100	14	150	C420	48.7	30	57.1	126	14	150	C420	48.7	30	57.1	126
PCBs[c]																		
Total PCBs	µg/kg	15	11	73	9.05 JT	45.6 T	BT0271	27	29	12.2	44.3	9.05 JT	45.6 T	BT0271	24.3	25.2	13	43.7
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	4	4	100	123 JT	317 T	BT0272	215	211	79.4	301	123 JT	317 T	BT0272	215	211	79.4	301
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	4	4	100	0.254 JT	0.926 JT	BT0272	0.533	0.476	0.282	0.861	0.254 JT	0.926 JT	BT0272	0.533	0.476	0.282	0.861
Pesticides																		
Aldrin	µg/kg	14	3	21	0.0394 JT	0.444 NJ	G412	0.175	0.0411	0.233	0.404	0.0274 UJ	2 U	PSY49	0.408	0.0516	0.637	1.71
Dieldrin	µg/kg	14	6	43	0.056 J	0.438 NJ	G438	0.206	0.179	0.159	0.409	0.056 J	2 U	PSY49	0.518	0.294	0.673	1.94
Total chlordanes	µg/kg	14	10	71	0.214 NJT	1.22 NJT	G438	0.746	0.748	0.323	1.2	0.214 NJT	3.59 UT	S0601	1.02	0.842	0.868	2.56
DDx	µg/kg	14	13	93	1.19 NJT	31.5 NJT	G424	6.44	3.9	8.17	21.2	1.19 NJT	31.5 NJT	G424	6.24	3.75	7.88	20.4
PAHs																		
Total PAHs	µg/kg	17	17	100	69.7 JT	711 T	G438	318	296	188	662	69.7 JT	711 T	G438	318	296	188	662
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	17	11	65	80	460	PSY47	261	242	122	425	25 U	460	PSY47	189	140	140	404
Swan Island Lagoon																		
Grain Size																		
Fines	percent	107	107	100	0.78 T	103 T	PSY23	61.6	74.2	34.7	97.6	0.78 T	103 T	PSY23	61.6	74.2	34.7	97.6
Conventionals																		
Total organic carbon	percent	129	129	100	0.0423	4.51	PSY08	1.74	1.9	0.997	3.16	0.0423	4.51	PSY08	1.74	1.9	0.997	3.16
Metals																		
Arsenic	mg/kg	124	114	92	0.7	17	PSY12; PSY27	5.87	5.33	3.48	14.2	0.7	17	PSY12; PSY27	5.87	5.48	3.35	13.8
Chromium	mg/kg	124	124	100	8.98 JT	148	PP01M104	35.4	33.6	19.8	64.6	8.98 JT	148	PP01M104	35.4	33.6	19.8	64.6
Copper	mg/kg	124	124	100	12.8	1080	G390	122	89.3	141	359	12.8	1080	G390	122	89.3	141	359
Zinc	mg/kg	124	124	100	45.6	731	G390	227	196	140	476	45.6	731	G390	227	196	140	476
Butyltins																		
Tributyltin ion	µg/kg	36	36	100	0.45 J	46000	G421	2340	328	7740	6750	0.45 J	46000	G421	2340	328	7740	6750
PCBs[c]																		
Total PCBs	µg/kg	100	82	82	2.39 JT	12500 JT	G393	373	116	1400	872	2.39 JT	12500 JT	G393	309	91.8	1270	733
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	12	12	100	115 T	27700 JT	G426	3030	647	7790	13600	115 T	27700 JT	G426	3030	647	7790	13600

Table 5.2-3. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	12	12	100	0.202 JT	40.4 JT	G426	4.9	1.7	11.2	20.1	0.202 JT	40.4 JT	G426	4.9	1.7	11.2	20.1
Pesticides																		
Aldrin	µg/kg	78	7	9	0.027 J	6	PSY01	1.03	0.112	2.2	4.35	0.027 J	11.2 UJ	M0303	1.05	0.317	1.84	6
Dieldrin	µg/kg	78	11	14	0.0378 J	22.3	M0201	4.35	0.34	6.8	16.2	0.03 U	22.3	M0201	1.57	0.576	3.29	8.59
Total chlordanes	µg/kg	78	39	50	0.073 JT	25.4 NJT	G390	2.75	1.27	4.39	7.3	0.0437 UT	25.9 UJT	M0303	3.06	2.18	4.38	7.74
DDx	µg/kg	78	51	65	0.149 JT	153 A	PSY27	15.7	6.22	29.9	83.8	0.0692 UJT	153 A	PSY27	12	4.99	24.9	35.1
PAHs																		
Total PAHs	µg/kg	124	123	99	6.73 JT	106000 JT	M0304	3580	1410	10100	11700	6.73 JT	106000 JT	M0304	3550	1400	10100	11600
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	121	110	91	45	440000 J	G367	6150	834	42100	10100	12 U	440000 J	G367	5610	760	40100	8600
RM 09-10																		
Grain Size																		
Fines	percent	33	33	100	0.37 T	80.2 T	WR-PG-43	38.6	35.9	25.6	71.7	0.37 T	80.2 T	WR-PG-43	38.6	35.9	25.6	71.7
Conventionals																		
Total organic carbon	percent	39	38	97	0.0431 JT	2.2	WR-PG-43	1.05	1.14	0.588	1.84	0.00433 U	2.2	WR-PG-43	1.03	1.11	0.604	1.83
Metals																		
Arsenic	mg/kg	39	39	100	1.3 T	6.42	G487	3.11	3.17	1.04	4.98	1.3 T	6.42	G487	3.11	3.17	1.04	4.98
Chromium	mg/kg	39	39	100	10.3 T	41.3	BT031	23	23	7.47	34.7	10.3 T	41.3	BT031	23	23	7.47	34.7
Copper	mg/kg	39	39	100	16.6	116	G487	31.6	30.6	17.2	43.9	16.6	116	G487	31.6	30.6	17.2	43.9
Zinc	mg/kg	39	39	100	60.2 T	334	G487	97.1	86.1	46.5	158	60.2 T	334	G487	97.1	86.1	46.5	158
Butyltins																		
Tributyltin ion	µg/kg	2	2	100	1.5	3.6	BT031	2.55	2.55	1.48	3.5	1.5	3.6	BT031	2.55	2.55	1.48	3.5
PCBs[c]																		
Total PCBs	µg/kg	33	29	88	7.6 T	141 T	G472	34.4	19.6	33.6	106	5.4 UT	141 T	G472	31.2	17.9	32.6	106
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	3	3	100	51.1 JT	530 JT	GSP10E	281	262	240	503	51.1 JT	530 JT	GSP10E	281	262	240	503
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	3	3	100	0.166 JT	1.12 JT	GSP10E	0.63	0.604	0.478	1.07	0.166 JT	1.12 JT	GSP10E	0.63	0.604	0.478	1.07
Pesticides																		
Aldrin	µg/kg	39	2	5	0.0201 J	0.47	G741	0.245	0.245	0.318	0.448	0.0201 J	6 U	PSY70; PSY71	0.599	0.19	1.33	2.07
Dieldrin	µg/kg	39	2	5	0.043 J	0.261 J	G442	0.152	0.152	0.154	0.25	0.032 U	6 U	PSY70; PSY71	0.633	0.249	1.3	1.72
Total chlordanes	µg/kg	39	21	54	0.087 JT	1.05 NJT	G442	0.386	0.342	0.24	0.74	0.0497 UT	3.79 UJT	S0502	0.893	0.42	0.939	2.55
DDx	µg/kg	39	26	67	0.635 NJT	7.79 NJT	WR-PG-45	2.92	1.89	2.17	7.62	0.39 UT	7.79 NJT	WR-PG-45	2.93	2.17	2.03	7.59
PAHs																		
Total PAHs	µg/kg	39	39	100	10.3 T	1180 T	WR-PG-37	219	164	214	509	10.3 T	1180 T	WR-PG-37	219	164	214	509
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	39	35	90	17.8 JT	920 J	G470	138	71	175	402	17.8 JT	920 J	G470	130	67	168	387
RM 10-11																		
Grain Size																		
Fines	percent	15	15	100	0.92 T	84 T	BT033	45.9	50.7	24.9	81.1	0.92 T	84 T	BT033	45.9	50.7	24.9	81.1
Conventionals																		
Total organic carbon	percent	18	18	100	0.23	2.47	BT033	1.71	1.85	0.596	2.42	0.23	2.47	BT033	1.71	1.85	0.596	2.42
Metals																		
Arsenic	mg/kg	18	18	100	1.27 J	3.86	BT033	2.97	3.06	0.599	3.8	1.27 J	3.86	BT033	2.97	3.06	0.599	3.8
Chromium	mg/kg	18	18	100	10.1	40.5	G495	25.7	25.4	9.05	38.5	10.1	40.5	G495	25.7	25.4	9.05	38.5
Copper	mg/kg	18	18	100	16	45	SD03	31.5	31.9	6.66	42	16	45	SD03	31.5	31.9	6.66	42
Zinc	mg/kg	18	18	100	47.6	203	G505	94.7	88.7	33.1	134	47.6	203	G505	94.7	88.7	33.1	134
Butyltins																		
Tributyltin ion	µg/kg	3	2	67	3	3	SD02; SD04	3	3	0	3	2.8 U	3	SD02; SD04	2.93	3	0.115	3
PCBs[c]																		
Total PCBs	µg/kg	18	18	100	5.49 T	550 T	SD04	59.3	18.4	129	244	5.49 T	550 T	SD04	59.3	18.4	129	244
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	1	1	100	173 T	173 T	BT033	173	173	--	173	173 T	173 T	BT033	173	173	--	173
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	1	1	100	0.497 JT	0.497 JT	BT033	0.497	0.497	--	0.497	0.497 JT	0.497 JT	BT033	0.497	0.497	--	0.497

Table 5.2-3. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Pesticides																		
Aldrin	µg/kg	15	1	7	0.083 J	0.083 J	BT033	0.083	0.083	--	0.083	0.0469 UJ	5.36 UJ	G505	0.565	0.147	1.34	2.06
Dieldrin	µg/kg	15	1	7	0.0936 J	0.0936 J	BT033	0.0936	0.0936	--	0.0936	0.032 U	5.36 U	G505	0.628	0.144	1.34	2.31
Total chlordanes	µg/kg	15	12	80	0.273 NJT	7.04 JT	G505	1.31	0.793	1.83	3.97	0.273 NJT	7.04 JT	G505	1.18	0.759	1.65	3.13
DDx	µg/kg	15	13	87	1.3 T	16.8 NJT	WR-PG-63	4.63	3.21	4.01	10.5	0.492 UJT	16.8 NJT	WR-PG-63	4.4	3.21	3.88	9.41
PAHs																		
Total PAHs	µg/kg	22	22	100	80.3 JT	46000 T	GA-PD02	4580	803	11400	30500	80.3 JT	46000 T	GA-PD02	4580	803	11400	30500
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	18	11	61	76 J	340 J	G500	137	110	78.1	270	25 UJ	1100 UJ	G505	166	100	244	454
RM 11-11.8																		
Grain Size																		
Fines	percent	20	20	100	1.67 T	56.8 T	G012	20.5	18.8	14.8	43.9	1.67 T	56.8 T	G012	20.5	18.8	14.8	43.9
Conventionals																		
Total organic carbon	percent	65	65	100	0.143	10.1	SL004	1.61	1.29	1.48	3.05	0.143	10.1	SL004	1.61	1.29	1.48	3.05
Metals																		
Arsenic	mg/kg	24	24	100	1.4	7.6	G029	3.35	2.84	1.39	5.25	1.4	7.6	G029	3.35	2.84	1.39	5.25
Chromium	mg/kg	24	24	100	13.5	193	G026	37.7	24.7	36.7	71.2	13.5	193	G026	37.7	24.7	36.7	71.2
Copper	mg/kg	24	24	100	21.1	2830	UG01	161	31.9	570	165	21.1	2830	UG01	161	31.9	570	165
Zinc	mg/kg	24	24	100	72.4	358	SL017	132	109	67.1	270	72.4	358	SL017	132	109	67.1	270
Butyltins																		
Tributyltin ion	µg/kg	21	14	67	0.96 J	87	G005	12.3	3.4	22.6	46.1	0.55 U	87	G005	8.45	2.2	19.1	24
PCBs[c]																		
Total PCBs	µg/kg	66	65	98	1.5 JT	6640 JT	GCA11E	495	69	1120	2640	1.5 JT	6640 JT	GCA11E	488	68.5	1120	2620
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	20	20	100	58.7 JT	12700 JT	G039	1670	947	2760	4550	58.7 JT	12700 JT	G039	1670	947	2760	4550
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	20	20	100	0.111 JT	21.6 JT	G039	4.44	2.56	5.08	12.1	0.111 JT	21.6 JT	G039	4.44	2.56	5.08	12.1
Pesticides																		
Aldrin	µg/kg	26	5	19	0.12 J	0.34 J	G051	0.232	0.24	0.101	0.336	0.046 U	4.1 U	SL004	0.453	0.18	0.848	1.73
Dieldrin	µg/kg	26	2	8	0.054 J	8.7	SL004	4.38	4.38	6.11	8.27	0.051 U	67 U	G036	3.77	0.3	13.1	7.65
Total chlordanes	µg/kg	26	15	58	0.061 JT	60 NJT	GCA11E	11.4	2.6	18.4	50.2	0.061 JT	97 UT	G026	14	2.45	24.1	58.5
DDx	µg/kg	26	26	100	0.16 T	430 JT	GCA11E	42	7.95	89.8	164	0.16 T	430 JT	GCA11E	42	7.95	89.8	164
PAHs																		
Total PAHs	µg/kg	25	25	100	169 JT	67200 JT	SL004	3640	872	13300	2670	169 JT	67200 JT	SL004	3640	872	13300	2670
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	24	19	79	16 J	2100	G005	204	90	464	444	16 J	2100	G005	244	110	429	669

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-4. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Study Area																		
Grain Size																		
Fines	percent	467	467	100	0.39 T	101 T	C380	48.7	53.9	31.4	91.3	0.39 T	101 T	C380	48.7	53.9	31.4	91.3
Conventionals																		
Total organic carbon	percent	746	712	95	0.02 J	8.36	C244	1.31	1.13	1.09	2.86	0.02 J	8.36	C244	1.25	1.05	1.09	2.85
Metals																		
Arsenic	mg/kg	657	634	96	0.8	51.4	C708	4.1	3.33	4.13	7.7	0.8	51.4	C708	4.11	3.37	4.08	7.86
Chromium	mg/kg	652	652	100	6.41 J	249 T	C207-1	28	25.2	20.2	47.7	6.41 J	249 T	C207-1	28	25.2	20.2	47.7
Copper	mg/kg	653	653	100	9.42 J	3290	C384	66.4	34.1	196	164	9.42 J	3290	C384	66.4	34.1	196	164
Zinc	mg/kg	693	693	100	24	1930	C384	155	105	164	458	24	1930	C384	155	105	164	458
Butyltins																		
Tributyltin ion	µg/kg	211	122	58	0.32 J	90000	PSY30C	2450	55	9830	14900	0.068 U	90000	PSY30C	1410	2	7560	4200
PCBs[c]																		
Total PCBs	µg/kg	662	407	61	0.00138 JT	26000 T	C092	541	98.8	2030	1930	0.00138 JT	26000 T	C092	335	23.4	1610	1100
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	106	105	99	0.403 T	87600 JT	C678	2020	341	8930	4060	0.403 T	87600 JT	C678	2000	325	8890	4030
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	107	102	95	0.000478 JT	173 JT	C678	5.45	1.06	18.4	27	0.000478 JT	173 JT	C678	5.2	0.933	18	22.7
Pesticides																		
Aldrin	µg/kg	354	40	11	0.119 J	3.81 NJ	C019-1	0.68	0.531	0.654	1.61	0.0269 UJ	20 UJ	C092	0.47	0.15	1.5	1.26
Dieldrin	µg/kg	372	21	6	0.038 NJ	100 J	C092	5.22	0.43	21.7	1.12	0.03 U	100 J	C092	0.758	0.15	5.27	1.9
Total chlordanes	µg/kg	374	202	54	0.046 JT	490 NJT	C092	12.6	1.99	56.9	21.7	0.0359 UT	490 NJT	C092	7.25	0.586	42.2	12.8
DDx	µg/kg	536	396	74	0.069 JT	2100 NJT	C708	49.1	9.88	189	163	0.049 UJT	2100 NJT	C708	36.6	4.81	164	125
PAHs																		
Total PAHs	µg/kg	672	630	94	0.15 JT	616000 T	SED01	13400	1390	49000	65000	0.15 JT	616000 T	SED01	12500	1170	47600	60100
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	654	255	39	3.1 J	6800	C384	337	90	778	1430	2 U	6800	C384	199	39.5	611	801
RM 01.9-03																		
Grain Size																		
Fines	percent	68	68	100	1.6 T	94.6 T	C022	50.8	57.6	32.5	91.3	1.6 T	94.6 T	C022	50.8	57.6	32.5	91.3
Conventionals																		
Total organic carbon	percent	73	73	100	0.04 J	2.84	021108WRPB-VC-06	1.36	1.36	0.814	2.43	0.04 J	2.84	021108WRPB-VC-	1.36	1.36	0.814	2.43
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	17	16	94	16.2 JT	3690 JT	DC01-1	446	143	902	1670	0.623 UT	3690 JT	DC01-1	420	138	880	1540
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	18	17	94	0.029 JT	10.6 JT	DC01-1	1.45	0.452	2.63	5.82	0.013 UT	10.6 JT	DC01-1	1.37	0.447	2.58	5.53
Pesticides																		
Aldrin	µg/kg	67	7	10	0.17 NJ	3.81 NJ	C019-1	0.989	0.49	1.28	2.97	0.0281 UJ	3.81 NJ	C019-1	0.288	0.12	0.534	0.943
Dieldrin	µg/kg	67	5	7	0.25 J	1.1 NJ	C015	0.516	0.43	0.337	0.972	0.03 U	3.7 U	WR-VC-02	0.412	0.26	0.641	1.07
Total chlordanes	µg/kg	67	39	58	0.046 JT	15 T	C020	2.26	1.6	2.85	6.8	0.0418 UJT	19 UA	WR-VC-02	2.07	0.55	3.71	6.82
DDx	µg/kg	67	63	94	0.17 JT	110 JT	C609	14.4	9.1	18.4	50.4	0.17 JT	110 JT	C609	13.7	8.4	18.1	48.3
PAHs																		
Total PAHs	µg/kg	67	66	99	1.63 JT	14000 T	DC01-1	1940	729	2920	7260	0.88 UT	14000 T	DC01-1	1910	700	2910	7240
Phthalates																		
Metals																		
Arsenic	mg/kg	65	64	98	0.86 J	7.88 J	DC01-2	3.66	3.59	1.22	5.99	0.86 J	7.88 J	DC01-2	3.71	3.6	1.28	6.12
Chromium	mg/kg	63	63	100	8.89	199 J	RB13	30.5	27.8	23.8	44.7	8.89	199 J	RB13	30.5	27.8	23.8	44.7
Copper	mg/kg	64	64	100	11.8	53.6	C022	32.4	35.2	13	50.3	11.8	53.6	C022	32.4	35.2	13	50.3
Zinc	mg/kg	64	64	100	44.5	479	C019-1	131	113	68.6	228	44.5	479	C019-1	131	113	68.6	228
Butyltins																		
Tributyltin ion	µg/kg	1	1	100	5.4	5.4	021108WRPB-VC-06	5.4	5.4	--	5.4	5.4	5.4	021108WRPB-VC-06	5.4	5.4	--	5.4
PCBs[c]																		
Total PCBs	µg/kg	72	58	81	0.291 JT	7900 JT	C011-2	521	99.8	1220	1790	0.291 JT	7900 JT	C011-2	421	53	1110	1470
Bis(2-ethylhexyl) phthalate	µg/kg	68	43	63	6.9 J	290	C604	53.9	41	49.7	119	2.5 U	290	C604	44.8	33.5	47.6	117
RM 03-04																		
Grain Size																		
Fines	percent	72	72	100	0.67 T	91.3 T	C103	36.8	38.5	29.8	86.1	0.67 T	91.3 T	C103	36.8	38.5	29.8	86.1
Conventionals																		
Total organic carbon	percent	78	76	97	0.03 J	5.46 T	C092	1.16	0.895	1.02	2.77	0.02 U	5.46 T	C092	1.13	0.84	1.03	2.77

Table 5.2-4. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Metals																		
Arsenic	mg/kg	74	73	99	1.26	18.3	C092	3.61	3.33	2.43	5.35	1.26	18.3	C092	3.62	3.34	2.41	5.32
Chromium	mg/kg	74	74	100	13.6 T	63.3	C092	28.6	28.6	11.1	48	13.6 T	63.3	C092	28.6	28.6	11.1	48
Copper	mg/kg	74	74	100	11.6 T	113	C092	35.6	31.1	20.8	75.3	11.6 T	113	C092	35.6	31.1	20.8	75.3
Zinc	mg/kg	82	82	100	44.8	672	C092	149	126	115	403	44.8	672	C092	149	126	115	403
Butyltins																		
Tributyltin ion	µg/kg	49	21	43	2.4	630	C083	93.5	40	156	450	0.068 U	630	C083	40.3	1.1	111	128
PCBs[c]																		
Total PCBs	µg/kg	84	66	79	2.2 JT	26000 T	C092	1530	129	4350	11800	1.3 UT	26000 T	C092	1200	68.2	3900	5080
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	16	16	100	0.403 T	3350 JT	C092	638	135	1020	2710	0.403 T	3350 JT	C092	638	135	1020	2710
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	16	16	100	0.000478 JT	10.4 JT	C092	1.99	0.426	3.28	9.54	0.000478 JT	10.4 JT	C092	1.99	0.426	3.28	9.54
Pesticides																		
Aldrin	µg/kg	72	9	12	0.13 NJT	1.2 NJ	C103	0.667	0.64	0.291	1.08	0.0315 UJ	20 UJ	C092	0.721	0.145	2.46	3.09
Dieldrin	µg/kg	72	2	3	0.95 NJ	100 J	C092	50.5	50.5	70	95	0.0516 U	100 J	C092	2.34	0.21	11.9	6.08
Total chlordanes	µg/kg	72	36	50	0.13 JT	490 NJT	C092	31.2	2.1	110	171	0.042 UJT	490 NJT	C092	16	0.535	78.7	17.1
DDx	µg/kg	72	57	79	0.077 JT	1540 NJT	C092	87.1	12.5	245	511	0.0561 UJT	1540 NJT	C092	70.6	8.59	221	360
PAHs																		
Total PAHs	µg/kg	84	81	96	0.73 JT	616000 T	SED01	22000	1880	79300	91200	0.7 UT	616000 T	SED01	21200	1760	77900	87700
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	72	20	28	6.8 J	3600	C099	586	120	1010	2840	2 U	3600	C099	190	25.5	580	945
RM 04-05																		
Grain Size																		
Fines	percent	17	17	100	3	85.5 T	C111-1	56.7	67	28.5	83.7	3	85.5 T	C111-1	56.7	67	28.5	83.7
Conventionals																		
Total organic carbon	percent	228	201	88	0.02 J	5.71	T4-VC23	1.28	1.23	1.03	2.78	0.02 J	5.71	T4-VC23	1.14	0.92	1.04	2.72
Metals																		
Arsenic	mg/kg	188	187	99	0.9	23.3	T4-VC32	3.47	2.9	2.54	6.53	0.9	23.3	T4-VC32	3.47	2.9	2.53	6.49
Chromium	mg/kg	185	185	100	6.41 J	41.4	SD031	18.5	17.4	8.1	32.8	6.41 J	41.4	SD031	18.5	17.4	8.1	32.8
Copper	mg/kg	188	188	100	9.42 J	116	T4-B411-06	30.2	28.1	17.8	54.8	9.42 J	116	T4-B411-06	30.2	28.1	17.8	54.8
Zinc	mg/kg	232	232	100	27.3 J	878 J	T4-S3-02	155	73.9	177	607	27.3 J	878 J	T4-S3-02	155	73.9	177	607
Butyltins																		
Tributyltin ion	µg/kg	9	6	67	2.1	110	C112	45.3	36.7	48.8	104	0.23 U	110	C112	30.3	2.2	44.7	99.6
PCBs[c]																		
Total PCBs	µg/kg	173	77	45	3.3 JT	1000 T	T4-VC29	106	70	131	267	1.3 UT	1000 T	T4-VC29	52.9	11	99.6	225
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	8	8	100	243 T	3080 JT	C111-2	1340	1280	964	2690	243 T	3080 JT	C111-2	1340	1280	964	2690
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	8	8	100	0.768 JT	8.87 JT	C111-2	3.52	3.04	2.74	7.53	0.768 JT	8.87 JT	C111-2	3.52	3.04	2.74	7.53
Pesticides																		
Aldrin	µg/kg	9	2	22	0.695 NJ	0.739 J	C112	0.717	0.717	0.0311	0.737	0.0425 UJ	0.739 J	C112	0.269	0.219	0.266	0.721
Dieldrin	µg/kg	9	0	0 --	--	--	--	--	--	--	--	0.0696 U	0.37 U	C112	0.225	0.298	0.146	0.369
Total chlordanes	µg/kg	9	8	89	1.15 NJT	12.7 NJT	C111-2	4.48	2.82	3.78	10.7	0.243 UJT	12.7 NJT	C111-2	4.01	2.48	3.81	10.4
DDx	µg/kg	173	92	53	0.07 JT	430 JT	T4-PI-09	21.7	11.5	48.9	46.3	0.07 JT	430 JT	T4-PI-09	11.8	0.5	37.1	43.2
PAHs																		
Total PAHs	µg/kg	240	224	93	0.15 JT	490000 T	T4-S3-01	23500	2010	64300	141000	0.15 JT	490000 T	T4-S3-01	21900	1840	62400	140000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	239	64	27	22	3000	T4-VC20	196	85.5	404	699	4.9 U	4000 U	HC-S-07; HC-S-11; HC-S-42	180	36	611	497
RM 05-06																		
Grain Size																		
Fines	percent	33	33	100	0.39 T	83.8 T	C164	41.5	51.2	27.3	70.4	0.39 T	83.8 T	C164	41.5	51.2	27.3	70.4
Conventionals																		
Total organic carbon	percent	33	33	100	0.05	8.16	C651	1.91	1.57	1.73	3.95	0.05	8.16	C651	1.91	1.57	1.73	3.95
Metals																		
Arsenic	mg/kg	34	31	91	1.49	24.6	C206	5.37	3.59	5.5	18.7	1.49	24.6	C206	5.48	3.88	5.27	17.2
Chromium	mg/kg	34	34	100	13.1 T	249 T	C207-1	56	39.1	51.8	158	13.1 T	249 T	C207-1	56	39.1	51.8	158
Copper	mg/kg	33	33	100	12.7	188	C203	56.9	39.1	51.3	160	12.7	188	C203	56.9	39.1	51.3	160
Zinc	mg/kg	33	33	100	46.2	515	C206	171	156	117	366	46.2	515	C206	171	156	117	366

Table 5.2-4. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Butyltins																		
Tributyltin ion	µg/kg	21	12	57	0.36 J	1000	SD053	196	46	320	819	0.2 U	1000	SD053	112	1.5	257	670
PCBs[c]																		
Total PCBs	µg/kg	32	18	56	1.95 JT	2830 T	C203	369	220	639	992	1.4 UT	2830 T	C203	208	27.3	508	568
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	11	11	100	1.71 T	1940 JT	C207-1	561	98.9	731	1760	1.71 T	1940 JT	C207-1	561	98.9	731	1760
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	11	9	82	0.0482 JT	7.03 JT	C207-1	2.21	1.76	2.46	5.91	0.016 UT	7.03 JT	C207-1	1.81	0.337	2.38	5.63
Pesticides																		
Aldrin	µg/kg	20	5	25	0.119 J	1.6 J	C206	0.92	1.11	0.638	1.56	0.0295 UJ	1.6 J	C206	0.449	0.167	0.522	1.39
Dieldrin	µg/kg	32	1	3	0.077 J	0.077 J	C651	0.077	0.077	--	0.077	0.0474 U	2 U	SD049	0.372	0.327	0.479	1.46
Total chlordanes	µg/kg	33	9	27	0.23 NJT	11.2 NJT	C206	4.67	3.69	3.59	10.5	0.0386 UT	12 UT	C651	2.11	0.297	3.41	10.2
DDx	µg/kg	32	26	81	0.09 JT	332 NJT	C197	56.2	10.7	85.6	221	0.0643 UJT	332 NJT	C197	45.7	3.49	80	196
PAHs																		
Total PAHs	µg/kg	33	33	100	21.9 JT	66600 T	C192	11600	5160	15900	43300	21.9 JT	66600 T	C192	11600	5160	15900	43300
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	33	8	24	36	620	C232	255	225	190	540	2.2 U	620	C232	91	31	137	342
RM 06-07																		
Grain Size																		
Fines	percent	55	55	100	1.55 T	94.1 T	NA-2B	52.4	63.5	34.5	91	1.55 T	94.1 T	NA-2B	52.4	63.5	34.5	91
Conventionals																		
Total organic carbon	percent	55	55	100	0.03 J	8.36	C244	1.78	1.7	1.73	4.58	0.03 J	8.36	C244	1.78	1.7	1.73	4.58
Metals																		
Arsenic	mg/kg	64	62	97	0.8	11.4 J	C295	4.11	4.05	1.83	6.42	0.8	11.4 J	C295	4.13	4.07	1.81	6.41
Chromium	mg/kg	64	64	100	9.29	52.9	C295	29	31.1	10.1	43.1	9.29	52.9	C295	29	31.1	10.1	43.1
Copper	mg/kg	64	64	100	13.2	801	C277	70	47.1	106	158	13.2	801	C277	70	47.1	106	158
Zinc	mg/kg	64	64	100	34.2	374	C295	133	106	76.9	284	34.2	374	C295	133	106	76.9	284
Butyltins																		
Tributyltin ion	µg/kg	17	8	47	0.68 J	360	SD071	90.5	67.5	120	283	0.23 U	360	SD071	42.7	0.33	91.7	184
PCBs[c]																		
Total PCBs	µg/kg	51	26	51	0.00252 JT	737 JT	C291	163	130	161	388	0.00252 JT	737 JT	C291	85	6.4	140	341
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	12	12	100	0.691 T	8480 JT	LWMC13	1650	293	2560	5690	0.691 T	8480 JT	LWMC13	1650	293	2560	5690
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	12	10	83	0.011 JT	31.5 T	LWMC13	5.8	1.57	9.6	20.9	0.007 UT	31.5 T	LWMC13	4.83	0.943	8.97	18.5
Pesticides																		
Aldrin	µg/kg	52	3	6	0.31 J	1.02 NJ	C293-2	0.561	0.352	0.398	0.953	0.0269 UJ	3.3 U	C303	0.27	0.16	0.489	0.98
Dieldrin	µg/kg	52	3	6	0.18 NJ	1.12 NJ	C293-1	0.569	0.406	0.491	1.05	0.044 UJ	2 UJ	LWMC13; SD074	0.321	0.155	0.425	1.05
Total chlordanes	µg/kg	52	24	46	0.064 JT	53.2 NJT	C295	5.52	1.83	11.7	24.3	0.0359 UT	53.2 NJT	C295	2.85	0.34	8.25	10.2
DDx	µg/kg	52	39	75	0.085 JT	1920 NJT	C295	103	16.6	311	273	0.049 UJT	1920 NJT	C295	77.2	9.45	272	230
PAHs																		
Total PAHs	µg/kg	54	52	96	0.54 JT	59300 T	C293-2	6560	2290	12800	39100	0.54 JT	59300 T	C293-2	6320	1870	12600	39000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	53	11	21	3.1 J	610	C244	122	60	175	410	2.7 U	730 U	C267	110	48	152	370
RM 07-08																		
Grain Size																		
Fines	percent	28	28	100	0.46 T	89.2 T	C678	51.6	67.2	33.6	84	0.46 T	89.2 T	C678	51.6	67.2	33.6	84
Conventionals																		
Total organic carbon	percent	28	28	100	0.03 J	2.5	C678	1.36	1.66	0.874	2.35	0.03 J	2.5	C678	1.36	1.66	0.874	2.35
Metals																		
Arsenic	mg/kg	37	32	86	1.34	32	SED10	4.11	3.04	5.2	5.63	1 U	32	SED10	4.15	3.23	4.9	6.82
Chromium	mg/kg	37	37	100	7.86	44	SED10	28.3	31	8.97	39.4	7.86	44	SED10	28.3	31	8.97	39.4
Copper	mg/kg	36	36	100	10.9	218	SED10	48.3	45.1	35.1	85.7	10.9	218	SED10	48.3	45.1	35.1	85.7
Zinc	mg/kg	24	24	100	40.8	285	C347	124	128	60.3	211	40.8	285	C347	124	128	60.3	211
Butyltins																		
Tributyltin ion	µg/kg	26	23	88	0.32 J	24000	SED10	1250	28	4980	1390	0.22 U	24000	SED10	1110	25.5	4690	1380
PCBs[c]																		
Total PCBs	µg/kg	23	18	78	0.00138 JT	254 JT	C347	82.5	45.9	87.5	234	0.00138 JT	254 JT	C347	65.1	24.4	84	229
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	6	6	100	131 T	87600 JT	C678	19500	544	35100	72600	131 T	87600 JT	C678	19500	544	35100	72600

Table 5.2-4. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	6	6	100	0.28 JT	173 JT	C678	37.6	1.61	69	142	0.28 JT	173 JT	C678	37.6	1.61	69	142
Pesticides																		
Aldrin	µg/kg	23	5	22	0.24 J	0.925 NJ	C347	0.519	0.51	0.274	0.864	0.0295 UJ	0.97 UJ	SD106	0.336	0.195	0.315	0.939
Dieldrin	µg/kg	23	2	9	0.47	0.84 J	C678	0.655	0.655	0.262	0.822	0.03 U	1.9 UJ	SD096; SD106	0.381	0.15	0.534	1.8
Total chlordanes	µg/kg	23	13	57	0.15 JT	6.2 JT	C678	2.17	2	2.01	5.79	0.087 UT	6.2 JT	C678	1.65	1	1.83	5.41
DDx	µg/kg	23	20	87	0.089 JT	502 NJT	C347	41.4	8.28	111	130	0.0826 UJT	502 NJT	C347	36.1	6.2	105	104
PAHs																		
Total PAHs	µg/kg	33	32	97	1.7 JT	30000 T	C678	3010	1070	6260	14500	0.75 UT	30000 T	C678	2920	1070	6180	14000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	25	4	16	15 J	260	SD106	149	160	101	245	2.5 U	700 U	C347	126	70	162	398
RM 08-09																		
Grain Size																		
Fines	percent	6	6	100	8.95 T	77.2	SD138	52.9	59.5	23.8	74.2	8.95 T	77.2	SD138	52.9	59.5	23.8	74.2
Conventionals																		
Total organic carbon	percent	6	6	100	0.353 T	2.1	SD138	1.46	1.67	0.65	2.05	0.353 T	2.1	SD138	1.46	1.67	0.65	2.05
Metals																		
Arsenic	mg/kg	6	6	100	2.53	42.6	C420	11.5	4.4	15.6	35	2.53	42.6	C420	11.5	4.4	15.6	35
Chromium	mg/kg	6	6	100	23.3 T	43.2	C420	33.6	35.1	8.11	42.5	23.3 T	43.2	C420	33.6	35.1	8.11	42.5
Copper	mg/kg	6	6	100	35.8	291	C420	128	109	94.2	259	35.8	291	C420	128	109	94.2	259
Zinc	mg/kg	6	6	100	127	764	C420	291	188	243	657	127	764	C420	291	188	243	657
Butyltins																		
Tributyltin ion	µg/kg	2	2	100	380	27000	C420	13700	13700	18800	25700	380	27000	C420	13700	13700	18800	25700
PCBs[c]																		
Total PCBs	µg/kg	6	6	100	35 JT	315 T	C420	161	143	113	304	35 JT	315 T	C420	161	143	113	304
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	2	2	100	88.6 T	279 T	C420	184	184	135	269	88.6 T	279 T	C420	184	184	135	269
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	2	2	100	0.274 JT	0.571 JT	C420	0.423	0.423	0.21	0.556	0.274 JT	0.571 JT	C420	0.423	0.423	0.21	0.556
Pesticides																		
Aldrin	µg/kg	6	0	0	--	--	--	--	--	--	--	0.0448 U	0.96 UJ	SD138	0.378	0.24	0.337	0.868
Dieldrin	µg/kg	6	2	33	0.39	0.87 J	C420	0.63	0.63	0.339	0.846	0.0733 U	1.9 UJ	SD138	0.677	0.525	0.669	1.64
Total chlordanes	µg/kg	6	4	67	0.382 NJT	2.3 JT	C420	1.33	1.32	0.816	2.2	0.382 NJT	2.3 JT	C420	1.35	1.4	0.636	2.13
DDx	µg/kg	6	5	83	5.37 NJT	20.4 NJT	C420	10.3	8.93	6.08	18.5	2.7 UJA	20.4 NJT	C420	9.05	7.42	6.27	18.1
PAHs																		
Total PAHs	µg/kg	5	5	100	390 JT	1320 T	C420	930	928	397	1320	390 JT	1320 T	C420	930	928	397	1320
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	6	6	100	18	1100	C420	473	385	435	1030	18	1100	C420	473	385	435	1030
Swan Island Lagoon																		
Grain Size																		
Fines	percent	153	153	100	0.78 T	101 T	C380	54.7	56	31.2	95.9	0.78 T	101 T	C380	54.7	56	31.2	95.9
Conventionals																		
Total organic carbon	percent	151	148	98	0.04 J	3.38	C364	1.25	0.945	0.902	2.8	0.04 J	3.38	C364	1.23	0.94	0.909	2.79
Metals																		
Arsenic	mg/kg	156	146	94	1.3	51.4	C708	4.81	3.77	5.83	9.2	1.3	51.4	C708	4.71	3.73	5.67	9.03
Chromium	mg/kg	156	156	100	7	180	C708	31	28.2	19.6	46.8	7	180	C708	31	28.2	19.6	46.8
Copper	mg/kg	155	155	100	10.5	3290	C384	145	47.8	384	594	10.5	3290	C384	145	47.8	384	594
Zinc	mg/kg	155	155	100	24	1930	C384	181	111	232	373	24	1930	C384	181	111	232	373
Butyltins																		
Tributyltin ion	µg/kg	65	44	68	0.38 J	90000	PSY30C	5380	120	15100	28100	0.21 U	90000	PSY30C	3640	20	12700	16600
PCBs																		
PCBs[c]	µg/kg	125	84	67	0.0418 JT	10800 JT	C384	560	151	1590	2190	0.0418 JT	10800 JT	C384	380	46.8	1330	1170
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	12	12	100	13 JT	4150 JT	C430	981	541	1160	2870	13 JT	4150 JT	C430	981	541	1160	2870
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	12	12	100	0.0136 JT	5.29 JT	C430	1.94	1.22	1.77	4.92	0.0136 JT	5.29 JT	C430	1.94	1.22	1.77	4.92
Pesticides																		
Aldrin	µg/kg	74	8	11	0.188 J	0.591 NJ	C397	0.269	0.24	0.133	0.474	0.0299 UJ	6.7 U	C708	0.359	0.15	1.03	0.964
Dieldrin	µg/kg	80	3	4	0.038 NJ	0.67 NJ	C702	0.337	0.303	0.317	0.633	0.03 U	5.1 U	C421	0.327	0.0871	0.693	1.71
Total chlordanes	µg/kg	81	48	59	0.092 NJT	310 NJT	C708	15.5	2.04	60.1	15.4	0.04 UT	310 NJT	C708	9.37	0.783	46.7	11

Table 5.2-4. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
DDx	µg/kg	80	69	86	0.097 JT	2100 NJT	C708	65.1	6.94	295	76.2	0.0535 UJT	2100 NJT	C708	56.2	5.45	275	62
PAHs																		
Total PAHs	µg/kg	123	104	85	0.48 JT	55000 T	C708	3400	916	8880	14200	0.48 JT	55000 T	C708	2870	740	8250	7670
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	124	77	62	7.1 J	6800	C384	650	290	1180	2200	2.5 U	6800	C384	428	85	976	1740
RM 09-10																		
Grain Size																		
Fines	percent	10	10	100	4.6 T	68.9 T	C743	36.1	31.4	25	67.6	4.6 T	68.9 T	C743	36.1	31.4	25	67.6
Conventionals																		
Total organic carbon	percent	10	10	100	0.37	3.54	C454	1.52	1.13	1.19	3.49	0.37	3.54	C454	1.52	1.13	1.19	3.49
Metals																		
Arsenic	mg/kg	9	9	100	1.61	3.89 JT	C454	2.47	2.45	0.786	3.61	1.61	3.89 JT	C454	2.47	2.45	0.786	3.61
Chromium	mg/kg	9	9	100	15.5 J	29.7 JT	C454	21.8	20	4.97	29.3	15.5 J	29.7 JT	C454	21.8	20	4.97	29.3
Copper	mg/kg	9	9	100	18.3 J	45.2 JT	C454	27.7	25.2	9.37	41.7	18.3 J	45.2 JT	C454	27.7	25.2	9.37	41.7
Zinc	mg/kg	9	9	100	62.7	164 T	C454	91.4	76.2	33.1	149	62.7	164 T	C454	91.4	76.2	33.1	149
PCBs[c]																		
Total PCBs	µg/kg	9	7	78	8.99 JT	94 JT	C742	41.1	22.1	32.4	86.8	1.9 UT	94 JT	C742	32.4	20.9	32.9	84.4
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	4	4	100	47.2 JT	945 T	C454	412	328	407	879	47.2 JT	945 T	C454	412	328	407	879
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	4	4	100	0.147 JT	2.57 JT	C454	1.29	1.22	1.26	2.51	0.147 JT	2.57 JT	C454	1.29	1.22	1.26	2.51
Pesticides																		
Aldrin	µg/kg	9	0	0	--	--	--	--	--	--	--	0.0306 UJ	0.21 U	C742	0.0932	0.12	0.0604	0.174
Dieldrin	µg/kg	9	2	22	0.14 J	0.53 NJ	C742	0.335	0.335	0.276	0.511	0.0501 U	0.77 U	C743	0.229	0.14	0.253	0.674
Total chlordanes	µg/kg	9	5	56	0.125 NJT	0.581 NJT	C454	0.406	0.48	0.191	0.574	0.044 UT	2.2 UT	C743	0.57	0.48	0.652	1.6
DDx	µg/kg	9	9	100	0.18 T	13 NJT	C742; C743	4.83	2	5.31	13	0.18 T	13 NJT	C742; C743	4.83	2	5.31	13
PAHs																		
Total PAHs	µg/kg	9	9	100	12 JT	2600 T	C743	814	495	775	2070	12 JT	2600 T	C743	814	495	775	2070
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	10	4	40	14 J	130	C742	58	44	54.4	121	2.6 U	130	C742	40.6	16	43.6	114
RM 10-11																		
Grain Size																		
Fines	percent	2	2	100	56.2 T	77.8 T	C749	67	67	15.3	76.7	56.2 T	77.8 T	C749	67	67	15.3	76.7
Conventionals																		
Total organic carbon	percent	4	4	100	0.63	2.42	SD04	1.73	1.94	0.773	2.36	0.63	2.42	SD04	1.73	1.94	0.773	2.36
Metals																		
Arsenic	mg/kg	4	4	100	1.7	4.4	SD04	2.95	2.84	1.27	4.28	1.7	4.4	SD04	2.95	2.84	1.27	4.28
Chromium	mg/kg	4	4	100	19.7	23.6	C749	20.9	20.1	1.83	23.1	19.7	23.6	C749	20.9	20.1	1.83	23.1
Copper	mg/kg	4	4	100	28.1	36	C749	32.4	32.8	3.29	35.6	28.1	36	C749	32.4	32.8	3.29	35.6
Zinc	mg/kg	4	4	100	65.6	177	C749	108	95.5	49.9	167	65.6	177	C749	108	95.5	49.9	167
Butyltins																		
Tributyltin ion	µg/kg	2	2	100	4	13	SD04	8.5	8.5	6.36	12.6	4	13	SD04	8.5	8.5	6.36	12.6
PCBs[c]																		
Total PCBs	µg/kg	4	3	75	12 T	83 JT	C749	36.7	15	40.2	76.2	1.3 UT	83 JT	C749	27.8	13.5	37.3	72.8
Pesticides																		
Aldrin	µg/kg	2	0	0	--	--	--	--	--	--	--	0.12 U	0.12 U	C749	0.12	0.12	0	0.12
Dieldrin	µg/kg	2	1	50	0.14 J	0.14 J	C749	0.14	0.14	--	0.14	0.14 J	0.19 U	C749	0.165	0.165	0.0354	0.188
Total chlordanes	µg/kg	2	1	50	0.66 T	0.66 T	C749	0.66	0.66	--	0.66	0.087 UT	0.66 T	C749	0.374	0.374	0.405	0.631
DDx	µg/kg	2	1	50	15 NJT	15 NJT	C749	15	15	--	15	0.18 UT	15 NJT	C749	7.59	7.59	10.5	14.3
PAHs																		
Total PAHs	µg/kg	4	4	100	18 JT	2200 T	C749	879	649	934	1980	18 JT	2200 T	C749	879	649	934	1980
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	4	3	75	49	200 J	SD04	116	100	76.8	190	7 U	200 J	SD04	89	74.5	83.2	185
RM 11-11.8																		
Grain Size																		
Fines	percent	23	23	100	4.1 T	72.8 T	C032	34.6	33.8	21.4	63.2	4.1 T	72.8 T	C032	34.6	33.8	21.4	63.2
Conventionals																		
Total organic carbon	percent	80	78	98	0.04 J	3.22	C048-R2	0.926	0.7	0.795	2.56	0.02 U	3.22	C048-R2	0.904	0.65	0.798	2.55
Metals																		
Arsenic	mg/kg	20	20	100	1.6 T	21.7 JT	C025	4.73	3.4	4.63	13.2	1.6 T	21.7 JT	C025	4.73	3.4	4.63	13.2

Table 5.2-4. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Eastern Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Chromium	mg/kg	20	20	100	12.6	61.5	C003	32.7	30.9	14.5	57.4	12.6	61.5	C003	32.7	30.9	14.5	57.4
Copper	mg/kg	20	20	100	19.2 J	268 JT	C025	59	47.2	54.4	104	19.2 J	268 JT	C025	59	47.2	54.4	104
Zinc	mg/kg	20	20	100	50.2 J	420 J	C003	159	151	108	376	50.2 J	420 J	C003	159	151	108	376
Butyltins																		
Tributyltin ion	µg/kg	19	3	16	0.93 J	31	C038	12.2	4.6	16.4	28.4	0.56 U	31	C038	2.5	0.66	6.96	7.24
PCBs[c]																		
Total PCBs	µg/kg	83	44	53	1.5 JT	6200 T	C019	464	75.9	1080	1750	1 UT	6200 T	C019	246	3	813	1180
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	18	18	100	6.96 JT	4880 T	C003	1510	602	1680	4650	6.96 JT	4880 T	C003	1510	602	1680	4650
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	18	18	100	0.02 JT	34.9 JT	C003	7.67	1.98	11.2	30.2	0.02 JT	34.9 JT	C003	7.67	1.98	11.2	30.2
Pesticides																		
Aldrin	µg/kg	20	1	5	1.8 J	1.8 J	C003	1.8	1.8	--	1.8	0.046 U	13 U	C047	1.61	0.165	3.34	8.44
Dieldrin	µg/kg	20	0	0	--	--	--	--	--	--	--	0.051 U	3.6 U	C047	0.714	0.43	0.959	2.37
Total chlordanes	µg/kg	20	15	75	0.22 JT	180 JT	C019	23.5	5.21	46.9	98.1	0.064 UT	180 JT	C019	17.6	3.28	41.6	68.9
DDx	µg/kg	20	15	75	0.069 JT	230 T	C019	45.4	13.7	64.4	167	0.069 JT	230 T	C019	34.1	5.47	58.8	145
PAHs																		
Total PAHs	µg/kg	20	20	100	1.3 JT	26800 T	C048-R1	2790	1490	5800	5770	1.3 JT	26800 T	C048-R1	2790	1490	5800	5770
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	20	15	75	7.7 J	510	C003	122	48	160	440	7 U	510	C003	97.7	39	145	415

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-5. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Study Area																		
Grain Size																		
Fines	percent	319	319	100	0.62 T	96.5	DM-22	57.1	65.3	28.1	90.7	0.62 T	96.5	DM-22	57.1	65.3	28.1	90.7
Conventionals																		
Total organic carbon	percent	363	363	100	0.05	9.29	G225	1.66	1.69	0.935	2.89	0.05	9.29	G225	1.66	1.69	0.935	2.89
Metals																		
Arsenic	mg/kg	334	322	96	0.7	7.99 J	G220	3.48	3.48	0.954	4.91	0.7	7.99 J	G220	3.55	3.5	1	5
Chromium	mg/kg	329	327	99	8.37	57.7	UG03	27	27.6	8.06	38.2	8.37	57.7	UG03	27	27.7	8.05	38.2
Copper	mg/kg	334	330	99	9.7	187 J	PSY36	35.9	35.7	19.2	57	9.7	187 J	PSY36	35.8	35.6	19.1	56.9
Zinc	mg/kg	334	334	100	38.6	238	G349	97.5	97.7	30	150	38.6	238	G349	97.5	97.7	30	150
Butyltins																		
Tributyltin ion	µg/kg	44	40	91	0.64 J	1800 J	SD124	137	8.15	333	562	0.64 J	1800 J	SD124	125	6.3	319	525
PCBs[c]																		
Total PCBs	µg/kg	326	238	73	1.41 JT	5900 JT	UG02	61.7	14.2	388	157	1 UT	5900 JT	UG02	49	13	332	110
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	39	39	100	15 JT	2260 T	G313	421	189	584	2030	15 JT	2260 T	G313	421	189	584	2030
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	39	39	100	0.0225 JT	6.27 JT	G307	1.42	0.605	1.85	5.37	0.0225 JT	6.27 JT	G307	1.42	0.605	1.85	5.37
Pesticides																		
Aldrin	µg/kg	266	65	24	0.0833 J	9.33 J	G225	0.674	0.381	1.17	1.51	0.0305 UJ	20 U	WR-BC-21; WR-BC-22	0.762	0.298	2	2
Dieldrin	µg/kg	275	74	27	0.064 J	6.38 J	G225	0.449	0.289	0.776	0.878	0.03 U	45 U	UG02	0.855	0.255	3.04	2.3
Total chlordanes	µg/kg	276	189	68	0.031 JT	7.2 T	G756	0.873	0.6	1.03	2.42	0.031 JT	700 UT	G778	5.27	0.64	45.7	10
DDx	µg/kg	276	267	97	0.052 JT	274 JT	C312	11	4.3	26.3	29.5	0.052 JT	274 JT	C312	11	4.3	25.9	31.2
PAHs																		
Total PAHs	µg/kg	335	335	100	4.7 T	7260000 T	G225	42600	434	414000	36600	4.7 T	7260000 T	G225	42600	434	414000	36600
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	317	218	69	7.3 J	3300 J	G748	241	140	409	554	7 U	10000 U	GRAB-05	236	120	655	542
RM 01.9-03																		
Grain Size																		
Fines	percent	7	7	100	58.8 T	94.7 T	G005	77.3	81.8	14.7	93.8	58.8 T	94.7 T	G005	77.3	81.8	14.7	93.8
Conventionals																		
Total organic carbon	percent	10	10	100	1.15	3.23	G036	2.1	1.86	0.766	3.1	1.15	3.23	G036	2.1	1.86	0.766	3.1
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	1	1	100	0.0225 JT	0.0225 JT	DG02	0.0225	0.0225	--	0.0225	0.0225 JT	0.0225 JT	DG02	0.0225	0.0225	--	0.0225
Pesticides																		
Aldrin	µg/kg	9	8	89	0.23 NJ	1.51 NJ	G036	0.738	0.565	0.5	1.47	0.23 NJ	1.51 NJ	G036	0.686	0.4	0.493	1.47
Dieldrin	µg/kg	10	5	50	0.188 J	0.587 NJ	G005	0.376	0.4	0.154	0.556	0.033 U	2 U	WR-BC-09; WR-BC-10	0.843	0.477	0.814	2
Total chlordanes	µg/kg	10	7	70	0.24 NJT	1.79 JT	G018	0.775	0.627	0.579	1.65	0.24 NJT	10 UA	WR-BC-09; WR-BC-10	3.54	1.04	4.48	10
DDx	µg/kg	10	10	100	1.9 JT	9.45 NJT	G018	4.71	4.12	2.52	8.84	1.9 JT	9.45 NJT	G018	4.71	4.12	2.52	8.84
PAHs																		
Total PAHs	µg/kg	10	10	100	296 JT	2900 T	WR-BC-10	1030	794	772	2390	296 JT	2900 T	WR-BC-10	1030	794	772	2390
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	7	4	57	67	100	G002; G606	89	94.5	15.6	100	39 U	120 U	G018	83	89	27.3	114
RM 03-04																		
Metals																		
Arsenic	mg/kg	10	10	100	3.18	4.33	DG02	3.66	3.55	0.32	4.18	3.18	4.33	DG02	3.66	3.55	0.32	4.18
Chromium	mg/kg	10	9	90	26.1	40.2	G005	30.9	30.4	4.74	38.4	26.1	40.2	G005	31.1	30.8	4.49	38.1
Copper	mg/kg	10	10	100	27.2	44.9	G036	36.5	35.6	6.01	44.1	27.2	44.9	G036	36.5	35.6	6.01	44.1
Zinc	mg/kg	10	10	100	92.5	153	G601	117	114	17.9	146	92.5	153	G601	117	114	17.9	146
PCBs[c]																		
Total PCBs	µg/kg	10	9	90	4 T	51 T	G018	13.6	9	14.5	37.6	4 T	51 T	G018	12.8	8.3	14	36
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	1	1	100	15 JT	15 JT	DG02	15	15	--	15	15 JT	15 JT	DG02	15	15	--	15
Grain Size																		
Fines	percent	11	11	100	10.8 T	87.2 T	G110	59.9	67.9	23.9	83.6	10.8 T	87.2 T	G110	59.9	67.9	23.9	83.6
Conventionals																		
Total organic carbon	percent	13	13	100	0.37	2.41	G113	1.54	1.61	0.645	2.34	0.37	2.41	G113	1.54	1.61	0.645	2.34
Metals																		
Arsenic	mg/kg	13	13	100	2.54	3.86 T	G614	3.24	3.3	0.418	3.79	2.54	3.86 T	G614	3.24	3.3	0.418	3.79
Chromium	mg/kg	13	13	100	18.5	38.3	G081	28.1	28.9	6.24	36	18.5	38.3	G081	28.1	28.9	6.24	36

Table 5.2-5. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Copper	mg/kg	13	13	100	16.2	44.3	G081	32.5	34.1	8.78	42.6	16.2	44.3	G081	32.5	34.1	8.78	42.6
Zinc	mg/kg	13	13	100	63.4	131	WR-BC-15	96.3	98.7	18.4	124	63.4	131	WR-BC-15	96.3	98.7	18.4	124
Butyltins																		
Tributyltin ion	µg/kg	1	1	100	3.7	3.7	G102	3.7	3.7	--	3.7	3.7	3.7	G102	3.7	3.7	--	3.7
PCBs[c]																		
Total PCBs	µg/kg	13	10	77	4 JT	200 JT	G614	29.8	11	60	118	2.3 UT	200 JT	G614	23.9	9	53.2	91
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	1	1	100	120 JT	120 JT	G611	120	120	--	120	120 JT	120 JT	G611	120	120	--	120
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	1	1	100	0.38 JT	0.38 JT	G611	0.38	0.38	--	0.38	0.38 JT	0.38 JT	G611	0.38	0.38	--	0.38
Pesticides																		
Aldrin	µg/kg	12	6	50	0.11 J	0.75 J	G614	0.431	0.382	0.248	0.733	0.0441 U	2 UJ	WR-BC-15	0.433	0.245	0.545	1.31
Dieldrin	µg/kg	13	8	62	0.158 NJ	0.48	G614	0.291	0.272	0.11	0.452	0.0939 U	2 U	C12/13/14; WR-BC-15	0.545	0.312	0.655	2
Total chlordanes	µg/kg	13	8	62	0.31 NJT	1.24 NJT	G102	0.775	0.791	0.306	1.18	0.0587 UJT	11 UT	G614	2.87	0.831	4.27	10.4
DDx	µg/kg	13	13	100	1.4 NJT	77.2 NJT	G113	12.2	5.45	20.6	46.5	1.4 NJT	77.2 NJT	G113	12.2	5.45	20.6	46.5
PAHs																		
Total PAHs	µg/kg	13	13	100	340 JT	10000 T	WR-BC-15	2700	1500	2750	7180	340 JT	10000 T	WR-BC-15	2700	1500	2750	7180
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	11	7	64	30	180 J	G614	103	100	52.5	174	22 U	180 J	G614	80.6	68	52.2	170
RM 04-05																		
Grain Size																		
Fines	percent	35	35	100	9.13 T	92 T	G131	68.5	75.5	22.4	91.1	9.13 T	92 T	G131	68.5	75.5	22.4	91.1
Conventionals																		
Total organic carbon	percent	38	38	100	0.19	2.83	G134	1.84	1.96	0.731	2.79	0.19	2.83	G134	1.84	1.96	0.731	2.79
Metals																		
Arsenic	mg/kg	36	35	97	1.8	7.53	G119	3.53	3.5	0.948	4.58	1.8	7.53	G119	3.57	3.53	0.966	4.81
Chromium	mg/kg	36	36	100	15.7	39.3	SD019	27.5	29	6.7	36.7	15.7	39.3	SD019	27.5	29	6.7	36.7
Copper	mg/kg	36	36	100	13.5	52.7 J	C522	34.9	37.6	9.17	46	13.5	52.7 J	C522	34.9	37.6	9.17	46
Zinc	mg/kg	36	36	100	56.8	151	C522	100	99	23.2	146	56.8	151	C522	100	99	23.2	146
PCBs[c]																		
Total PCBs	µg/kg	30	26	87	3.6 JT	110 T	G629	16	11.1	21.4	45.3	2.4 UT	110 T	G629	14.6	10.2	20.3	39
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	8	8	100	20.7 JT	656 JT	G630	224	146	212	545	20.7 JT	656 JT	G630	224	146	212	545
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	8	8	100	0.0226 JT	1.22 JT	G630	0.456	0.33	0.422	1.1	0.0226 JT	1.22 JT	G630	0.456	0.33	0.422	1.1
Pesticides																		
Aldrin	µg/kg	30	9	30	0.216 J	0.9 J	G633	0.456	0.381	0.255	0.848	0.036 UJ	1.7 U	GRAB-01; GRAB-02	0.398	0.272	0.408	1.34
Dieldrin	µg/kg	30	6	20	0.19 NJ	0.63 J	G632	0.368	0.284	0.188	0.618	0.032 U	2.3 U	GRAB-01; GRAB-02	0.43	0.24	0.627	2.17
Total chlordanes	µg/kg	30	24	80	0.11 JT	2.3 JT	G629	0.73	0.635	0.529	1.77	0.0479 UT	10 UA	C16/17	1.07	0.635	1.77	2.08
DDx	µg/kg	30	30	100	1.3 NJT	19 NJT	G629	7.23	6.27	4.51	15.9	1.3 NJT	19 NJT	G629	7.23	6.27	4.51	15.9
PAHs																		
Total PAHs	µg/kg	37	37	100	210 JT	9000 T	G630	2100	1440	2160	6980	210 JT	9000 T	G630	2100	1440	2160	6980
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	35	25	71	21	400 J	GRAB-01	127	110	85.4	266	7 U	400 J	GRAB-01	114	98	82.2	245
RM 05-06																		
Grain Size																		
Fines	percent	42	42	100	0.62 T	86.3 T	G171	35.5	35.3	27.3	79.6	0.62 T	86.3 T	G171	35.5	35.3	27.3	79.6
Conventionals																		
Total organic carbon	percent	44	44	100	0.11	9.29	G225	1.43	1.34	1.44	2.49	0.11	9.29	G225	1.43	1.34	1.44	2.49
Metals																		
Arsenic	mg/kg	41	41	100	1.8	7.99 J	G220	3.23	3.15	1.13	4.72	1.8	7.99 J	G220	3.23	3.15	1.13	4.72
Chromium	mg/kg	41	40	98	8.72 T	35.7	G188	21	20.9	7.66	34.6	8.72 T	35.7	G188	21.3	21.3	7.81	34.6
Copper	mg/kg	41	41	100	9.7	121 JT	G196	30.1	28.6	19.9	53.7	9.7	121 JT	G196	30.1	28.6	19.9	53.7
Zinc	mg/kg	41	41	100	43.7 T	159 T	G196	86.5	88.3	29.9	140	43.7 T	159 T	G196	86.5	88.3	29.9	140
Butyltins																		
Tributyltin ion	µg/kg	4	4	100	28	230	G205	102	75.5	92.5	212	28	230	G205	102	75.5	92.5	212
PCBs[c]																		
Total PCBs	µg/kg	39	26	67	1.41 JT	61 NJT	C196	16	16.5	12.9	33.4	1.3 UT	61 NJT	C196	12.4	8	12.1	28.4
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	2	2	100	284 JT	593 T	C196	439	439	218	578	284 JT	593 T	C196	439	439	218	578

Table 5.2-5. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	2	2	100	1.39 JT	2.37 JT	GCA05W	1.88	1.88	0.693	2.32	1.39 JT	2.37 JT	GCA05W	1.88	1.88	0.693	2.32
Pesticides																		
Aldrin	µg/kg	37	14	38	0.143 J	9.33 J	G225	1.15	0.387	2.39	4.24	0.0305 UJ	20 U	WR-BC-21	1.23	0.304	3.52	3.47
Dieldrin	µg/kg	39	17	44	0.079 J	6.38 J	G225	0.711	0.3	1.48	2.04	0.03 U	6.38 J	G225	0.717	0.3	1.18	2.39
Total chlordanes	µg/kg	39	24	62	0.054 JT	1.66 JT	G178	0.571	0.462	0.436	1.54	0.0405 UT	10 UA	WR-BC-20; WR-BC-21	1.41	0.44	2.8	9.28
DDx	µg/kg	39	37	95	0.052 JT	148 JT	G225	12.6	7.8	23.7	22.4	0.052 JT	148 JT	G225	13.2	7.8	23.7	26
PAHs																		
Total PAHs	µg/kg	41	41	100	88 JT	7260000 T	G225	275000	4530	1140000	801000	88 JT	7260000 T	G225	275000	4530	1140000	801000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	38	26	68	7.3 J	2900	G183	203	86	555	273	7.3 J	2900	G183	197	96	474	416
RM 06-07																		
Grain Size																		
Fines	percent	44	44	100	1.03 T	86.4 T	G289	34.7	21.2	30.9	80	1.03 T	86.4 T	G289	34.7	21.2	30.9	80
Conventionals																		
Total organic carbon	percent	50	50	100	0.09	3 T	BT015	1.15	0.74	0.921	2.67	0.09	3 T	BT015	1.15	0.74	0.921	2.67
Metals																		
Arsenic	mg/kg	48	48	100	0.7	5.18	BT015	3	3.05	0.881	4.23	0.7	5.18	BT015	3	3.05	0.881	4.23
Chromium	mg/kg	48	48	100	8.37	40.2	G289	20.5	18.4	9.27	37.6	8.37	40.2	G289	20.5	18.4	9.27	37.6
Copper	mg/kg	48	48	100	9.71	53	G287	25.2	21.3	13.7	47.3	9.71	53	G287	25.2	21.3	13.7	47.3
Zinc	mg/kg	48	48	100	38.6	194	C312	87.7	70	43	180	38.6	194	C312	87.7	70	43	180
Butyltins																		
Tributyltin ion	µg/kg	1	1	100	13	13	BT015	13	13	--	13	13	13	BT015	13	13	--	13
PCBs[c]																		
Total PCBs	µg/kg	38	21	55	2 JT	303 JT	C300-2	68.2	24.2	87.4	235	1.3 UT	303 JT	C300-2	42.3	10	71.7	198
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	11	11	100	17.2 JT	2260 T	G313	779	457	834	2180	17.2 JT	2260 T	G313	779	457	834	2180
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	11	11	100	0.0745 JT	6.27 JT	G307	3.13	3.96	2.41	5.82	0.0745 JT	6.27 JT	G307	3.13	3.96	2.41	5.82
Pesticides																		
Aldrin	µg/kg	31	5	16	0.0833 J	2.2	GRAB-04	0.806	0.37	0.911	2.01	0.0325 UJ	20 U	WR-BC-22	1.17	0.125	3.56	2.1
Dieldrin	µg/kg	36	7	19	0.064 J	2.6 J	C299	0.494	0.15	0.931	1.9	0.03 U	2.6 J	C299	0.511	0.0985	0.813	2.3
Total chlordanes	µg/kg	37	20	54	0.031 JT	6.1 JT	C299	1.58	1.32	1.57	4.31	0.031 JT	10 UA	WR-BC-22; WR-BC-23	1.57	0.663	2.44	6.88
DDx	µg/kg	37	35	95	0.26 JT	274 JT	C312	29.1	7.82	56.7	117	0.054 UT	274 JT	C312	27.7	7.49	55.5	106
PAHs																		
Total PAHs	µg/kg	48	48	100	4.7 T	1420000 T	WR-BC-22	58600	3230	221000	190000	4.7 T	1420000 T	WR-BC-22	58600	3230	221000	190000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	44	15	34	8.2 J	470 J	GRAB-04	87.8	50	131	358	7 U	10000 U	GRAB-05	308	47.5	1500	412
RM 07-08																		
Grain Size																		
Fines	percent	41	41	100	38.9 T	93.9 T	PSY37	76.8	79.3	14.3	91.5	38.9 T	93.9 T	PSY37	76.8	79.3	14.3	91.5
Conventionals																		
Total organic carbon	percent	45	45	100	0.17	4.35	AN-CTPD-05	2.03	2.01	0.781	3.14	0.17	4.35	AN-CTPD-05	2.03	2.01	0.781	3.14
Metals																		
Arsenic	mg/kg	44	38	86	1.4	5	PSY37; PSY38	3.89	4	0.785	4.92	1.4	6 U	SD120; SD122	4.09	4.19	0.901	5
Chromium	mg/kg	39	39	100	17.7	41	SD093	31.1	31.3	5.5	38.9	17.7	41	SD093	31.1	31.3	5.5	38.9
Copper	mg/kg	44	44	100	16.4	187 J	PSY36	49.3	40.3	30.3	119	16.4	187 J	PSY36	49.3	40.3	30.3	119
Zinc	mg/kg	44	44	100	51.5	238	G349	114	107	33.3	187	51.5	238	G349	114	107	33.3	187
Butyltins																		
Tributyltin ion	µg/kg	12	11	92	2.6	1800 J	SD124	373	160	559	1390	2.3 U	1800 J	SD124	342	93	543	1350
PCBs[c]																		
Total PCBs	µg/kg	37	24	65	2.18 JT	140 T	AN-CTPD-04	37.4	19.2	38.8	104	2.18 JT	140 T	AN-CTPD-04	31.5	17.9	33	98.6
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	6	6	100	35.6 JT	507 JT	G681	239	177	174	477	35.6 JT	507 JT	G681	239	177	174	477
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	6	6	100	0.134 JT	1.71 JT	G681	0.701	0.515	0.56	1.52	0.134 JT	1.71 JT	G681	0.701	0.515	0.56	1.52
Pesticides																		
Aldrin	µg/kg	33	6	18	0.16 NJ	1.51 J	G344	0.596	0.26	0.599	1.43	0.0399 UJ	9.6 U	SD093	1.03	0.2	1.79	2.6
Dieldrin	µg/kg	33	8	24	0.252 J	1.22 NJ	G358	0.535	0.42	0.328	1.09	0.0652 U	19 U	SD093	1.38	0.39	3.3	2.6
Total chlordanes	µg/kg	33	20	61	0.17 JT	6.35 JT	G349	1.07	0.669	1.43	3.47	0.17 JT	10 UA	C26/27/28; WR-BC-29	2.32	0.948	3.11	10

Table 5.2-5. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
DDx	µg/kg	33	33	100	1.8 T	86 JA	SD093	11.5	7.4	15	24.3	1.8 T	86 JA	SD093	11.5	7.4	15	24.3
PAHs																		
Total PAHs	µg/kg	44	44	100	37.7 T	1200 T	AN-CTPD-04	326	292	200	572	37.7 T	1200 T	AN-CTPD-04	326	292	200	572
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	41	25	61	59	540	07R040	213	160	131	462	34 U	570 U	AN-CTPD-05	207	140	158	470
RM 08-09																		
Grain Size																		
Fines	percent	50	50	100	27.3 T	96 T	WR-PG-88	73.8	77.6	16.7	93.2	27.3 T	96 T	WR-PG-88	73.8	77.6	16.7	93.2
Conventionals																		
Total organic carbon	percent	49	49	100	0.81	3.22	G387	2.12	2.16	0.571	2.98	0.81	3.22	G387	2.12	2.16	0.571	2.98
Metals																		
Arsenic	mg/kg	49	46	94	2.86	5.07	G725	3.87	3.98	0.617	4.98	2.86	6 U	SD144	3.96	3.99	0.704	5.01
Chromium	mg/kg	49	49	100	19.6	40.6 J	G435	30.6	29.2	4.95	39.7	19.6	40.6 J	G435	30.6	29.2	4.95	39.7
Copper	mg/kg	49	49	100	24.2	56.8 J	G406	38.7	39.1	5.86	47.4	24.2	56.8 J	G406	38.7	39.1	5.86	47.4
Zinc	mg/kg	49	49	100	73 J	137	G418	97.9	100	14.3	119	73 J	137	G418	97.9	100	14.3	119
Butyltins																		
Tributyltin ion	µg/kg	11	10	91	0.72 J	230	SD147	27.1	2.55	71.4	132	0.72 J	230	SD147	25.1	3	68.1	121
PCBs[c]																		
Total PCBs	µg/kg	45	33	73	5.3 JT	50.4 T	DM-G	18.2	15.1	10.2	40.6	4.4 UJT	50.4 T	DM-G	17.5	13.9	10.2	39.8
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	3	3	100	66.4 JT	232 JT	G725	145	136	83.1	222	66.4 JT	232 JT	G725	145	136	83.1	222
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	3	3	100	0.0932 JT	0.668 JT	G725	0.458	0.613	0.317	0.663	0.0932 JT	0.668 JT	G725	0.458	0.613	0.317	0.663
Pesticides																		
Aldrin	µg/kg	34	5	15	0.172 J	0.9 J	C449	0.464	0.37	0.272	0.822	0.0432 U	0.9 J	C449	0.3	0.31	0.196	0.562
Dieldrin	µg/kg	34	12	35	0.066 J	0.47	G725	0.268	0.291	0.11	0.422	0.034 U	1.1 U	WR-PG-78	0.357	0.255	0.298	1
Total chlordanes	µg/kg	34	32	94	0.137 JT	1.84 NJT	G410-2	0.639	0.457	0.406	1.42	0.137 JT	1.84 NJT	G410-2	0.62	0.457	0.403	1.39
DDx	µg/kg	34	34	100	0.66 JT	10.6 NJT	G414	3.76	3.46	2.03	7.02	0.66 JT	10.6 NJT	G414	3.76	3.46	2.03	7.02
PAHs																		
Total PAHs	µg/kg	49	49	100	57.8 JT	3480 JA	DM-H	297	185	500	502	57.8 JT	3480 JA	DM-H	297	185	500	502
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	49	39	80	48	751 J	DM-H	208	160	148	448	14 U	751 J	DM-H	187	150	141	432
Swan Island Lagoon																		
Grain Size																		
Fines	percent	5	5	100	86.1 T	96.5	DM-22	91.6	91.4	4.3	96.2	86.1 T	96.5	DM-22	91.6	91.4	4.3	96.2
Conventionals																		
Total organic carbon	percent	5	5	100	1.5	2.48	PSY35	2.04	2.27	0.438	2.44	1.5	2.48	PSY35	2.04	2.27	0.438	2.44
Metals																		
Arsenic	mg/kg	5	4	80	3.46 J	5	PSY34; PSY35	4.49	4.75	0.726	5	3.46 J	6 U	SD125	4.79	5	0.923	5.8
Chromium	mg/kg	5	5	100	26	34.7	SD125	30	28.6	3.4	34.2	26	34.7	SD125	30	28.6	3.4	34.2
Copper	mg/kg	5	5	100	38.1	76.7	PSY34	62	65.7	14.6	75.1	38.1	76.7	PSY34	62	65.7	14.6	75.1
Zinc	mg/kg	5	5	100	71.3	122	PSY34	103	104	20.5	122	71.3	122	PSY34	103	104	20.5	122
Butyltins																		
Tributyltin ion	µg/kg	2	2	100	92	540 J	SD125	316	316	317	518	92	540 J	SD125	316	316	317	518
PCBs[c]																		
Total PCBs	µg/kg	5	1	20	15.6 T	15.6 T	G700	15.6	15.6	--	15.6	10 UT	40 UT	DM-22	22.7	15.6	15.1	39.6
Pesticides																		
Aldrin	µg/kg	1	0	0	--	--	--	--	--	--	--	0.44 U	0.44 U	G700	0.44	0.44	--	0.44
Dieldrin	µg/kg	1	0	0	--	--	--	--	--	--	--	0.11 U	0.11 U	G700	0.11	0.11	--	0.11
Total chlordanes	µg/kg	1	1	100	0.39 T	0.39 T	G700	0.39	0.39	--	0.39	0.39 T	0.39 T	G700	0.39	0.39	--	0.39
DDx	µg/kg	1	1	100	5 NJT	5 NJT	G700	5	5	--	5	5 NJT	5 NJT	G700	5	5	--	5
PAHs																		
Total PAHs	µg/kg	5	5	100	230 JT	589 T	PSY34	370	343	138	551	230 JT	589 T	PSY34	370	343	138	551
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	5	5	100	170	1920 J	DM-22	679	480	713	1650	170	1920 J	DM-22	679	480	713	1650
RM 09-10																		
Grain Size																		
Fines	percent	33	33	100	9.21 T	87.2 T	WR-PG-92	63.4	65.7	19.9	86.6	9.21 T	87.2 T	WR-PG-92	63.4	65.7	19.9	86.6
Conventionals																		
Total organic carbon	percent	34	34	100	0.37	3.16	WR-PG-94	2.11	2.09	0.683	3.05	0.37	3.16	WR-PG-94	2.11	2.09	0.683	3.05

Table 5.2-5. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Metals																		
Arsenic	mg/kg	34	33	97	2 J	6	PSY77	3.73	3.77	0.91	5.09	2 J	6	PSY77	3.74	3.8	0.898	5.06
Chromium	mg/kg	34	34	100	13.3	44.7	RC483-2	29.9	29.3	6.19	37.6	13.3	44.7	RC483-2	29.9	29.3	6.19	37.6
Copper	mg/kg	34	32	94	15.5	71.6	RC483-2	35.4	35.4	8.85	41.5	15.5	71.6	RC483-2	34.6	35.3	9.17	41.4
Zinc	mg/kg	34	34	100	60.6	188	SD150	95.8	96.6	23.6	129	60.6	188	SD150	95.8	96.6	23.6	129
Butyltins																		
Tributyltin ion	µg/kg	9	8	89	0.64 J	7.7	DM-F	2.75	1.55	2.83	7.39	0.64 J	7.7	DM-F	3.08	1.9	2.83	7.34
PCBs[c]																		
Total PCBs	µg/kg	34	27	79	3.42 JT	156 T	SD150	27.1	13	39.5	127	3.42 JT	156 T	SD150	26.3	12.9	36	118
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	2	2	100	27.8 JT	543 JT	G739	285	285	364	517	27.8 JT	543 JT	G739	285	285	364	517
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	2	2	100	0.0294 JT	1.21 JT	G739	0.62	0.62	0.835	1.15	0.0294 JT	1.21 JT	G739	0.62	0.62	0.835	1.15
Pesticides																		
Aldrin	µg/kg	28	4	14	0.43	1.3 NJ	G475-2	0.688	0.51	0.411	1.19	0.0324 U	2 U	GRAB-09; GRAB-10; PSY77	0.483	0.305	0.603	2
Dieldrin	µg/kg	28	5	18	0.1 J	0.33 J	G734	0.252	0.28	0.0889	0.322	0.033 U	2 U	GRAB-09; GRAB-10; PSY77	0.474	0.179	0.649	2
Total chlordanes	µg/kg	28	21	75	0.057 JT	1.1 JT	G745	0.588	0.55	0.315	1.01	0.057 JT	2 UA	GRAB-09; GRAB-10; PSY77	0.728	0.58	0.566	2
DDx	µg/kg	28	25	89	1.2 NJT	9.9 NJT	G739	3.25	2.92	1.72	5.61	1.2 NJT	9.9 NJT	G739	3.13	2.85	1.66	5.4
PAHs																		
Total PAHs	µg/kg	34	34	100	27 JT	2580 JA	DM-F	455	198	656	2020	27 JT	2580 JA	DM-F	455	198	656	2020
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	34	31	91	33	3260 J	DM-F	294	130	584	735	23 UJ	3260 J	DM-F	276	130	560	647
RM 10-11																		
Grain Size																		
Fines	percent	39	39	100	8.76 T	83.8 T	RC01-2	52	53.9	15.7	72.6	8.76 T	83.8 T	RC01-2	52	53.9	15.7	72.6
Conventionals																		
Total organic carbon	percent	42	42	100	0.36	2.98	G760	1.76	1.63	0.536	2.62	0.36	2.98	G760	1.76	1.63	0.536	2.62
Metals																		
Arsenic	mg/kg	42	42	100	1.95	6.66 JT	RC01-2	3.44	3.11	1.08	5.49	1.95	6.66 JT	RC01-2	3.44	3.11	1.08	5.49
Chromium	mg/kg	42	42	100	17.6	42.3	DM-B	28.6	28.4	6.2	40.3	17.6	42.3	DM-B	28.6	28.4	6.2	40.3
Copper	mg/kg	42	40	95	17.2	179	G506	39.7	34	25.8	59.2	17.2	179	G506	38.9	33.8	25.4	56.8
Zinc	mg/kg	42	42	100	63.2 J	195	G504	100	96.4	24.7	136	63.2 J	195	G504	100	96.4	24.7	136
Butyltins																		
Tributyltin ion	µg/kg	1	0	0 --	--		--	--	--	--	--	5.8 U	5.8 U	DM-A	5.8	5.8	--	5.8
PCBs[c]																		
Total PCBs	µg/kg	42	31	74	4.8 T	167 JT	G504	32.7	16.6	36.3	97.7	3.07 UT	167 JT	G504	30.4	16.8	33	90.3
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	2	2	100	61.2 JT	127 JT	RC01-2	93.8	93.8	46.2	123	61.2 JT	127 JT	RC01-2	93.8	93.8	46.2	123
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	2	2	100	0.129 JT	0.387 JT	RC01-2	0.258	0.258	0.182	0.374	0.129 JT	0.387 JT	RC01-2	0.258	0.258	0.182	0.374
Pesticides																		
Aldrin	µg/kg	39	7	18	0.2	0.48	G747	0.327	0.29	0.114	0.477	0.0326 UJ	6 U	PSY72	0.866	0.37	1.35	2.4
Dieldrin	µg/kg	39	6	15	0.15 J	0.82 J	G770	0.413	0.345	0.255	0.76	0.03 U	6 U	PSY72	0.856	0.35	1.36	2.4
Total chlordanes	µg/kg	39	26	67	0.3 T	7.2 T	G756	1.05	0.6	1.42	2.88	0.3 T	10 UA	T1S-01; T1S-03; T1S-05; WR-BC-36	2.15	0.84	2.98	10
DDx	µg/kg	39	37	95	1.3 T	12 NJT	G771	4.06	3.5	2.26	7.73	1.3 T	12 NJT	G771	4.06	3.5	2.24	7.69
PAHs																		
Total PAHs	µg/kg	42	42	100	44 T	8770 JA	DM-B	595	255	1370	1200	44 T	8770 JA	DM-B	595	255	1370	1200
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	41	33	80	87 J	3300 J	G748	446	260	589	1120	27 UJ	3300 J	G748	405	220	548	1000
RM 11-11.8																		
Grain Size																		
Fines	percent	12	12	100	1.68 T	39.5 T	G774	14.7	5.39	14.4	36.1	1.68 T	39.5 T	G774	14.7	5.39	14.4	36.1
Conventionals																		
Total organic carbon	percent	33	33	100	0.05	1.76	T1S-09	0.651	0.4	0.504	1.55	0.05	1.76	T1S-09	0.651	0.4	0.504	1.55
Metals																		
Arsenic	mg/kg	12	12	100	1.02	4.4	T1S-07	2.57	2.69	0.977	3.8	1.02	4.4	T1S-07	2.57	2.69	0.977	3.8

Table 5.2-5. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Chromium	mg/kg	12	12	100	10	57.7	UG03	23.7	23.7	13.3	43	10	57.7	UG03	23.7	23.7	13.3	43
Copper	mg/kg	12	12	100	11.6	35.3 N	T1S-07	23	23.7	7.8	32.4	11.6	35.3 N	T1S-07	23	23.7	7.8	32.4
Zinc	mg/kg	12	12	100	44	202 T	G028	83.3	80.4	43.5	155	44	202 T	G028	83.3	80.4	43.5	155
Butyltins																		
Tributyltin ion	µg/kg	3	3	100	0.74 J	16	G028	5.84	0.77	8.8	14.5	0.74 J	16	G028	5.84	0.77	8.8	14.5
PCBs[c]																		
Total PCBs	µg/kg	33	30	91	2.2 JT	5900 JT	UG02	292	15.5	1080	678	1 UT	5900 JT	UG02	266	14	1030	650
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	3	3	100	104 JT	2020 JT	G028	810	307	1050	1850	104 JT	2020 JT	G028	810	307	1050	1850
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	3	3	100	0.218 JT	4.9 JT	G028	1.95	0.728	2.57	4.48	0.218 JT	4.9 JT	G028	1.95	0.728	2.57	4.48
Pesticides																		
Aldrin	µg/kg	12	1	8	0.12 J	0.12 J	G024	0.12	0.12	--	0.12	0.046 U	1.9 U	UG02	0.471	0.19	0.56	1.41
Dieldrin	µg/kg	12	0	0	--	--	--	--	--	--	--	0.03 U	45 U	UG02	4.67	0.51	12.8	22.5
Total chlordanes	µg/kg	12	6	50	0.24 JT	5.7 JT	G028	1.42	0.385	2.15	4.65	0.17 UT	700 UT	G778	86.2	3.3	211	480
DDx	µg/kg	12	12	100	0.26 T	140 T	G778	25.2	5	43.3	110	0.26 T	140 T	G778	25.2	5	43.3	110
PAHs																		
Total PAHs	µg/kg	12	12	100	20 T	950 JA	UG03	327	162	335	870	20 T	950 JA	UG03	327	162	335	870
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	12	8	67	9 J	270	T1S-09	130	125	85.2	242	9 J	270	T1S-09	98.9	90	83.1	226

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - non-detect
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-6. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Study Area																		
Grain Size																		
Fines	percent	341	341	100	0.12 T	94.5 T	WR-VC-10	49.1	58.4	32.1	90.5	0.12 T	94.5 T	WR-VC-10	49.1	58.4	32.1	90.5
Conventionals																		
Total organic carbon	percent	411	401	98	0.02 J	9.74 J	GS-C7	1.45	1.67	1.13	3.08	0.02 J	9.74 J	GS-C7	1.42	1.64	1.13	3.05
Metals																		
Arsenic	mg/kg	359	343	96	0.5 J	21	PSY36C	3.45	3.39	1.94	6.05	0.5 J	21	PSY36C	3.38	3.32	1.96	6.01
Chromium	mg/kg	341	335	98	7.62	175	C299	25	23.6	13	39.9	7.62	175	C299	24.9	23.5	13	39.8
Copper	mg/kg	359	359	100	10.3	579	PSY36C	38.9	33.9	49	65.5	10.3	579	PSY36C	38.9	33.9	49	65.5
Zinc	mg/kg	359	359	100	26.6 J	891	C299	105	91.2	76	200	26.6 J	891	C299	105	91.2	76	200
Butyltins																		
Tributyltin ion	µg/kg	32	28	88	0.58 J	4100	SD125	490	12.1	1090	3220	0.21 U	4100	SD125	429	9.55	1030	3060
PCBs[c]																		
Total PCBs	µg/kg	390	253	65	0.00232 JT	2400 T	WR-VC-108	91	40.9	215	262	0.00232 JT	2400 T	WR-VC-108	65.1	20.9	183	219
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	53	53	100	0.0578 JT	4080 JT	RC01-2	348	99.3	726	1260	0.0578 JT	4080 JT	RC01-2	348	99.3	726	1260
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	54	51	94	0.000262 JT	33.3 JT	C314	1.84	0.341	4.95	6.18	0.000262 JT	33.3 JT	C314	1.74	0.335	4.83	6.06
Pesticides																		
Aldrin	µg/kg	329	31	9	0.23 NJ	44 J	C299	2.57	0.62	8.04	9.02	0.0284 UJ	44 J	C299	1.03	0.26	3.24	2
Dieldrin	µg/kg	334	30	9	0.08 J	13	WR-CD-40	1.11	0.285	2.46	3.62	0.03 U	13	WR-CD-40	0.958	0.3	1.8	3.5
Total chlordanes	µg/kg	334	177	53	0.051 NJT	51.1 NJT	C314	2.63	0.87	6.77	9.5	0.0379 UT	51.1 NJT	C314	3.55	0.99	6.47	17
DDx	µg/kg	334	294	88	0.058 JT	3200 JT	C314	53.9	7.81	252	178	0.0506 UJT	3200 JT	C314	47.6	6.4	237	136
PAHs																		
Total PAHs	µg/kg	422	403	95	0.37 JT	12000000 JT	GS-C7	118000	449	843000	257000	0.37 JT	12000000 JT	GS-C7	112000	400	824000	167000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	379	200	53	2.6 J	18000	WR-VC-110	303	76.5	1700	404	2.1 U	18000	WR-VC-110	196	68	1250	330
RM 01.9-03																		
Grain Size																		
Fines	percent	7	7	100	39.3 T	84.3 T	WR-VC-03	67	70.3	14	81.2	39.3 T	84.3 T	WR-VC-03	67	70.3	14	81.2
Conventionals																		
Total organic carbon	percent	13	13	100	1.22	2.78	021108WRPB-VC-01	1.86	1.91	0.454	2.51	1.22	2.78	021108WRPB-VC-01	1.86	1.91	0.454	2.51
Pesticides																		
Aldrin	µg/kg	14	1	7	0.65 J	0.65 J	021108WRPB-VC-01	0.65	0.65	--	0.65	0.12 U	2 U	WR-GC-11	0.492	0.17	0.63	1.81
Dieldrin	µg/kg	14	2	14	0.62 NJ	0.8 NJ	C606	0.71	0.71	0.127	0.791	0.16 U	3.6 U	021108WRPB-VC-03	0.974	0.305	1.17	3.47
Total chlordanes	µg/kg	14	6	43	0.18 JT	1.8 JA	021108WRPB-VC-01	0.815	0.78	0.626	1.63	0.18 JT	17 UA	WR-VC-01	3.12	1.4	4.72	12.5
DDx	µg/kg	14	13	93	4 A	47 NJT	C6011	12.8	8.7	11.4	30.2	3.4 UA	47 NJT	C6011	12.1	8.65	11.3	28.8
PAHs																		
Total PAHs	µg/kg	14	14	100	676 T	7130 T	WR-GC-11	2710	1850	2240	6460	676 T	7130 T	WR-GC-11	2710	1850	2240	6460
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	13	11	85	17 J	99	C606	48.7	47	26.8	90	17 J	99	C606	49.2	47	24.7	88.2
RM 03-04																		
Grain Size																		
Fines	percent	10	10	100	4.71 T	94.5 T	WR-VC-10	74.6	80.7	25.8	93.6	4.71 T	94.5 T	WR-VC-10	74.6	80.7	25.8	93.6
Metals																		
Arsenic	mg/kg	13	13	100	2.29	4.2	021108WRPB-VC-03	3.13	3.1	0.537	3.98	2.29	4.2	021108WRPB-VC-03	3.13	3.1	0.537	3.98
Chromium	mg/kg	13	13	100	19	28.1	WR-GC-11	23.3	23.6	2.33	26.2	19	28.1	WR-GC-11	23.3	23.6	2.33	26.2
Copper	mg/kg	13	13	100	28.1	42.9	C606	34.6	34.4	4.13	41.2	28.1	42.9	C606	34.6	34.4	4.13	41.2
Zinc	mg/kg	13	13	100	68.9	226	021108WRPB-VC-03	118	90.6	48.9	196	68.9	226	021108WRPB-VC-03	118	90.6	48.9	196
Butyltins																		
Tributyltin ion	µg/kg	2	1	50	8.1	8.1	021108WRPB-VC-01	8.1	8.1	--	8.1	0.54 U	8.1	021108WRPB-VC-01	4.32	4.32	5.35	7.72
PCBs																		
Total PCBs	µg/kg	14	10	71	9.22 JT	150 T	021108WRPB-VC-03	65.4	47.5	50	142	7.4 UT	150 T	021108WRPB-VC-03	51.4	31.1	47.9	138
Conventionals																		
Total organic carbon	percent	10	10	100	0.09	2.23	WR-VC-10	1.71	1.84	0.611	2.21	0.09	2.23	WR-VC-10	1.71	1.84	0.611	2.21
Metals																		
Arsenic	mg/kg	10	10	100	1.86	3.96	C614	3.44	3.65	0.619	3.93	1.86	3.96	C614	3.44	3.65	0.619	3.93
Chromium	mg/kg	10	10	100	11.7	30.6	C614	24	24	5.33	29.7	11.7	30.6	C614	24	24	5.33	29.7
Copper	mg/kg	10	10	100	15.5	53.4	C614	37.6	34.7	10.6	50.7	15.5	53.4	C614	37.6	34.7	10.6	50.7
Zinc	mg/kg	10	10	100	51.2	162	C614; C617	107	96.9	35	162	51.2	162	C614; C617	107	96.9	35	162

Table 5.2-6. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PCBs[c]																		
Total PCBs	µg/kg	10	10	100	3.6 JT	120 NJT	C614	66.5	69.5	34.5	109	3.6 JT	120 NJT	C614	66.5	69.5	34.5	109
Pesticides																		
Aldrin	µg/kg	10	0	0	--	--	--	--	--	--	--	0.12 U	0.21 U	WR-VC-06	0.16	0.155	0.0424	0.206
Dieldrin	µg/kg	10	2	20	0.3	1.2 NJ	C614	0.75	0.75	0.636	1.16	0.088 U	1.2 NJ	C614	0.399	0.26	0.395	1.11
Total chlordanes	µg/kg	10	6	60	0.14 JT	1.1 NJT	WR-VC-07	0.47	0.345	0.384	1.01	0.14 JT	2.4 UT	C614	0.974	0.835	0.799	2.22
DDx	µg/kg	10	10	100	3 T	35 NJT	C614	18.1	15.6	10	34	3 T	35 NJT	C614	18.1	15.6	10	34
PAHs																		
Total PAHs	µg/kg	10	10	100	1200 T	5310 T	WR-VC-10	3040	3250	1460	5040	1200 T	5310 T	WR-VC-10	3040	3250	1460	5040
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	10	7	70	78	160	WR-VC-07	112	100	29.4	154	7 U	160	WR-VC-07	96.8	94.5	40.9	151
RM 04-05																		
Grain Size																		
Fines	percent	32	32	100	0.92 T	93 T	WR-VC-22	67.3	82.6	29	92.6	0.92 T	93 T	WR-VC-22	67.3	82.6	29	92.6
Conventionals																		
Total organic carbon	percent	36	35	97	0.06	3.2	WR-VC-22	1.63	1.99	0.898	2.45	0.06	3.2	WR-VC-22	1.59	1.98	0.923	2.45
Metals																		
Arsenic	mg/kg	33	33	100	1	5.43	WR-VC-30	3.41	3.51	1.12	4.86	1	5.43	WR-VC-30	3.41	3.51	1.12	4.86
Chromium	mg/kg	33	33	100	9.54	37.4	C152	23	20.8	7.54	36.5	9.54	37.4	C152	23	20.8	7.54	36.5
Copper	mg/kg	33	33	100	13.1	57.8	C630	33.8	32.9	11.1	48.8	13.1	57.8	C630	33.8	32.9	11.1	48.8
Zinc	mg/kg	33	33	100	41.1	186	C167	101	89	35.4	166	41.1	186	C167	101	89	35.4	166
PCBs[c]																		
Total PCBs	µg/kg	30	26	87	11 T	153 T	C167	56	46.1	38.8	129	1.3 UT	153 T	C167	50	34.5	39.4	126
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	2	2	100	99.8 T	474 T	C144	287	287	265	455	99.8 T	474 T	C144	287	287	265	455
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	2	2	100	2.52 JT	3.06 JT	C144	2.79	2.79	0.382	3.03	2.52 JT	3.06 JT	C144	2.79	2.79	0.382	3.03
Pesticides																		
Aldrin	µg/kg	30	1	3	0.4 NJ	0.4 NJ	C144	0.4	0.4	--	0.4	0.12 U	2 U	WR-GC-18	0.492	0.21	0.559	1.7
Dieldrin	µg/kg	30	0	0	--	--	--	--	--	--	--	0.03 U	2.3 U	B401-C1; B401-C2	0.453	0.16	0.652	2.17
Total chlordanes	µg/kg	30	18	60	0.17 JT	1.63 NJT	WR-VC-30	0.85	0.78	0.442	1.54	0.092 UT	10 UA	WR-GC-18	1.23	0.885	1.76	2.21
DDx	µg/kg	30	30	100	0.27 JT	1230 JT	WR-VC-28	73.9	17.9	234	286	0.27 JT	1230 JT	WR-VC-28	73.9	17.9	234	286
PAHs																		
Total PAHs	µg/kg	36	36	100	5.5 JT	51000 T	C621	5240	3090	8590	14000	5.5 JT	51000 T	C621	5240	3090	8590	14000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	32	11	34	7.6 J	210	C630	100	95	58.9	185	5.9 U	210	C630	72	61	55.4	178
RM 05-06																		
Grain Size																		
Fines	percent	35	35	100	0.45 T	90 T	WR-VC-34	31.9	6.8	35.4	83.5	0.45 T	90 T	WR-VC-34	31.9	6.8	35.4	83.5
Conventionals																		
Total organic carbon	percent	35	30	86	0.02 J	2.65	WR-VC-34	0.866	0.31	0.952	2.32	0.02 J	2.65	WR-VC-34	0.753	0.2	0.923	2.31
Metals																		
Arsenic	mg/kg	34	34	100	1.4 J	6.95	WR-VC-42	2.86	2.63	1.29	4.73	1.4 J	6.95	WR-VC-42	2.86	2.63	1.29	4.73
Chromium	mg/kg	34	34	100	8.81	37	C169	17.1	14.5	7.86	34.2	8.81	37	C169	17.1	14.5	7.86	34.2
Copper	mg/kg	34	34	100	12.4	47.4	C171	23.6	15.7	12.7	46.6	12.4	47.4	C171	23.6	15.7	12.7	46.6
Zinc	mg/kg	34	34	100	39.6	157	C169	68.8	53.6	34	142	39.6	157	C169	68.8	53.6	34	142
Butyltins																		
Tributyltin ion	µg/kg	2	1	50	0.58 J	0.58 J	C196	0.58	0.58	--	0.58	0.21 U	0.58 J	C196	0.395	0.395	0.262	0.562
PCBs[c]																		
Total PCBs	µg/kg	34	17	50	0.00232 JT	112 JT	C169	39.3	22	38.7	106	0.00232 JT	112 JT	C169	20.7	2.58	32.9	100
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	8	8	100	0.0578 JT	186 T	C196	32.5	9.03	63.3	133	0.0578 JT	186 T	C196	32.5	9.03	63.3	133
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	8	5	62	0.000262 JT	0.499 JT	C196	0.218	0.0747	0.255	0.498	0.000262 JT	0.499 JT	C196	0.138	0.0148	0.222	0.497
Pesticides																		
Aldrin	µg/kg	31	3	10	0.44 J	0.748 J	C171	0.556	0.48	0.167	0.721	0.0354 UJ	2 U	WR-GC-19	0.317	0.13	0.38	0.729
Dieldrin	µg/kg	34	2	6	0.08 J	0.095 NJ	C645	0.0875	0.0875	0.0106	0.0943	0.03 U	2 U	WR-GC-19	0.26	0.11	0.41	1
Total chlordanes	µg/kg	34	15	44	0.12 JT	1.79 NJT	C171	0.871	0.96	0.517	1.55	0.0471 UJT	10 UA	WR-GC-19	0.768	0.223	1.71	1.57
DDx	µg/kg	34	25	74	0.058 JT	261 NJT	C171	19.2	6.99	51	26	0.058 JT	261 NJT	C171	14.3	2.9	44.3	24.6

Table 5.2-6. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PAHs																		
Total PAHs	µg/kg	35	33	94	0.39 JT	117000 T	C221	8450	2770	21400	35600	0.39 JT	117000 T	C221	7970	2670	20900	34900
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	34	9	26	31 J	130	WR-VC-15	80.4	75	34.2	122	4.4 UJ	130	WR-VC-15	39.5	26	39	110
RM 06-07																		
Grain Size																		
Fines	percent	63	63	100	0.29 T	87.1 T	C300-2	25.7	9.84	27.9	75.5	0.29 T	87.1 T	C300-2	25.7	9.84	27.9	75.5
Conventionals																		
Total organic carbon	percent	64	64	100	0.02 J	9.74 J	GS-C7	1.4	0.68	1.64	3.46	0.02 J	9.74 J	GS-C7	1.4	0.68	1.64	3.46
Metals																		
Arsenic	mg/kg	66	66	100	1.04	5.09 J	C326	2.63	2.47	1.07	4.84	1.04	5.09 J	C326	2.63	2.47	1.07	4.84
Chromium	mg/kg	66	66	100	8.66	175	C299	22.9	18.6	20.8	37	8.66	175	C299	22.9	18.6	20.8	37
Copper	mg/kg	66	66	100	10.4	53.5	C664	23.8	17.7	12.3	46.3	10.4	53.5	C664	23.8	17.7	12.3	46.3
Zinc	mg/kg	66	66	100	37 J	891	C299	102	63.4	114	202	37 J	891	C299	102	63.4	114	202
PCBs[c]																		
Total PCBs	µg/kg	44	23	52	1.84 JT	542 T	C521	120	98.6	127	294	1 UT	720 UT	WR-VC-56	95.9	16	163	505
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	9	9	100	4.62 T	1750 T	C314	375	190	540	1220	4.62 T	1750 T	C314	375	190	540	1220
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	9	9	100	0.00449 JT	33.3 JT	C314	5.91	1.58	10.8	24.4	0.00449 JT	33.3 JT	C314	5.91	1.58	10.8	24.4
Pesticides																		
Aldrin	µg/kg	43	5	12	0.96 J	44 J	C299	12.9	5.04	18	37.8	0.0294 UJ	44 J	C299	3.27	0.6	7.96	12.7
Dieldrin	µg/kg	45	1	2	3 J	3 J	C252	3	3	--	3	0.03 U	10 U	WR-VC-52; WR-VC-54	1.2	0.422	2.14	3.48
Total chlordanes	µg/kg	45	22	49	0.089 NJT	51.1 NJT	C314	6.59	2.03	12.2	30.6	0.0385 UT	51.1 NJT	C314	5.16	1.5	9.55	23
DDx	µg/kg	45	41	91	0.067 JT	3200 JT	C314	229	30	613	1580	0.0649 UJT	3200 JT	C314	209	18.9	588	1340
PAHs																		
Total PAHs	µg/kg	110	103	94	0.71 JT	12000000 JT	GS-C7	453000	2290	1630000	3020000	0.71 JT	12000000 JT	GS-C7	424000	1870	1580000	2750000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	87	12	14	14 J	850 J	C299	124	60	231	447	2.1 U	1700 U	C521	124	87.2	220	324
RM 07-08																		
Grain Size																		
Fines	percent	34	34	100	0.54	93.2 T	WR-VC-72	65.8	79.7	30.6	91.9	0.54	93.2 T	WR-VC-72	65.8	79.7	30.6	91.9
Conventionals																		
Total organic carbon	percent	36	35	97	0.05	3.88	C349	1.82	2.06	0.828	2.75	0.05	3.88	C349	1.77	2.06	0.868	2.73
Metals																		
Arsenic	mg/kg	36	32	89	1.1	21	PSY36C	4.18	3.71	3.2	5.45	1.1	21	PSY36C	4.1	3.71	3.06	5.25
Chromium	mg/kg	34	34	100	10	40.8	SD120	29.4	31.7	8.2	39.8	10	40.8	SD120	29.4	31.7	8.2	39.8
Copper	mg/kg	36	36	100	13 J	579	PSY36C	68.7	45.3	103	166	13 J	579	PSY36C	68.7	45.3	103	166
Zinc	mg/kg	36	36	100	35	579 J	PSY36C	125	106	87.7	182	35	579 J	PSY36C	125	106	87.7	182
Butyltins																		
Tributyltin ion	µg/kg	6	6	100	1.7	3500	SD116	1300	765	1460	3300	1.7	3500	SD116	1300	765	1460	3300
PCBs[c]																		
Total PCBs	µg/kg	29	21	72	7.96 JT	605 T	PSY36C	86.6	59	126	165	1.6 UT	605 T	PSY36C	66.8	40.8	112	153
Pesticides																		
Aldrin	µg/kg	30	3	10	0.397 J	0.845 J	C341	0.621	0.62	0.224	0.823	0.0284 UJ	11 UJ	WB-12; WB-15; WB-20	1.97	0.364	3.65	11
Dieldrin	µg/kg	30	0	0 --	--	--	--	--	--	--	--	0.0465 U	11 UJ	WB-12; WB-15; WB-20	2.01	0.304	3.65	11
Total chlordanes	µg/kg	30	16	53	0.08 JT	5 NJT	C349	1.94	1.72	1.37	3.94	0.0379 UT	11 UJA	WB-12; WB-15; WB-20	2.95	1.65	3.41	11
DDx	µg/kg	30	26	87	4.5 JA	395 JA	WB-15	67.1	42.6	86.4	207	0.0506 UJT	395 JA	WB-15	58.2	22	83.5	196
PAHs																		
Total PAHs	µg/kg	35	32	91	1.39 JT	19600 T	PSY36C	1350	387	3640	6160	1.39 JT	19600 T	PSY36C	1230	315	3490	5910
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	36	24	67	11 J	16000 J	PSY36C	910	77.5	3270	2640	2.2 U	16000 J	PSY36C	625	69	2680	1060
RM 08-09																		
Grain Size																		
Fines	percent	26	26	100	8.23	92.9 T	C458-2	69.5	69.8	17.7	92.8	8.23	92.9 T	C458-2	69.5	69.8	17.7	92.8

Table 5.2-6. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Conventionals																		
Total organic carbon	percent	23	23	100	1.46	2.72	C458-1	2.16	2.12	0.363	2.65	1.46	2.72	C458-1	2.16	2.12	0.363	2.65
Metals																		
Arsenic	mg/kg	21	21	100	3	4.69	C449	3.66	3.55	0.463	4.46	3	4.69	C449	3.66	3.55	0.463	4.46
Chromium	mg/kg	14	14	100	25	43.6	C449	32.9	32.5	5.11	40.2	25	43.6	C449	32.9	32.5	5.11	40.2
Copper	mg/kg	21	21	100	31.2 J	55.9	C449	41.5	40	6.93	55.3	31.2 J	55.9	C449	41.5	40	6.93	55.3
Zinc	mg/kg	21	21	100	75.4 J	148	C449	103	100	17.9	134	75.4 J	148	C449	103	100	17.9	134
Butyltins																		
Tributyltin ion	µg/kg	9	9	100	2.1	550	C400	69.5	12	180	340	2.1	550	C400	69.5	12	180	340
PCBs[c]																		
Total PCBs	µg/kg	29	22	76	5.1 JT	93 T	C400	38.1	25.6	28.3	91.3	5.1 JT	93 T	C400	37.1	33.5	24.6	86.6
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	1	1	100	5.73 JT	5.73 JT	WR-VC-05	5.73	5.73	--	5.73	5.73 JT	5.73 JT	WR-VC-05	5.73	5.73	--	5.73
Pesticides																		
Aldrin	µg/kg	26	1	4	0.28 J	0.28 J	C449	0.28	0.28	--	0.28	0.0467 U	2 U	WR-VC-05	0.775	0.48	0.717	1.78
Dieldrin	µg/kg	26	6	23	0.17 J	0.56	C720	0.338	0.3	0.164	0.548	0.0764 U	3.9 U	WR-VC-05	1.35	0.405	1.55	3.5
Total chlordanes	µg/kg	26	15	58	0.246 JT	1.73 JT	C458-2	0.772	0.67	0.45	1.56	0.246 JT	20 UA	WR-VC-05	6.45	1.05	7.97	17.8
DDx	µg/kg	26	21	81	2.52 JA	8.9 NJT	C720	5.24	5.19	1.76	7.8	2.52 JA	8.9 NJT	C720	4.91	4.69	1.72	7.71
PAHs																		
Total PAHs	µg/kg	29	29	100	8.9 T	958 T	PSY50C	206	159	174	377	8.9 T	958 T	PSY50C	206	159	174	377
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	30	26	87	11 J	272 J	PSY50C	72.7	59	58.2	179	11 J	272 J	PSY50C	68	52.8	55.8	177
Swan Island Lagoon																		
Grain Size																		
Fines	percent	7	7	100	71.1	94.2 T	DMMU2	87.3	89.3	7.69	93.6	71.1	94.2 T	DMMU2	87.3	89.3	7.69	93.6
Conventionals																		
Total organic carbon	percent	8	8	100	1.69	2.49	DMMU2	2.13	2.11	0.259	2.46	1.69	2.49	DMMU2	2.13	2.11	0.259	2.46
Metals																		
Arsenic	mg/kg	8	7	88	3	4.6 J	C04-06	3.85	4	0.585	4.56	3	5 U	SD125	3.99	4	0.677	4.86
Chromium	mg/kg	7	7	100	22	43.6	SD125	27.3	24.7	7.56	38.9	22	43.6	SD125	27.3	24.7	7.56	38.9
Copper	mg/kg	8	8	100	42	141	SD125	88.2	79.4	31.9	132	42	141	SD125	88.2	79.4	31.9	132
Zinc	mg/kg	8	8	100	89.6	196	SD125	128	127	35.2	181	89.6	196	SD125	128	127	35.2	181
Butyltins																		
Tributyltin ion	µg/kg	4	4	100	48	4100	SD125	1310	555	1890	3620	48	4100	SD125	1310	555	1890	3620
PCBs[c]																		
Total PCBs	µg/kg	8	7	88	8.9 JT	231 T	PSY34C	69.6	32	85	203	6.7 UT	231 T	PSY34C	61.7	21	81.7	199
Pesticides																		
Aldrin	µg/kg	4	0	0 --	--		--	--	--	--	--	0.16 U	0.51 U	C04-06	0.255	0.175	0.171	0.462
Dieldrin	µg/kg	4	1	25	0.43 J	0.43 J	C04-06	0.43	0.43	--	0.43	0.15 U	0.43 J	C04-06	0.238	0.185	0.13	0.396
Total chlordanes	µg/kg	4	3	75	0.48 JA	0.78 JA	DMMU2	0.633	0.64	0.15	0.766	0.11 UA	0.78 JA	DMMU2	0.503	0.56	0.289	0.759
DDx	µg/kg	4	4	100	1.8 A	6.4 A	C04-06	4.63	5.15	1.99	6.27	1.8 A	6.4 A	C04-06	4.63	5.15	1.99	6.27
PAHs																		
Total PAHs	µg/kg	8	8	100	170 JT	2250 T	SD125	927	788	730	1960	170 JT	2250 T	SD125	927	788	730	1960
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	8	8	100	49	680	SD125	298	253	230	638	49	680	SD125	298	253	230	638
RM 09-10																		
Grain Size																		
Fines	percent	33	33	100	16.1 T	86.3 T	C474	66.4	70.2	14.2	84.5	16.1 T	86.3 T	C474	66.4	70.2	14.2	84.5
Conventionals																		
Total organic carbon	percent	37	37	100	1.1	4.29	C45-47	2.36	2.03	0.844	4.2	1.1	4.29	C45-47	2.36	2.03	0.844	4.2
Metals																		
Arsenic	mg/kg	35	34	97	2.04	6.62 J	RC483-2	4.13	3.75	1.22	6.38	2.04	6.62 J	RC483-2	4.12	3.79	1.2	6.37
Chromium	mg/kg	27	27	100	10.9 J	41.7	RC483-2	30.3	31.7	7.88	40.4	10.9 J	41.7	RC483-2	30.3	31.7	7.88	40.4
Copper	mg/kg	35	35	100	16.2	59.5	RC483-2	37.1	38.1	7.47	46.1	16.2	59.5	RC483-2	37.1	38.1	7.47	46.1
Zinc	mg/kg	35	35	100	47 J	207	C739	94.9	90.5	28.4	140	47 J	207	C739	94.9	90.5	28.4	140
Butyltins																		
Tributyltin ion	µg/kg	7	7	100	0.59 J	32	SD150	7.28	2.1	11.5	25.7	0.59 J	32	SD150	7.28	2.1	11.5	25.7
PCBs[c]																		
Total PCBs	µg/kg	39	30	77	5.8 JT	580 T	C739	51.6	23.5	104	98.9	4 UT	580 T	C739	42.7	15	92.4	86.8

Table 5.2-6. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	15	15	100	12.6 JT	3110 JT	C739	445	99.3	799	1590	12.6 JT	3110 JT	C739	445	99.3	799	1590
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	15	15	100	0.0161 JT	6.57 JT	C739	1.02	0.282	1.75	3.71	0.0161 JT	6.57 JT	C739	1.02	0.282	1.75	3.71
Pesticides																		
Aldrin	µg/kg	34	5	15	0.32 J	0.52 J	RC483-2	0.406	0.4	0.0786	0.504	0.0441 UJ	2.1 U	WR-VC-03	0.461	0.355	0.462	1.6
Dieldrin	µg/kg	34	7	21	0.17 J	0.31 J	C42-44	0.216	0.21	0.0458	0.286	0.0722 U	4.3 U	WR-VC-03	0.701	0.28	0.993	3.2
Total chlordanes	µg/kg	34	17	50	0.29 JT	5.6 NJT	C739	1.09	0.72	1.3	3.36	0.29 JT	21 UA	WR-VC-03	2.53	0.96	4.92	16
DDx	µg/kg	34	32	94	2.2 JT	110 NJT	C739	8.87	4.42	18.9	17.5	2.2 JT	110 NJT	C739	8.57	4.35	18.3	17
PAHs																		
Total PAHs	µg/kg	38	38	100	30.3 T	5300 T	C739	386	205	839	788	30.3 T	5300 T	C739	386	205	839	788
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	39	31	79	22 J	510	C39-41	87.1	60	92.9	225	22 J	510	C39-41	83.4	63	84.7	181
RM 10-11																		
Grain Size																		
Fines	percent	63	63	100	0.61 T	81.8 T	C746	49.9	56.2	22.6	79.5	0.61 T	81.8 T	C746	49.9	56.2	22.6	79.5
Conventionals																		
Total organic carbon	percent	68	68	100	0.04 J	4.16	RC01-2	1.68	1.68	0.822	3.06	0.04 J	4.16	RC01-2	1.68	1.68	0.822	3.06
Metals																		
Arsenic	mg/kg	68	67	99	0.5 J	12.6	WR-VC-110	4.02	3.55	2.01	7.65	0.5 J	12.6	WR-VC-110	3.97	3.54	2.04	7.63
Chromium	mg/kg	68	62	91	7.88	54.1 J	WR-VC-110	28.4	27.5	9.03	42	7.69 UT	54.1 J	WR-VC-110	27.5	27.1	9.23	41.7
Copper	mg/kg	68	68	100	10.4	523 J	WR-VC-110	51.4	34.3	73	140	10.4	523 J	WR-VC-110	51.4	34.3	73	140
Zinc	mg/kg	68	68	100	42.4 T	651	C752	127	98.8	93.2	327	42.4 T	651	C752	127	98.8	93.2	327
PCBs[c]																		
Total PCBs	µg/kg	68	57	84	3.8 JT	2400 T	WR-VC-108	156	42	361	608	0.73 UT	2400 T	WR-VC-108	132	28.4	334	521
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	17	17	100	32.9 JT	4080 JT	RC01-2	443	167	960	1390	32.9 JT	4080 JT	RC01-2	443	167	960	1390
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	17	17	100	0.0502 JT	5.78 JT	RC01-2	0.778	0.33	1.38	2.64	0.0502 JT	5.78 JT	RC01-2	0.778	0.33	1.38	2.64
Pesticides																		
Aldrin	µg/kg	68	11	16	0.23 NJ	1.5 NJ	C7641	0.664	0.7	0.353	1.17	0.12 U	2 UJ	WR-GC-32; WR-GC-33; WR-GC-34; WR-GC-35	0.48	0.26	0.504	1.86
Dieldrin	µg/kg	68	5	7	0.11 J	0.4	WR-GC-35	0.224	0.23	0.116	0.37	0.03 U	8.6 U	WR-VC-108	0.698	0.425	1.16	2
Total chlordanes	µg/kg	68	48	71	0.051 NJT	28 T	C747	2.83	0.82	5.8	13.7	0.051 NJT	28 T	C747	3.34	0.92	5.59	13.7
DDx	µg/kg	68	67	99	0.076 JT	293 JT	WR-VC-108	14.6	6.1	36.5	40.3	0.076 JT	293 JT	WR-VC-108	14.4	6.05	36.2	40.2
PAHs																		
Total PAHs	µg/kg	68	68	100	0.37 JT	7990 JT	WR-VC-110	614	265	1270	1870	0.37 JT	7990 JT	WR-VC-110	614	265	1270	1870
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	64	52	81	9.9 J	18000	WR-VC-110	502	120	2480	718	7 U	18000	WR-VC-110	414	99.5	2240	646
RM 11-11.8																		
Grain Size																		
Fines	percent	31	31	100	0.12 T	72.4 T	UC03	21.1	3.66	25.7	67.3	0.12 T	72.4 T	UC03	21.1	3.66	25.7	67.3
Conventionals																		
Total organic carbon	percent	81	78	96	0.02 J	2.74	WR-CD-41	0.449	0.105	0.651	1.91	0.02 J	2.74	WR-CD-41	0.434	0.1	0.643	1.9
Metals																		
Arsenic	mg/kg	35	26	74	0.5	19.7	WR-CD-43	3.03	2.1	3.73	6.07	0.5	19.7	WR-CD-43	2.38	1.25	3.39	5.67
Chromium	mg/kg	35	35	100	7.62	98 JT	UC03	21.5	17.3	16.1	38.9	7.62	98 JT	UC03	21.5	17.3	16.1	38.9
Copper	mg/kg	35	35	100	10.3	70.1	WR-CD-43	23.2	18	13.3	44	10.3	70.1	WR-CD-43	23.2	18	13.3	44
Zinc	mg/kg	35	35	100	26.6 J	243 J	WR-VC-132	88.3	76	55.2	182	26.6 J	243 J	WR-VC-132	88.3	76	55.2	182
Butyltins																		
Tributyltin ion	µg/kg	2	0	0	--	--	--	--	--	--	--	0.48 U	0.54 U	C024	0.51	0.51	0.0424	0.537
PCBs[c]																		
Total PCBs	µg/kg	85	30	35	0.0051 T	1700 JT	UC03	107	26	309	254	0.0051 T	1700 JT	UC03	40.6	1	188	148
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	2	2	100	5.68 JT	10.5 JT	C024	8.09	8.09	3.41	10.3	5.68 JT	10.5 JT	C024	8.09	8.09	3.41	10.3
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	2	2	100	0.013 JT	0.0144 JT	C024	0.0137	0.0137	0.00099	0.0143	0.013 JT	0.0144 JT	C024	0.0137	0.0137	0.00099	0.0143

Table 5.2-6. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Navigation Channel.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Pesticides																		
Aldrin	µg/kg	39	1	3	1 J	1 J	WR-CD-40	1	1	--	1	0.046 U	2 UJ	WR-CD-41; WR-CD-42; WR-CD-43; WR-GC-37; WR-GC-38; WR-GC-39	0.9	0.24	0.851	2
Dieldrin	µg/kg	39	4	10	2	13	WR-CD-40	5.55	3.6	5.03	11.6	0.03 U	13	WR-CD-40	1.49	1	2.19	3.44
Total chlordanes	µg/kg	39	11	28	0.055 JT	47 A	WR-CD-40	7.82	1.1	15.5	38	0.055 JT	47 A	WR-CD-40	6.85	1.9	9.3	17.3
DDx	µg/kg	39	25	64	0.3 A	100 NJT	UC03	10.8	5.3	19.9	28.1	0.1 UT	100 NJT	UC03	7.14	2	16.6	23.6
PAHs																		
Total PAHs	µg/kg	39	32	82	0.77 JT	2320 T	WR-CD-43	594	364	667	2300	0.75 UT	2320 T	WR-CD-43	487	275	645	2300
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	26	9	35	2.6 J	290	UC03	116	98	97.6	258	2.6 J	290	UC03	60.9	28.5	76.3	208

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-7. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Study Area																		
Grain Size																		
Fines	percent	533	533	100	0.11	98.9 T	WR-PG-68	57.2	64.3	26.9	89.5	0.11	98.9 T	WR-PG-68	57.2	64.3	26.9	89.5
Conventionals																		
Total organic carbon	percent	621	621	100	0.0438	24.9	C138	1.98	1.88	1.69	3.69	0.0438	24.9	C138	1.98	1.88	1.69	3.69
Metals																		
Arsenic	mg/kg	567	504	89	0.97	79.6	A2GS10	5.45	3.8	7.15	12.5	0.97	79.6	A2GS10	5.47	3.92	6.76	11.2
Chromium	mg/kg	569	568	100	4.07 J	774	19A01	34.7	31.2	39.1	55	4.07 J	774	19A01	34.7	31.2	39.1	54.9
Copper	mg/kg	580	580	100	6.19 J	1370	HA-43	61.8	39.1	105	195	6.19 J	1370	HA-43	61.8	39.1	105	195
Zinc	mg/kg	580	580	100	17.3 J	4220	HA-43	159	108	235	397	17.3 J	4220	HA-43	159	108	235	397
Butyltins																		
Tributyltin ion	µg/kg	131	122	93	0.49 J	1830	A2GS12	39.6	8.55	181	80.6	0.086 U	1830	A2GS12	37.1	7.7	175	77
PCBs[c]																		
Total PCBs	µg/kg	420	317	75	0.851 JT	35400 T	G453	209	26.9	2000	497	0.851 JT	35400 T	G453	198	24.4	1760	525
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	95	95	100	2.48 T	264000 T	07R006	4000	467	27000	5650	2.48 T	264000 T	07R006	4000	467	27000	5650
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	95	95	100	0.00803 JT	14100 JT	07R006	164	1.88	1450	87	0.00803 JT	14100 JT	07R006	164	1.88	1450	87
Pesticides																		
Aldrin	µg/kg	438	108	25	0.047 J	691 J	G355	11.2	1	67.5	25.5	0.0264 U	691 J	G355	5.88	0.375	35.6	25.9
Dieldrin	µg/kg	456	95	21	0.057 J	356 J	G453	5.45	0.337	36.6	11.1	0.03 U	356 J	G453	6.85	0.38	32.3	19.3
Total chlordanes	µg/kg	457	282	62	0.036 JT	669 NJT	G355	10.9	1.35	58.4	32.2	0.0351 UT	669 NJT	G355	10.6	1.4	48.7	48
DDx	µg/kg	461	438	95	0.102 JT	84900 A	OSS002	671	15.9	4690	1460	0.0651 UT	84900 A	OSS002	639	14.8	4570	1420
PAHs																		
Total PAHs	µg/kg	612	602	98	3.3 JT	2450000 T	GS04APG2	39800	1900	202000	144000	3.3 JT	2450000 T	GS04APG2	39200	1860	200000	138000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	543	286	53	13 JT	6700	AN-CTPD-02	338	120	738	1300	2 U	40000 U	A2GS12; HA-43	623	101	2980	2000
RM 01.9-03																		
Grain Size																		
Fines	percent	16	16	100	5.35 T	89.6 T	G003	57.2	58.4	27.1	88.2	5.35 T	89.6 T	G003	57.2	58.4	27.1	88.2
Conventionals																		
Total organic carbon	percent	16	16	100	0.16	2.1 T	D1-1	1.21	1.26	0.74	2.09	0.16	2.1 T	D1-1	1.21	1.26	0.74	2.09
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	7	7	100	9.56 T	310 JT	GCA02W	68.9	25.4	107	232	9.56 T	310 JT	GCA02W	68.9	25.4	107	232
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	7	7	100	0.0297 JT	2.17 JT	GCA02W	0.368	0.0672	0.795	1.55	0.0297 JT	2.17 JT	GCA02W	0.368	0.0672	0.795	1.55
Pesticides																		
Aldrin	µg/kg	10	1	10	0.36 JT	0.36 JT	GCA02W	0.36	0.36	--	0.36	0.0301 UJ	0.36 JT	GCA02W	0.094	0.0397	0.117	0.315
Dieldrin	µg/kg	16	6	38	0.15 JT	0.306 NJ	G029	0.207	0.182	0.0647	0.297	0.0492 U	1 U	WR-PG-04	0.176	0.0908	0.234	0.48
Total chlordanes	µg/kg	16	11	69	0.053 JT	1.12 NJT	G037	0.484	0.46	0.37	1.12	0.04 UT	1.12 NJT	G037	0.413	0.216	0.403	1.11
DDx	µg/kg	16	16	100	0.478 NJT	29.4 NJT	G029	7	4.4	7.54	20.7	0.478 NJT	29.4 NJT	G029	7	4.4	7.54	20.7
PAHs																		
Total PAHs	µg/kg	16	16	100	84.5 JT	7540 T	G041	1790	496	2500	7020	84.5 JT	7540 T	G041	1790	496	2500	7020
Phthalates																		
Metals																		
Arsenic	mg/kg	16	16	100	2.25	4.91 J	G029	3.43	3.4	0.752	4.48	2.25	4.91 J	G029	3.43	3.4	0.752	4.48
Chromium	mg/kg	16	15	94	15.3	33.8 T	D1-1	27.1	27.6	5.74	33.5	15.3	33.8 T	D1-1	27.4	28.7	5.64	33.5
Copper	mg/kg	16	16	100	14.3	41 T	D1-1	28.5	28	9.82	40.4	14.3	41 T	D1-1	28.5	28	9.82	40.4
Zinc	mg/kg	16	16	100	64.9	164	G029	99.7	90.8	30.7	156	64.9	164	G029	99.7	90.8	30.7	156
Butyltins																		
Tributyltin ion	µg/kg	1	1	100	2.1 JT	2.1 JT	GCA02W	2.1	2.1	--	2.1	2.1 JT	2.1 JT	GCA02W	2.1	2.1	--	2.1
PCBs[c]																		
Total PCBs	µg/kg	16	10	62	1.5 JT	40 JT	WR-PG-04	11.3	9.67	10.7	27.4	1.5 JT	40 JT	WR-PG-04	8.01	4.38	9.4	19
Bis(2-ethylhexyl) phthalate	µg/kg	16	6	38	13 JT	68	G012	38.3	37	23.8	66.5	8.2 U	90 U	G041	35.4	31	25.4	73.5

Table 5.2-7. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
RM 03-04																		
Grain Size																		
Fines	percent	31	31	100	4.14 T	91.1 T	G077	48.8	54.4	25	83.1	4.14 T	91.1 T	G077	48.8	54.4	25	83.1
Conventionals																		
Total organic carbon	percent	31	31	100	0.19	5.97	G105	1.65	1.64	1.06	2.64	0.19	5.97	G105	1.65	1.64	1.06	2.64
Metals																		
Arsenic	mg/kg	31	30	97	2.41 J	16.9 J	G105	4.86	4	3.29	11.7	2.41 J	16.9 J	G105	4.86	4	3.23	11.3
Chromium	mg/kg	31	31	100	15 J	36.5	G063	28.8	30	5.65	35.5	15 J	36.5	G063	28.8	30	5.65	35.5
Copper	mg/kg	31	31	100	13.4 T	41.9	03R002	32.1	34.6	8.32	40.7	13.4 T	41.9	03R002	32.1	34.6	8.32	40.7
Zinc	mg/kg	31	31	100	62	122	G101	97.5	101	14.5	118	62	122	G101	97.5	101	14.5	118
Butyltins																		
Tributyltin ion	µg/kg	3	3	100	2.6	81	SD011	33.9	18	41.5	74.7	2.6	81	SD011	33.9	18	41.5	74.7
PCBs[c]																		
Total PCBs	µg/kg	28	20	71	5.7 T	29 T	G105	15.1	15.7	7.05	27.1	2.3 UT	40 UT	SD011	15.6	14.2	10.1	35.5
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	7	7	100	73.3 JT	467 T	G105	172	130	133	377	73.3 JT	467 T	G105	172	130	133	377
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	7	7	100	0.138 JT	1.62 JT	GCA03W	0.66	0.333	0.652	1.61	0.138 JT	1.62 JT	GCA03W	0.66	0.333	0.652	1.61
Pesticides																		
Aldrin	µg/kg	26	10	38	0.151 J	1.13 J	G077	0.552	0.516	0.322	1.11	0.0331 U	2 U	03R040	0.45	0.29	0.458	1.12
Dieldrin	µg/kg	28	10	36	0.086 NJ	1.32 NJ	G064	0.294	0.183	0.363	0.838	0.03 U	3.9 U	03R040	0.559	0.198	0.859	2
Total chlordanes	µg/kg	28	19	68	0.11 JT	2.69 JT	G105	0.91	0.684	0.699	2.55	0.0415 UT	3.9 UT	03R040	0.966	0.677	0.859	2.63
DDx	µg/kg	28	26	93	1.3 JT	247 JT	03R002	26.6	8.42	50.8	92.7	0.39 UT	247 JT	03R002	24.7	7.83	49.3	88.1
PAHs																		
Total PAHs	µg/kg	31	31	100	44.6 T	50000 T	G619	4740	1890	9080	12700	44.6 T	50000 T	G619	4740	1890	9080	12700
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	31	13	42	23	150	03R040	67.8	67	34.8	126	3.9 U	170 UJ	SD011	67.2	59	40.7	140
RM 04-05																		
Grain Size																		
Fines	percent	77	77	100	0.36 T	95.1 T	WR-PG-14	56.5	70.2	28.8	87.7	0.36 T	95.1 T	WR-PG-14	56.5	70.2	28.8	87.7
Conventionals																		
Total organic carbon	percent	98	98	100	0.08	24.9	C138	2.29	1.89	2.87	6.72	0.08	24.9	C138	2.29	1.89	2.87	6.72
Metals																		
Arsenic	mg/kg	98	88	90	1.54 J	12.5 J	G166	4.1	3.66	1.74	6.96	1.54 J	12.5 J	G166	4.2	3.73	1.68	6.91
Chromium	mg/kg	95	95	100	4.07 J	49.3 J	SS-37	27.9	28.4	10.2	44.2	4.07 J	49.3 J	SS-37	27.9	28.4	10.2	44.2
Copper	mg/kg	98	98	100	6.19 J	194	04B024	39.8	37.6	24	63.7	6.19 J	194	04B024	39.8	37.6	24	63.7
Zinc	mg/kg	98	98	100	33 J	292	R2AR02PG	104	100	33.2	150	33 J	292	R2AR02PG	104	100	33.2	150
Butyltins																		
Tributyltin ion	µg/kg	6	6	100	1.1 J	14	SD035	7.03	7.45	4.35	12.6	1.1 J	14	SD035	7.03	7.45	4.35	12.6
PCBs[c]																		
Total PCBs	µg/kg	52	36	69	3.4 JT	160 JT	GSP04W	30.1	17.1	37.7	131	1.7 UT	274 UT	S3	36	15.1	53.9	144
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	9	9	100	2.48 T	3080 T	GSP04W	726	506	923	2170	2.48 T	3080 T	GSP04W	726	506	923	2170
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	9	9	100	0.00803 JT	6.81 JT	GSP04W	2.46	1.74	2.37	6.38	0.00803 JT	6.81 JT	GSP04W	2.46	1.74	2.37	6.38
Pesticides																		
Aldrin	µg/kg	55	12	22	0.0969 J	1.4 J	G116	0.595	0.316	0.501	1.38	0.0284 U	41 U	S3	1.84	0.24	6.55	6.7
Dieldrin	µg/kg	55	13	24	0.0653 J	0.64 J	C162	0.221	0.159	0.158	0.491	0.034 U	41 U	S3	1.88	0.28	6.55	6.7
Total chlordanes	µg/kg	55	32	58	0.042 JT	5.9 JT	04B024	1.16	0.914	1.04	2.14	0.0378 UT	41 UA	S3	2.48	0.91	6.47	6.7
DDx	µg/kg	55	50	91	0.102 JT	189 JT	2403	23.4	10.2	36.4	91.3	0.0765 UJT	189 JT	2403	22.7	10.1	35.1	80.9
PAHs																		
Total PAHs	µg/kg	100	98	98	9.75 A	114000 T	ARC03B	7940	2630	16800	40600	9.75 A	114000 T	ARC03B	7790	2510	16600	40400
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	77	22	29	42 J	230	R2AR02PG	84.6	66.5	48.2	196	2 U	20400 U	S3	746	62	3140	2400

Table 5.2-7. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
RM 05-06																		
Grain Size																		
Fines	percent	76	76	100	3.17 T	95.2 T	WR-PG-34	53	58.3	24.3	84	3.17 T	95.2 T	WR-PG-34	53	58.3	24.3	84
Conventionals																		
Total organic carbon	percent	82	82	100	0.18	3.92	G210	1.8	1.8	0.751	2.87	0.18	3.92	G210	1.8	1.8	0.751	2.87
Metals																		
Arsenic	mg/kg	67	56	84	2.19 J	12.5 J	G227	4.12	3.52	1.94	7.3	2.19 J	12.5 J	G227	4.31	3.87	1.93	8.22
Chromium	mg/kg	67	67	100	12.2	44.9	05R020	28.7	28.1	7.7	39.1	12.2	44.9	05R020	28.7	28.1	7.7	39.1
Copper	mg/kg	67	67	100	13	562 J	G245	50.7	37.2	75.7	95.4	13	562 J	G245	50.7	37.2	75.7	95.4
Zinc	mg/kg	67	67	100	56.3	273	SD03	106	101	31.4	146	56.3	273	SD03	106	101	31.4	146
Butyltins																		
Tributyltin ion	µg/kg	30	29	97	0.49 J	130	SD03	22.8	12	30.6	81.4	0.49 J	130	SD03	22.3	9.6	30.3	80.2
PCBs[c]																		
Total PCBs	µg/kg	55	39	71	2.02 JT	96.5 T	C187	18.4	12	19.2	64.4	2.02 JT	96.5 T	C187	17.6	12	18.3	46.6
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	6	6	100	192 JT	2800 T	G185	830	437	996	2320	192 JT	2800 T	G185	830	437	996	2320
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	6	6	100	0.801 JT	5.32 JT	G185	2.03	1.32	1.69	4.57	0.801 JT	5.32 JT	G185	2.03	1.32	1.69	4.57
Pesticides																		
Aldrin	µg/kg	44	12	27	0.0554 J	4.65 J	G241	1.01	0.347	1.34	3.14	0.0316 UJ	4.65 J	G241	0.513	0.222	0.801	1.83
Dieldrin	µg/kg	49	14	29	0.083 J	1.45 J	G228	0.427	0.267	0.456	1.39	0.0503 U	2 U	CS005; G654; SD055	0.51	0.23	0.606	1.96
Total chlordanes	µg/kg	50	33	66	0.18 NJT	14 JT	G241	1.75	0.735	2.71	5.12	0.0409 UT	14 JT	G241	1.47	0.723	2.3	3.5
DDx	µg/kg	50	49	98	0.661 NJT	343 JT	G242	36.3	13.3	63.5	154	0.0651 UT	343 JT	G242	35.6	13.2	63	153
PAHs																		
Total PAHs	µg/kg	82	82	100	76.8 JT	345000 T	G210	17300	3090	49300	96000	76.8 JT	345000 T	G210	17300	3090	49300	96000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	67	36	54	29	300 J	SD03	105	89	60.7	220	9.9 U	12000 U	SD05	273	90	1460	207
RM 06-07																		
Grain Size																		
Fines	percent	102	102	100	0.67 T	93.6 T	C269	50.8	57.1	26.2	85.9	0.67 T	93.6 T	C269	50.8	57.1	26.2	85.9
Conventionals																		
Total organic carbon	percent	113	113	100	0.077	18.5	GS04APG2	2.36	2	2.31	6.04	0.077	18.5	GS04APG2	2.36	2	2.31	6.04
Metals																		
Arsenic	mg/kg	109	95	87	1.7	53.7	22C04	5.99	3.69	8.06	20.6	1.7	53.7	22C04	6.16	3.97	7.56	20.2
Chromium	mg/kg	109	109	100	7.84	332	SDDC25SS	38.8	32	38.6	94.7	7.84	332	SDDC25SS	38.8	32	38.6	94.7
Copper	mg/kg	109	109	100	11	271 J	22B03	46.9	40	36.8	114	11	271 J	22B03	46.9	40	36.8	114
Zinc	mg/kg	109	109	100	48	689 J	22B04	150	121	104	337	48	689 J	22B04	150	121	104	337
Butyltins																		
Tributyltin ion	µg/kg	29	29	100	0.73 J	830	SDDC25SS	45.9	7.3	155	130	0.73 J	830	SDDC25SS	45.9	7.3	155	130
PCBs[c]																		
Total PCBs	µg/kg	79	50	63	2.27 JT	480 T	G332	66.1	34	93.5	248	2.27 JT	2000 UT	SD081	86.3	29	245	273
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	25	25	100	55.4 T	12700 T	G332	1730	732	3010	8530	55.4 T	12700 T	G332	1730	732	3010	8530
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	25	25	100	0.206 JT	223 JT	G332	20	6.06	44.7	52.1	0.206 JT	223 JT	G332	20	6.06	44.7	52.1
Pesticides																		
Aldrin	µg/kg	87	24	28	0.047 J	25.9 NJ	G330	3.41	1.11	5.54	10.2	0.0298 UJ	50 U	SD081	3.55	0.59	9.45	17.8
Dieldrin	µg/kg	92	18	20	0.057 J	11.2 NJ	G294-1	1.83	0.6	2.84	6.81	0.0513 U	99 U	SD081	4.65	0.501	17.5	9.66
Total chlordanes	µg/kg	92	54	59	0.16 NJT	246 NJT	G311-1	12.5	2.81	35.7	45.4	0.0417 UT	246 NJT	G311-1	9.83	2.14	28.7	48
DDx	µg/kg	92	91	99	1.5 T	1720 JT	G311-1	190	66	273	620	1.5 T	1720 JT	G311-1	190	69.5	271	619
PAHs																		
Total PAHs	µg/kg	109	109	100	136 JT	2450000 T	GS04APG2	192000	17200	442000	1210000	136 JT	2450000 T	GS04APG2	192000	17200	442000	1210000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	105	44	42	20	3200	WR-PG-52	256	120	513	734	12 U	3200	WR-PG-52	206	96	368	732

Table 5.2-7. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
RM 07-08																		
Grain Size																		
Fines	percent	114	114	100	0.11	98.9 T	WR-PG-68	65.9	75.5	27.4	92.8	0.11	98.9 T	WR-PG-68	65.9	75.5	27.4	92.8
Conventionals																		
Total organic carbon	percent	150	150	100	0.0438	5.53	22031	1.77	1.9	0.883	2.82	0.0438	5.53	22031	1.77	1.9	0.883	2.82
Metals																		
Arsenic	mg/kg	108	90	83	1.22	8.37	G355	3.87	3.8	1.33	6.12	1.22	8.37	G355	4.05	3.96	1.32	6.03
Chromium	mg/kg	100	100	100	10.7	270 J	CP09APG	34.8	33	26.1	50.7	10.7	270 J	CP09APG	34.8	33	26.1	50.7
Copper	mg/kg	108	108	100	11.3	276	CP07APG	41.4	37.3	30.8	87.9	11.3	276	CP07APG	41.4	37.3	30.8	87.9
Zinc	mg/kg	108	108	100	17.3 J	244	G394	104	103	34	158	17.3 J	244	G394	104	103	34	158
Butyltins																		
Tributyltin ion	µg/kg	18	16	89	1.8	83 T	AN-CTPD-06	25.7	13	25.8	75.5	0.086 U	83 T	AN-CTPD-06	23.2	10.4	25.3	74.5
PCBs[c]																		
Total PCBs	µg/kg	80	57	71	0.851 JT	972 T	G355	85.8	34	176	505	0.851 JT	4000 UT	SD090	212	34	616	1020
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	19	19	100	28.8 JT	264000 T	07R006	15200	469	60300	31900	28.8 JT	264000 T	07R006	15200	469	60300	31900
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	19	19	100	0.0844 JT	14100 JT	07R006	785	3.47	3230	1630	0.0844 JT	14100 JT	07R006	785	3.47	3230	1630
Pesticides																		
Aldrin	µg/kg	104	20	19	0.047 J	691 J	G355	40.4	1.95	153	59.2	0.0281 UJ	691 J	G355	17.1	2.2	70.1	65.9
Dieldrin	µg/kg	104	11	11	0.107 J	13 J	AP04CPG2	2.85	0.49	4.64	12	0.03 U	270 U	07R006	19.7	1.34	53.6	181
Total chlordanes	µg/kg	104	39	38	0.036 JT	669 NJT	G355	24.9	2.3	106	30.8	0.036 JT	669 NJT	G355	22.1	3.09	71.9	98.7
DDx	µg/kg	108	98	91	0.75 NJT	84900 A	OSS002	2720	133	9660	12800	0.75 NJT	84900 A	OSS002	2470	85	9240	12400
PAHs																		
Total PAHs	µg/kg	133	127	95	3.3 JT	149000 JT	G355	3490	940	14800	9680	3.3 JT	149000 JT	G355	3350	870	14500	9390
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	115	67	58	26.5 T	6700	AN-CTPD-02	347	190	830	747	6.7 U	6700	AN-CTPD-02	452	170	881	2000
RM 08-09																		
Grain Size																		
Fines	percent	52	52	100	0.79 T	94.8 T	G450-2	60.7	68.4	26.7	90	0.79 T	94.8 T	G450-2	60.7	68.4	26.7	90
Conventionals																		
Total organic carbon	percent	66	66	100	0.12	7.45	G453	1.85	1.76	1.16	3.61	0.12	7.45	G453	1.85	1.76	1.16	3.61
Metals																		
Arsenic	mg/kg	67	60	90	0.97	79.6	A2GS10	9.17	4.44	13.2	29.1	0.97	79.6	A2GS10	8.75	5	12.5	28.7
Chromium	mg/kg	67	67	100	8.7	774	19A01	46.9	33.9	91.9	60.1	8.7	774	19A01	46.9	33.9	91.9	60.1
Copper	mg/kg	67	67	100	13.2	772 J	19A01	102	48.4	143	388	13.2	772 J	19A01	102	48.4	143	388
Zinc	mg/kg	67	67	100	40.9	1360	G445	290	186	301	1100	40.9	1360	G445	290	186	301	1100
Butyltins																		
Tributyltin ion	µg/kg	31	26	84	2.1 J	1830	A2GS12	83.8	10	356	48.8	0.58 U	1830	A2GS12	70.8	8.4	327	42.5
PCBs[c]																		
Total PCBs	µg/kg	47	45	96	4.28 JT	35400 T	G453	978	94	5260	764	4.28 JT	35400 T	G453	940	94	5140	748
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	11	11	100	9.9 JT	8300 JT	BT028	1500	395	2430	5360	9.9 JT	8300 JT	BT028	1500	395	2430	5360
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	11	11	100	0.0109 JT	18.2 JT	BT028	3.55	1.55	5.31	12.1	0.0109 JT	18.2 JT	BT028	3.55	1.55	5.31	12.1
Pesticides																		
Aldrin	µg/kg	49	21	43	0.0593 J	132 J	G453	13.5	5.03	28.7	30	0.0264 U	132 J	G453	6.18	0.71	19.6	26.8
Dieldrin	µg/kg	49	15	31	0.0762 J	356 J	G453	28.7	1.72	90.9	126	0.0432 U	356 J	G453	9.13	0.649	50.8	16.6
Total chlordanes	µg/kg	49	42	86	0.215 NJT	660 NJT	G453	28.9	3.59	102	64.1	0.0351 UT	660 NJT	G453	25	2.82	94.5	62.5
DDx	µg/kg	49	48	98	0.954 NJT	3930 NJT	G453	123	13.6	564	194	0.954 NJT	3930 NJT	G453	120	13.5	558	192
PAHs																		
Total PAHs	µg/kg	66	66	100	71.1 T	26400 T	A2GS12	2280	715	4280	9900	71.1 T	26400 T	A2GS12	2280	715	4280	9900
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	64	49	77	13 J	4500	G453	745	300	1150	3160	7 U	40000 U	A2GS12	1850	305	5730	9170

Table 5.2-7. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
RM 09-10																		
Grain Size																		
Fines	percent	33	33	100	4.72 JT	92.5 T	C461	60.3	69.7	26.2	88.9	4.72 JT	92.5 T	C461	60.3	69.7	26.2	88.9
Conventionals																		
Total organic carbon	percent	33	33	100	0.13 T	4.12	G497	2.07	2.08	0.894	3.35	0.13 T	4.12	G497	2.07	2.08	0.894	3.35
Metals																		
Arsenic	mg/kg	36	34	94	2 J	43.2	HA-38	5.79	3.76	7.64	14.9	2 J	43.2	HA-38	5.77	3.87	7.42	13.5
Chromium	mg/kg	36	36	100	11.5 T	194	HA-43	39.1	31.2	33.3	97.1	11.5 T	194	HA-43	39.1	31.2	33.3	97.1
Copper	mg/kg	36	36	100	14.6 T	1370	HA-43	110	37.8	251	386	14.6 T	1370	HA-43	110	37.8	251	386
Zinc	mg/kg	36	36	100	71.9 J	4220	HA-43	394	142	734	1430	71.9 J	4220	HA-43	394	142	734	1430
Butyltins																		
Tributyltin ion	µg/kg	10	9	90	0.97 J	31	G473	10.9	7	10.3	28.2	0.97 J	31	G473	9.97	6.85	10.1	27.9
PCBs[c]																		
Total PCBs	µg/kg	31	31	100	10.4 T	2510 T	G473	341	110	570	1580	10.4 T	2510 T	G473	341	110	570	1580
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	8	8	100	378 T	5440 NJT	09R002	1650	691	1860	4760	378 T	5440 NJT	09R002	1650	691	1860	4760
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	8	8	100	0.918 JT	16.5 NJT	09R002	4.59	1.58	5.53	13.6	0.918 JT	16.5 NJT	09R002	4.59	1.58	5.53	13.6
Pesticides																		
Aldrin	µg/kg	31	6	19	0.103 J	2.78 J	G497	0.999	0.789	1.02	2.44	0.0282 UT	9.7 UT	SD151	0.877	0.214	1.87	3.29
Dieldrin	µg/kg	31	7	23	0.15 J	4.85 J	G497	1.04	0.415	1.69	3.58	0.032 U	19 UT	SD151	1.05	0.2	3.45	3.28
Total chlordanes	µg/kg	31	26	84	0.19 JT	12.4 NJT	G473	2.5	1.63	2.79	8.02	0.0375 UT	12.4 NJT	G473	2.58	1.59	2.94	8.9
DDx	µg/kg	31	29	94	0.695 NJT	75.5 NJT	G473	13.7	5.6	19.2	60.3	0.695 NJT	75.5 NJT	G473	13.7	5.9	18.6	59.6
PAHs																		
Total PAHs	µg/kg	36	36	100	49.6 JT	25100 JT	G467	2510	817	4840	8380	49.6 JT	25100 JT	G467	2510	817	4840	8380
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	36	25	69	23 J	3900	G497	531	170	887	2220	7 UT	40000 U	HA-43	1700	158	6680	4430
RM 10-11																		
Grain Size																		
Fines	percent	23	23	100	0.94 T	96.9 T	WR-PG-120	58.3	66.2	27.1	85.5	0.94 T	96.9 T	WR-PG-120	58.3	66.2	27.1	85.5
Conventionals																		
Total organic carbon	percent	23	23	100	0.35	3.63	WR-PG-120	2.03	2.15	0.76	3	0.35	3.63	WR-PG-120	2.03	2.15	0.76	3
Metals																		
Arsenic	mg/kg	26	26	100	3.12 T	55	SED-12	9.96	4.22	13.4	40.4	3.12 T	55	SED-12	9.96	4.22	13.4	40.4
Chromium	mg/kg	39	39	100	13.5	76.1	SED-3	34.7	31.9	12.7	62.7	13.5	76.1	SED-3	34.7	31.9	12.7	62.7
Copper	mg/kg	39	39	100	27.3	846	SED-5	164	53.6	188	438	27.3	846	SED-5	164	53.6	188	438
Zinc	mg/kg	39	39	100	68.3 J	904	SED-8	212	150	183	529	68.3 J	904	SED-8	212	150	183	529
Butyltins																		
Tributyltin ion	µg/kg	3	3	100	1.3 J	3.4	GCA10W	2.43	2.6	1.06	3.32	1.3 J	3.4	GCA10W	2.43	2.6	1.06	3.32
PCBs[c]																		
Total PCBs	µg/kg	23	21	91	8.65 T	338 T	G503	52.7	26.8	73.3	146	8.65 T	338 T	G503	49.9	24.5	70.6	141
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	3	3	100	405 JT	2940 JT	GSP10W	1690	1720	1270	2820	405 JT	2940 JT	GSP10W	1690	1720	1270	2820
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	3	3	100	0.815 JT	9.83 JT	GCR10W	5.1	4.64	4.52	9.31	0.815 JT	9.83 JT	GCR10W	5.1	4.64	4.52	9.31
Pesticides																		
Aldrin	µg/kg	23	2	9	0.504 NJ	0.93 J	G763	0.717	0.717	0.301	0.909	0.0592 UJ	4.99 UJ	G508	0.634	0.3	1.02	1.26
Dieldrin	µg/kg	23	0	0 --	--	--	--	--	--	--	--	0.032 U	4.99 U	G508	0.62	0.24	1.02	1.26
Total chlordanes	µg/kg	23	18	78	0.075 JT	8.07 JT	G503	1.57	0.952	1.94	5.12	0.075 JT	10 UA	T1S-02; T1S-04; T1S-06	2.81	1.18	3.4	10
DDx	µg/kg	23	22	96	1.82 NJT	20.7 NJT	G503	7.21	5.64	4.33	13.7	1.82 NJT	20.7 NJT	G503	7.11	5.48	4.25	13.7
PAHs																		
Total PAHs	µg/kg	30	28	93	70.2 JT	6050 T	G508	1130	551	1550	4750	20 UT	6050 T	G508	1060	523	1520	4680
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	23	15	65	57	590 J	G510	174	140	129	366	28 UJ	590 J	G510	157	130	111	266

Table 5.2-7. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
RM 11-11.8																		
Grain Size																		
Fines	percent	9	9	100	34.6 T	79.3 T	WR-PG-122	56.2	62.4	15.7	75.5	34.6 T	79.3 T	WR-PG-122	56.2	62.4	15.7	75.5
Conventionals																		
Total organic carbon	percent	9	9	100	1.1	2.54	WR-PG-122; WR-PG-132	2.01	2.08	0.485	2.54	1.1	2.54	WR-PG-122; WR-PG-132	2.01	2.08	0.485	2.54
Metals																		
Arsenic	mg/kg	9	9	100	2.94	4.7	T1S-08	3.5	3.42	0.547	4.41	2.94	4.7	T1S-08	3.5	3.42	0.547	4.41
Chromium	mg/kg	9	9	100	22.3	32.2	G772	26.9	26.6	3.12	31.3	22.3	32.2	G772	26.9	26.6	3.12	31.3
Copper	mg/kg	9	9	100	25.9 J	48.4 J	WR-PG-130	33.6	31.9	6.96	44.2	25.9 J	48.4 J	WR-PG-130	33.6	31.9	6.96	44.2
Zinc	mg/kg	9	9	100	65.6 J	105	G772	80.2	75.6	12.4	98.8	65.6 J	105	G772	80.2	75.6	12.4	98.8
PCBs[c]																		
Total PCBs	µg/kg	9	8	89	12.8 JT	33 JT	WR-PG-122; WR-PG-130	20.4	17.5	8.04	33	12.8 JT	33 JT	WR-PG-122; WR-PG-130	20.3	17.9	7.52	33
Pesticides																		
Aldrin	µg/kg	9	0	0	--	--	--	--	--	--	--	0.19 U	1 U	T1S-08	0.417	0.27	0.322	0.98
Dieldrin	µg/kg	9	1	11	2.5 NJ	2.5 NJ	WR-PG-130	2.5	2.5	--	2.5	0.24 U	2.5 NJ	WR-PG-130	0.788	0.68	0.712	1.9
Total chlordanes	µg/kg	9	8	89	0.27 JT	1.4 NJT	WR-PG-130	0.596	0.395	0.418	1.3	0.27 JT	10 UA	T1S-08	1.64	0.4	3.16	6.56
DDx	µg/kg	9	9	100	2 NJT	7.9 JT	WR-PG-122	3.47	2.8	1.86	6.66	2 NJT	7.9 JT	WR-PG-122	3.47	2.8	1.86	6.66
PAHs																		
Total PAHs	µg/kg	9	9	100	53 T	6250 T	WR-PG-130	940	205	2000	4060	53 T	6250 T	WR-PG-130	940	205	2000	4060
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	9	9	100	58	1100	G772	338	130	398	1040	58	1100	G772	338	130	398	1040

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-8. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[b]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Study Area																		
Grain Size																		
Fines	percent	780	780	100	0.24	99.2 T	DRB-3	55.7	63.9	28.2	91	0.24	99.2 T	DRB-3	55.7	63.9	28.2	91
Conventionals																		
Total organic carbon	percent	879	810	92	0.02 J	35.5	C302	1.81	1.62	2.59	4.57	0.02 J	35.5	C302	1.68	1.37	2.53	4.24
Metals																		
Arsenic	mg/kg	537	512	95	0.7	43.3	HA-38	4.47	3.88	3.7	8.42	0.7	43.3	HA-38	4.56	3.95	3.67	9
Chromium	mg/kg	537	537	100	7.06 J	464	HA-42	32.2	30.1	25.7	50.3	7.06 J	464	HA-42	32.2	30.1	25.7	50.3
Copper	mg/kg	529	529	100	10.9	1990	HA-42	52.4	39.6	123	85.2	10.9	1990	HA-42	52.4	39.6	123	85.2
Zinc	mg/kg	529	529	100	42.8	9000	HA-42	164	123	451	278	42.8	9000	HA-42	164	123	451	278
Butyltins																		
Tributyltin ion	µg/kg	190	73	38	0.39 J	670	C457	45.5	16	98	152	0 U	670	C457	21.3	2.4	66.5	70.5
PCBs[c]																		
Total PCBs	µg/kg	492	280	57	0.0604 JT	36800 T	C455	309	77.5	2230	696	0.0604 JT	150000 UT	SD092	597	36.1	7040	840
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	168	167	99	0.141 T	425000 JT	WB-36	16200	425	59300	108000	0.141 T	425000 JT	WB-36	16100	422	59200	107000
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	170	160	94	0.00053 JT	24400 JT	WB-36	844	3.04	3360	6700	0.00053 JT	24400 JT	WB-36	794	2.41	3260	6050
Pesticides																		
Aldrin	µg/kg	489	64	13	0.11 J	1340 J	C356	47.5	2.71	185	141	0.028 UJ	14000 U	WB-36	92.6	0.6	742	111
Dieldrin	µg/kg	502	26	5	0.04 J	51 J	C453	5.14	0.784	10.4	15.4	0.03 U	12000 U	WB-36	80.8	0.396	689	93.9
Total chlordanes	µg/kg	506	269	53	0.038 JT	2330 JT	C455	35.8	2.15	178	115	0.0373 UJT	10000 UA	WB-36	87.4	1.94	549	264
DDx	µg/kg	808	703	87	0.08 JT	3640000 A	WB-24	22200	43	202000	26500	0.0498 UJT	3640000 A	WB-24	19300	28	189000	19000
PAHs																		
Total PAHs	µg/kg	621	610	98	0.46 JT	53300000 T	C302	571000	2290	3760000	1270000	0.46 JT	53300000 T	C302	561000	2260	3730000	1260000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	558	180	32	2.4 J	10000	C240	405	125	1130	1310	2.3 U	40000 U	HA-43	535	80.5	2380	2020
RM 03-04																		
Grain Size																		
Fines	percent	13	13	100	32.1 T	92.8 T	C066	64.7	68.3	17.2	87.5	32.1 T	92.8 T	C066	64.7	68.3	17.2	87.5
Conventionals																		
Total organic carbon	percent	13	13	100	0.86	4.19	C060	1.97	1.85	0.993	3.53	0.86	4.19	C060	1.97	1.85	0.993	3.53
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	10	10	100	0.446 T	2230 JT	C066	416	16.1	708	1590	0.446 T	2230 JT	C066	416	16.1	708	1590
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	10	7	70	0.00171 JT	5.74 JT	C060	1.52	1.19	2.01	4.57	0.00171 JT	5.74 JT	C060	1.07	0.134	1.8	3.99
Pesticides																		
Aldrin	µg/kg	13	0	0	--	--	--	--	--	--	--	0.0367 UJ	0.96 UJ	SD001	0.176	0.12	0.248	0.515
Dieldrin	µg/kg	13	0	0	--	--	--	--	--	--	--	0.06 UJ	1.9 UJ	SD001	0.317	0.22	0.492	0.974
Total chlordanes	µg/kg	13	4	31	0.157 NJT	6.01 NJT	C060	2.66	2.24	2.92	5.74	0.0503 UJT	6.01 NJT	C060	1.02	0.238	1.87	4.93
DDx	µg/kg	13	10	77	0.205 NJT	131 NJT	C060	39.4	14.2	50.2	120	0.0692 UJT	131 NJT	C060	30.4	0.857	46.7	117
PAHs																		
Total PAHs	µg/kg	12	12	100	4.14 JT	96300 T	SD001	19000	3280	32600	85100	4.14 JT	96300 T	SD001	19000	3280	32600	85100
Phthalates																		
Metals																		
Arsenic	mg/kg	12	11	92	1.99	29.9	C077	6.07	3.05	8.03	18.2	1.99	29.9	C077	5.99	3.55	7.66	17
Chromium	mg/kg	12	12	100	21.7	37.7	SD001	28.3	28.3	5.04	36.1	21.7	37.7	SD001	28.3	28.3	5.04	36.1
Copper	mg/kg	12	12	100	22.3	56.3	C077	34.2	30.6	11.7	52	22.3	56.3	C077	34.2	30.6	11.7	52
Zinc	mg/kg	12	12	100	52.8	152	SD001	92	78.2	38.8	150	52.8	152	SD001	92	78.2	38.8	150
Butyltins																		
Tributyltin ion	µg/kg	1	0	0	--	--	--	--	--	--	--	11 U	11 U	SD001	11	11	--	11
PCBs[c]																		
Total PCBs	µg/kg	12	5	42	3.8 T	118 JT	C060	50.9	46.8	41.7	104	2.65 UT	118 JT	C060	25.9	3.46	34.9	80.2
Bis(2-ethylhexyl) phthalate	µg/kg	12	3	25	13 J	110	C615	61.3	61	48.5	105	3.2 U	110	C615	29.1	13	34.2	89.7
RM 04-05																		
Grain Size																		
Fines	percent	72	72	100	0.65 T	92.5 T	C138	63.1	69.2	21.8	86.2	0.65 T	92.5 T	C138	63.1	69.2	21.8	86.2
Conventionals																		
Total organic carbon	percent	78	78	100	0.05	14.9	C139	2.27	2.16	2.12	5.46	0.05	14.9	C139	2.27	2.16	2.12	5.46
Metals																		
Arsenic	mg/kg	82	80	98	1.64	15.2	SGP-14	4.04	3.94	1.71	6.3	1.64	15.2	SGP-14	4.06	3.95	1.7	6.28
Chromium	mg/kg	82	82	100	9.5	40.8	C133	28.7	30.2	7.7	38.9	9.5	40.8	C133	28.7	30.2	7.7	38.9
Copper	mg/kg	82	82	100	10.9	677 T	SGP-16	48	39.5	74	60.2	10.9	677 T	SGP-16	48	39.5	74	60.2
Zinc	mg/kg	82	82	100	44.3	292	C133	126	124	48.2	205	44.3	292	C133	126	124	48.2	205
Butyltins																		
Tributyltin ion	µg/kg	4	0	0	--	--	--	--	--	--	--	0.31 U	19 U	SD035	5.04	0.415	9.31	16.2

Table 5.2-8. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[b]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PCBs[c]																		
Total PCBs	µg/kg	61	41	67	6.33 JT	218 T	C136	76.7	60	56.8	194	1.4 UT	288 UT	S2	60.6	44	65.1	194
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	12	12	100	0.441 T	3240 JT	C136	624	255	1050	2750	0.441 T	3240 JT	C136	624	255	1050	2750
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	12	11	92	0.0014 JT	31.6 JT	C136	5.27	0.934	10.5	25.8	0.0014 JT	31.6 JT	C136	4.83	0.848	10.1	25.2
Pesticides																		
Aldrin	µg/kg	59	8	14	0.281 NJ	1.49 NJ	C142	0.851	0.853	0.4	1.39	0.0289 UJT	43.3 U	S2	2.24	0.281	6.66	9.12
Dieldrin	µg/kg	61	0	0 --	--	--	--	--	--	--	--	0.0473 UJT	43.3 U	S2	2.02	0.338	6.52	6.7
Total chlordanes	µg/kg	61	33	54	0.3 JT	36.6 NJT	C147	5.79	2.49	9.59	33	0.0385 UJT	43.3 UA	S2	4.98	1.5	9.44	31
DDx	µg/kg	61	46	75	0.093 JT	793 JT	C147	77	32.6	129	217	0.0514 UJT	793 JT	C147	59.3	20	116	176
PAHs																		
Total PAHs	µg/kg	75	73	97	2.21 JT	254000 T	C147	24700	6560	50900	111000	2.21 JT	254000 T	C147	24100	5800	50400	107000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	67	10	15	5.9 JT	170	C139	66.2	52	57.7	157	2.4 U	21500 U	S2	764	39	3120	3400
RM 05-06																		
Grain Size																		
Fines	percent	56	56	100	3.59 T	93.4 T	C172	53.5	55.6	22.2	80.4	3.59 T	93.4 T	C172	53.5	55.6	22.2	80.4
Conventionals																		
Total organic carbon	percent	60	60	100	0.03 J	4.37	SD05	1.63	1.83	1.04	3.07	0.03 J	4.37	SD05	1.63	1.83	1.04	3.07
Metals																		
Arsenic	mg/kg	54	50	93	1.68	12.9	C172	4.25	3.82	1.89	8.1	1.68	12.9	C172	4.4	3.98	1.99	8.55
Chromium	mg/kg	54	54	100	11	45.2	C227	26.5	27.1	7.15	36.6	11	45.2	C227	26.5	27.1	7.15	36.6
Copper	mg/kg	54	54	100	14.5 J	74.5 J	C227	33.9	33	12.7	54.9	14.5 J	74.5 J	C227	33.9	33	12.7	54.9
Zinc	mg/kg	54	54	100	48.9	229	C184	110	106	45	193	48.9	229	C184	110	106	45	193
Butyltins																		
Tributyltin ion	µg/kg	27	11	41	0.39 J	93	C240	26.5	9	30	75.3	0.2 U	93	C240	11.3	0.6	22.7	53.8
PCBs[c]																		
Total PCBs	µg/kg	53	28	53	3.72 JT	358 JT	C531	88.2	69.8	83.1	209	1.5 UT	358 JT	C531	56.5	21.9	83.5	208
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	8	8	100	0.141 T	1060 T	C185	315	1.48	477	1060	0.141 T	1060 T	C185	315	1.48	477	1060
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	8	8	100	0.00053 JT	9.97 JT	C245	2.46	0.00965	4.27	9.53	0.00053 JT	9.97 JT	C245	2.46	0.00965	4.27	9.53
Pesticides																		
Aldrin	µg/kg	41	4	10	1.34 J	3	C531	1.9	1.63	0.776	2.83	0.0327 UJ	8.7 U	SD055C	1.11	0.22	1.82	3.7
Dieldrin	µg/kg	50	0	0 --	--	--	--	--	--	--	--	0.0514 U	17 U	SD055C	0.948	0.346	2.42	2.22
Total chlordanes	µg/kg	50	26	52	0.039 JT	335 NJT	C531	17.2	1.56	65.6	41.9	0.039 JT	335 NJT	C531	9.55	1.02	47.6	9.64
DDx	µg/kg	50	45	90	0.08 JT	780 JT	C531	78.4	21.3	141	302	0.0559 UJT	780 JT	C531	70.6	15.8	135	297
PAHs																		
Total PAHs	µg/kg	59	59	100	0.47 JT	585000 JT	SD05	45400	9380	90100	163000	0.47 JT	585000 JT	SD05	45400	9380	90100	163000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	57	8	14	20 J	10000	C240	1400	105	3480	6700	2.3 U	10000	C240	309	49	1370	620
RM 06-07																		
Grain Size																		
Fines	percent	194	194	100	0.81	92.5 T	C529	44.8	49.6	27.3	84.7	0.81	92.5 T	C529	44.8	49.6	27.3	84.7
Conventionals																		
Total organic carbon	percent	204	187	92	0.02 J	35.5	C302	2.81	1.58	4.7	9.07	0.02 J	35.5	C302	2.58	1.22	4.56	8.63
Metals																		
Arsenic	mg/kg	155	149	96	0.7	16.5 J	C324	3.61	3.26	1.9	6.22	0.7	16.5 J	C324	3.77	3.33	2.05	8
Chromium	mg/kg	155	155	100	7.06 J	125	SDDC25SB	30.3	28.9	15.3	50.4	7.06 J	125	SDDC25SB	30.3	28.9	15.3	50.4
Copper	mg/kg	152	152	100	11.4	183	SDDC25SB	39.4	33.9	24.9	78.4	11.4	183	SDDC25SB	39.4	33.9	24.9	78.4
Zinc	mg/kg	152	152	100	44.3	873	C324	126	108	86.1	230	44.3	873	C324	126	108	86.1	230
Butyltins																		
Tributyltin ion	µg/kg	53	20	38	1.8 J	390	SDDC25SB	63.3	16	110	333	0 U	390	SDDC25SB	24.8	1.7	73.2	140
PCBs[c]																		
Total PCBs	µg/kg	121	53	44	11.9 NJT	322 JT	C316	110	81	78.5	251	1.4 UT	1300 UT	SDDC23SB	80.8	31	159	250
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	37	37	100	0.29 T	65700 T	C302	2650	524	10700	4500	0.29 T	65700 T	C302	2650	524	10700	4500
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	38	36	95	0.0052 JT	178 T	C334	20.4	3.9	39.6	108	0.0052 JT	178 T	C334	19.3	3.37	38.8	104
Pesticides																		
Aldrin	µg/kg	122	16	13	0.11 J	200	C527	28.9	6.78	52.5	119	0.028 UJ	200	C527	6.09	0.499	21.4	21.9
Dieldrin	µg/kg	124	9	7	0.04 J	15.6 NJ	C264	4.52	0.74	6.44	15.3	0.04 J	99 U	LWMC11	3.6	0.647	11.2	15.9
Total chlordanes	µg/kg	127	74	58	0.047 JT	220 JT	SDDC24SB	18.9	3.2	36.1	74.1	0.0373 UJT	610 UA	LWMTCLP11B	24.8	2	76.6	93.8
DDx	µg/kg	124	104	84	0.1 JT	6650 NJT	C316	322	67	780	1330	0.0498 UJT	6650 NJT	C316	271	44	723	1200

Table 5.2-8. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[b]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
PAHs																		
Total PAHs	µg/kg	216	213	99	0.46 JT	53300000 T	C302	1610000	23900	6250000	7450000	0.46 JT	53300000 T	C302	1580000	23900	6210000	7430000
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	161	35	22	7.7 J	5600 J	C301	338	87	949	824	2.3 U	16000 U	RAA-17	430	88	1500	1700
RM 07-08																		
Grain Size																		
Fines	percent	337	337	100	0.24	99.2 T	DRB-3	57.2	65.3	30	93	0.24	99.2 T	DRB-3	57.2	65.3	30	93
Conventionals																		
Total organic carbon	percent	416	365	88	0.04 J	5.9	WB-66	1.24	0.93	1.08	2.86	0.04 J	5.9	WB-66	1.09	0.615	1.08	2.8
Metals																		
Arsenic	mg/kg	125	118	94	2.17	10.6 JT	C366-2	4.34	4.06	1.25	6	2.17	10.6 JT	C366-2	4.42	4.12	1.31	6.08
Chromium	mg/kg	125	125	100	11.5	95.8 T	C366-1	32.3	30.6	13.9	51.9	11.5	95.8 T	C366-1	32.3	30.6	13.9	51.9
Copper	mg/kg	123	123	100	11.5	237 J	DMMU-2-A+B+C	42.6	41.6	23.5	72.6	11.5	237 J	DMMU-2-A+B+C	42.6	41.6	23.5	72.6
Zinc	mg/kg	123	123	100	47.7 JT	592 J	DMMU-2-A+B+C	131	125	63.8	221	47.7 JT	592 J	DMMU-2-A+B+C	131	125	63.8	221
Butyltins																		
Tributyltin ion	µg/kg	55	10	18	4 J	58 J	DRB-2	36.2	40.3	19.8	57.6	1.5 UJ	58 J	DRB-2	13.2	13	14.7	52.2
PCBs[c]																		
Total PCBs	µg/kg	146	70	48	0.906 T	1180 NJT	C356	177	63.6	263	858	0.906 T	150000 UT	SD092	1470	38.1	12500	1650
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	86	85	99	0.443 T	425000 JT	WB-36	27300	381	78100	151000	0.443 T	425000 JT	WB-36	27000	347	77700	151000
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	87	85	98	0.00072 JT	24400 JT	WB-36	1570	3.85	4490	8960	0.00072 JT	24400 JT	WB-36	1540	3.82	4450	8790
Pesticides																		
Aldrin	µg/kg	167	26	16	0.27	1340 J	C356	72.5	5.95	261	137	0.0315 UJ	14000 U	WB-36	261	2.45	1250	1230
Dieldrin	µg/kg	167	10	6	0.34 J	10 J	DMMU1	3.95	3.65	3.48	9.1	0.0515 U	12000 U	WB-36	238	2.12	1180	696
Total chlordanes	µg/kg	165	69	42	0.19 JT	1000 A	WB-35	68.5	1.89	203	354	0.0419 UT	10000 UA	WB-36	225	4.11	928	998
DDx	µg/kg	473	421	89	0.087 JT	3640000 A	WB-24	36900	98.4	260000	51000	0.0659 UJT	3640000 A	WB-24	32800	43.2	246000	38000
PAHs																		
Total PAHs	µg/kg	154	149	97	0.53 JT	135000 T	OSS004	3560	1480	12000	10400	0.53 JT	135000 T	OSS004	3450	1460	11800	10200
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	152	67	44	20 J	4200	OSS006	277	150	536	683	2.5 U	7440 U	DMMU-2-A	445	150	1260	1190
RM 08-09																		
Grain Size																		
Fines	percent	82	82	100	0.89 T	93.1 T	C457	66.8	77.4	25.7	89.3	0.89 T	93.1 T	C457	66.8	77.4	25.7	89.3
Conventionals																		
Total organic carbon	percent	82	81	99	0.03 J	7.21	C455	1.82	1.99	1.28	3.44	0.02 U	7.21	C455	1.8	1.97	1.29	3.44
Metals																		
Arsenic	mg/kg	77	75	97	1.84	32.3 J	C445	5.67	4.19	4.64	15	1.84	32.3 J	C445	5.69	4.22	4.59	15
Chromium	mg/kg	77	77	100	12.3	157	SD143	35.2	32.8	21.5	56.5	12.3	157	SD143	35.2	32.8	21.5	56.5
Copper	mg/kg	76	76	100	13.9	397	C457	59.8	45.9	61	126	13.9	397	C457	59.8	45.9	61	126
Zinc	mg/kg	76	76	100	48.6	700	C445	190	146	139	505	48.6	700	C445	190	146	139	505
Butyltins																		
Tributyltin ion	µg/kg	43	25	58	0.49 J	670	C457	44.9	5.8	133	94.4	0.22 U	670	C457	32.5	1.7	109	96.2
PCBs[c]																		
Total PCBs	µg/kg	73	58	79	0.0604 JT	36800 T	C455	931	110	4860	1270	0.0604 JT	36800 T	C455	740	70.5	4340	901
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	13	13	100	0.227 T	218000 T	C455	19400	1540	59800	92400	0.227 T	218000 T	C455	19400	1540	59800	92400
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	13	11	85	0.217 JT	332 T	C455	36.7	4.19	98.2	175	0.014 UT	332 T	C455	31.1	3.02	90.7	144
Pesticides																		
Aldrin	µg/kg	63	10	16	0.5 NJ	637 J	C455	67.9	1.6	200	364	0.032 UJ	637 J	C455	10.9	0.204	80.2	2.42
Dieldrin	µg/kg	63	3	5	0.42 J	51 J	C453	17.3	0.43	29.2	45.9	0.03 U	51 J	C453	1.17	0.2	6.44	0.721
Total chlordanes	µg/kg	64	46	72	0.038 JT	2330 JT	C455	61.4	1.82	343	102	0.038 JT	2330 JT	C455	44.2	0.765	291	81.6
DDx	µg/kg	63	56	89	0.087 JT	5840 NJT	C455	153	15.7	781	380	0.0579 UJT	5840 NJT	C455	136	13.7	737	339
PAHs																		
Total PAHs	µg/kg	76	76	100	1.05 JT	17200 T	C455	1500	763	2640	3850	1.05 JT	17200 T	C455	1500	763	2640	3850
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	78	38	49	2.4 J	7400	C455	628	100	1470	2620	2.4 J	7400	C455	418	48	1290	2120
RM 09-10																		
Grain Size																		
Fines	percent	20	20	100	0.94 T	94.1 T	C468	62.6	72	27.2	90.9	0.94 T	94.1 T	C468	62.6	72	27.2	90.9
Conventionals																		
Total organic carbon	percent	20	20	100	0.04 J	2.58	C468	1.7	1.94	0.671	2.3	0.04 J	2.58	C468	1.7	1.94	0.671	2.3

Table 5.2-8. Summary Statistics by River Mile for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Study Area (RM 1.9-11.8) Western Nearshore.

					Detected Concentrations							Detected and Not Detected Concentrations						
Chemical	**Units**	**Sample Count**	**Detected Sample Count**	**Percent Detected**	**Minimum[a]**	**Maximum[b]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**Standard Deviation**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (full DL)**	**Median (full DL)[b]**	**Standard Deviation (full DL)**	**95th Percentile (full DL)[b]**
Metals																		
Arsenic	mg/kg	26	23	88	1.48	43.3	HA-38	8.11	3.86	11.8	39.3	1.48	43.3	HA-38	8.06	4.04	11.1	37.3
Chromium	mg/kg	26	26	100	10.2	464	HA-42	60.5	34.4	94.8	214	10.2	464	HA-42	60.5	34.4	94.8	214
Copper	mg/kg	24	24	100	13.6	1990	HA-42	229	45.7	524	1590	13.6	1990	HA-42	229	45.7	524	1590
Zinc	mg/kg	24	24	100	42.8	9000	HA-42	792	155	2020	4450	42.8	9000	HA-42	792	155	2020	4450
Butyltins																		
Tributyltin ion	µg/kg	7	7	100	9.2	140	C468	40.3	29	45	108	9.2	140	C468	40.3	29	45	108
PCBs[c]																		
Total PCBs	µg/kg	20	19	95	2.17 JT	2370 JT	LWMC19	424	128	692	2210	1.4 UT	2370 JT	LWMC19	403	123	680	2200
PCDD/Fs Homologs																		
Total PCDD/Fs	pg/g	2	2	100	11200 JT	13300 JT	LWMC19	12200	12200	1470	13200	11200 JT	13300 JT	LWMC19	12200	12200	1470	13200
PCDD/Fs																		
TCDD TEQ (ND=0)	pg/g	2	2	100	32.3 JT	38 T	LWMC19	35.2	35.2	4.07	37.8	32.3 JT	38 T	LWMC19	35.2	35.2	4.07	37.8
Pesticides																		
Aldrin	µg/kg	18	0	0	--	--	--	--	--	--	--	0.0329 UJ	37 U	LWMC24	4.39	0.12	11.4	34.5
Dieldrin	µg/kg	18	2	11	0.3 NJ	0.828 NJ	C477	0.564	0.564	0.373	0.802	0.03 U	30 U	LWMC24	4	0.134	9.21	27.5
Total chlordanes	µg/kg	20	11	55	0.892 NJT	5.1 JT	C738	2.19	2	1.26	4.15	0.082 UT	100 UA	LWMTCLP19	17.4	2.26	31.8	90.5
DDx	µg/kg	18	15	83	0.31 JT	255 JT	LWMC24	44.8	9.3	80.9	236	0.22 UT	255 JT	LWMC24	38.3	8.73	75	232
PAHs																		
Total PAHs	µg/kg	23	22	96	64 JT	358000 T	HA-43	19200	1430	75800	13400	1.5 UT	358000 T	HA-43	18300	960	74100	13300
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	25	13	52	32	1400	C468	359	210	405	1060	4.9 U	40000 U	HA-43	2310	180	8100	8400
RM 11-11.8																		
Grain Size																		
Fines	percent	6	6	100	43.5 T	66.1 T	C7732	57.9	61.2	8.32	65.3	43.5 T	66.1 T	C7732	57.9	61.2	8.32	65.3
Conventionals																		
Total organic carbon	percent	6	6	100	1.13 T	1.99 T	C7732	1.7	1.78	0.336	1.98	1.13 T	1.99 T	C7732	1.7	1.78	0.336	1.98
Metals																		
Arsenic	mg/kg	6	6	100	3.29 T	3.96 T	C7732	3.72	3.83	0.278	3.96	3.29 T	3.96 T	C7732	3.72	3.83	0.278	3.96
Chromium	mg/kg	6	6	100	25.7	31.9 T	C7732	28.7	28.7	2.78	31.8	25.7	31.9 T	C7732	28.7	28.7	2.78	31.8
Copper	mg/kg	6	6	100	35.6 T	46.8 T	C7732	42.4	43	3.7	46	35.6 T	46.8 T	C7732	42.4	43	3.7	46
Zinc	mg/kg	6	6	100	101 T	278	C7731	159	145	62	248	101 T	278	C7731	159	145	62	248
PCBs[c]																		
Total PCBs	µg/kg	6	6	100	10 JT	148 JT	C7731	70.6	61.3	52.3	139	10 JT	148 JT	C7731	70.6	61.3	52.3	139
Pesticides																		
Aldrin	µg/kg	6	0	0	--	--	--	--	--	--	--	0.12 U	0.6 U	C7731	0.228	0.12	0.194	0.523
Dieldrin	µg/kg	6	2	33	0.15 JT	0.48 JT	C7732	0.315	0.315	0.233	0.464	0.15 JT	0.79 U	C7731	0.358	0.28	0.247	0.713
Total chlordanes	µg/kg	6	6	100	0.74 JT	6.2 JT	C7731	3.07	2.4	2.4	6.05	0.74 JT	6.2 JT	C7731	3.07	2.4	2.4	6.05
DDx	µg/kg	6	6	100	5.1 JT	33 NJT	C7731	18.1	15	11.7	32.5	5.1 JT	33 NJT	C7731	18.1	15	11.7	32.5
PAHs																		
Total PAHs	µg/kg	6	6	100	380 T	4100 T	C7731	1240	835	1420	3300	380 T	4100 T	C7731	1240	835	1420	3300
Phthalates																		
Bis(2-ethylhexyl) phthalate	µg/kg	6	6	100	160 T	530	C7731	317	330	133	488	160 T	530	C7731	317	330	133	488

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-9. Number of Surface and Subsurface Sediment Samples (Detected Only) for Indicator Contaminants by Concentration Range, Study Area (RM 1.9 - 11.8).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges							
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Subsurface Total**	**Grand Total**
Metals															
Arsenic	3	1364	57	2			1426	11	1433	45				1489	2915
Chromium		25	1466	39			1530		58	1452	14			1524	3054
Copper		8	1392	144	4		1548		1	1456	78	6		1541	3089
Zinc		2	650	914	15		1581			741	834	6		1581	3162
Butyltins															
Tributyltin ion	15	108	125	71	12	2	333	16	62	88	35	14	8	223	556
PCBs															
Total PCBs	1	188	621	203	37	2	1052	20	88	467	319	40	6	940	1992
PCDD/Fs Homologs															
Total PCDD/Fs		3	31	133	63	7	237	20	31	74	103	71	26	325	562
PCDD/Fs															
TCDD TEQ (ND = 0)	98	107	28	4		1	238	143	99	42	12	14	3	313	551
Pesticides															
Aldrin	187	67	12	2			268	72	44	14	4	1		135	403
Dieldrin	212	33	6	1			252	57	15	5				77	329
Total chlordanes	442	270	46	3			761	245	316	67	19	1		648	1409
DDx	46	636	327	92	22	7	1130	145	425	489	200	83	51	1393	2523
PAHs															
Total PAHs		6	104	661	636	233	1640	37	87	137	484	563	335	1643	3283
Phthalates															
Bis(2-ethylhexyl) phthalate		7	336	501	79	9	932		27	317	257	32	2	635	1567

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.2-10. Number of Surface and Subsurface Sediment Samples (Detected and Not Detected) for Indicator Contaminants by Concentration Range, Study Area (RM 1.9 - 11.8).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges							
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Subsurface Total**	**Grand Total**
Metals															
Arsenic	3	1489	57	2			1551	21	1487	45				1553	3104
Chromium		25	1472	39			1536		59	1457	14			1530	3066
Copper		8	1396	144	4		1552		1	1456	78	6		1541	3093
Zinc		2	650	914	15		1581			741	834	6		1581	3162
Butyltins															
Tributyltin ion	26	122	125	71	12	2	358	138	126	111	36	14	8	433	791
PCBs															
Total PCBs	1	346	712	215	42	2	1318	26	555	564	340	50	9	1544	2862
PCDD/Fs Homologs															
Total PCDD/Fs		3	31	133	63	7	237	21	32	74	103	71	26	327	564
PCDD/Fs Homologs															
TCDD TEQ (ND = 0)	98	107	28	4		1	238	161	99	42	12	14	3	331	569
Pesticides															
Aldrin	847	256	41	2			1146	884	206	56	17	8	1	1172	2318
Dieldrin	905	246	31	8			1190	902	238	46	14	7	1	1208	2398
Total chlordanes	623	479	83	8			1193	558	487	122	38	9		1214	2407
DDx	66	721	340	93	22	7	1249	395	453	495	201	83	51	1678	2927
PAHs															
Total PAHs		9	115	668	636	233	1661	54	133	142	487	564	335	1715	3376
Phthalates															
Bis(2-ethylhexyl) phthalate		36	662	699	100	16	1513		233	839	451	63	5	1591	3104

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.2-11. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Upriver Reach (RM 15.3-28.4).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Grainsize																
Fines	percent	80	80	100	0.28	98.4 T	U6TOC-2	30.5	28.3	67.4	0.28	98.4 T	U6TOC-2	30.5	28.3	67.4
Conventionals																
Total organic carbon	percent	77	77	100	0.12	2.57	U6TOC-2	1.13	1.18	2.29	0.12	2.57	U6TOC-2	1.13	1.18	2.29
Metals																
Arsenic	mg/kg	77	73	94.8	1.9 J	5.29	U6TOC-2	2.94	2.84 T	4.05	1.9 J	5.29	U6TOC-2	2.85	2.78	4.04
Chromium	mg/kg	66	66	100	11.9 J	40.5	HC08	23.1	23.1 J	32.4	11.9 J	40.5	HC08	23.1	23.1 J	32.4
Copper	mg/kg	72	72	100	10.5 J	50.9	HC08	24.6	24.5	35.9 J	10.5 J	50.9	HC08	24.6	24.5	35.9 J
Zinc	mg/kg	72	72	100	41.1 J	165	U2C-2	75.2	74.5	100	41.1 J	165	U2C-2	75.2	74.5	100
Butyltins																
Tributyltin ion	µg/kg	8	4	50	0.72 J	2.3	G028	1.31	1.1 J	2.12 J	0.082 U	2.3	G028	0.675	0.388 J	1.88 J
PCBs[c]																
Total PCBs	µg/kg	81	42	51.9	0.29 JT	31 T	U2C-2	4.48	2.99 J	14.3 J	0.29 JT	42 UT	HC08	5.69	2.9 JT	19.5 UT
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	39	38	97.4	2.39 T	733 T	G027	90.3	59.1 J	298 J	2.39 T	733 T	G027	88.1	57.1 JT	297 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	49	48	98	0.00684 JT	2.99 T	WR04SD	0.31492	0.1135 J	1.1571	0.00684 JT	2.99 T	WR04SD	0.30903	0.111 A	1.1424
Pesticides																
Aldrin	µg/kg	77	7	9.1	0.17 J	0.55	UG03B	0.3341	0.32 J	0.508	0.0329 UJ	2.1 U	HC08	0.243	0.135 U	0.95 U
Dieldrin	µg/kg	77	10	13	0.092 NJ	0.4 T	G027	0.2089	0.162 J	0.3955	0.03 U	2.1 U	HC08	0.2515	0.092 NJ	0.95 U
Total chlordanes	µg/kg	77	38	49.4	0.057 JT	1.53 T	G027	0.3909	0.3445 J	0.806 J	0.0438 UT	2.1 UA	HC08	0.3825	0.24 UJT	1 U
DDx	µg/kg	81	56	69.1	0.087 JT	14.57 JA	HC10	2.011	1.715 J	5.375 J	0.087 JT	14.57 JA	HC10	1.707	1.2 T	3.35 UA
PAHs																
Total PAHs	µg/kg	78	63	80.8	0.91 JT	1510 T	G027	107.4	74.4 T	270.1 J	0.91 JT	1510 T	G027	88.39	55.75 J	195.8 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	72	56	77.8	4.2 J	2100	U1C-3	94	40	210	3.2 UJ	2100	U1C-3	84	34 J	200

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT

DL - detection limit

ND - not detected

PAH - polycyclic aromatic hydrocarbon

PCB - polychlorinated biphenyl

PCDD/F - dioxin/furan

RM - river mile

TCDD - tetrachlorodibenzo-p-dioxin

TEQ - toxic equivalent concentration

TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-12. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Upriver Reach (RM 15.3-28.4).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Grainsize																
Fines	percent	3	3	100	22.2 T	43.6 T	C016	30.6	25.9 T	41.8 V	22.2 T	43.6 T	C016	30.6	25.9 T	41.8 V
Conventionals																
Total organic carbon	percent	3	3	100	1.15	1.8 T	C016	1.47	1.47	1.77 V	1.15	1.8 T	C016	1.47	1.47	1.77 V
Metals																
Arsenic	mg/kg	3	3	100	2.37	2.45	C032	2.41	2.4	2.45 V	2.37	2.45	C032	2.41	2.4	2.45 V
Chromium	mg/kg	3	3	100	19.7	23.4	C032	21.2	20.5	23.1 V	19.7	23.4	C032	21.2	20.5	23.1 V
Copper	mg/kg	3	3	100	26	33	C016	28.6	26.8	32.4 V	26	33	C016	28.6	26.8	32.4 V
Zinc	mg/kg	3	3	100	65.8	119	C017	87.6	78.1	115 V	65.8	119	C017	87.6	78.1	115 V
Butyltins																
Tributyltin ion	µg/kg	3	0	0	--	--	--	--	--	--	0.085 U	0.094 U	C032	0.0453	0.0465 U	0.047 UV
PCBs[c]																
Total PCBs	µg/kg	3	0	0	--	--	--	--	--	--	2.8 UT	11 UT	C017	3.2	2.8 UT	5.2 UV
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	3	3	100	359 T	1090 T	C016	816	1000 T	1080 V	359 T	1090 T	C016	816	1000 T	1080 V
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	3	3	100	0.656 T	2.63 T	C016	1.55	1.37 T	2.5 V	0.656 T	2.63 T	C016	1.55	1.37 T	2.5 V
Pesticides																
Aldrin	µg/kg	3	0	0	--	--	--	--	--	--	0.055 U	0.2 U	C016	0.0517	0.0275 U	0.0928 UV
Dieldrin	µg/kg	3	0	0	--	--	--	--	--	--	0.036 U	0.036 U	C016; C017; C032	0.018	0.018 U	0.018 UV
Total chlordanes	µg/kg	3	3	100	0.187 T	2.93 T	C016	1.34	0.89 T	2.73 V	0.187 T	2.93 T	C016	1.34	0.89 T	2.73 V
DDx	µg/kg	3	3	100	0.99 T	9.74 T	C016	5.83	6.75 T	9.44 V	0.99 T	9.74 T	C016	5.83	6.75 T	9.44 V
PAHs																
Total PAHs	µg/kg	3	3	100	253 T	533 T	C016	384	366 T	516 V	253 T	533 T	C016	384	366 T	516 V
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	3	3	100	20 J	3800	C032	1300	110	3400 V	20 J	3800	C032	1300	110	3400 V

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT

DL - detection limit

ND - not detected

PAH - polycyclic aromatic hydrocarbon

PCB - polychlorinated biphenyl

PCDD/F - dioxin/furan

RM - river mile

TCDD - tetrachlorodibenzo-p-dioxin

TEQ - toxic equivalent concentration

TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-13. Number of Surface and Subsurface Sediment Samples (Detected Only) for Indicator Contaminants by Concentration Range, Upriver Reach (RM 15.3 - 28.4).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges						
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**Subsurface Total**	**Grand Total**
Metals														
Arsenic		73					73		3				3	76
Chromium			66				66			3			3	69
Copper			72				72			3			3	75
Zinc			68	4			72			2	1		3	75
Butyltins														
Tributyltin ion	1	3					4							4
PCBs														
Total PCBs	5	33	4				42							42
PCDD/Fs Homologs														
Total PCDD/Fs		9	17	12			38				2	1	3	41
PCDD/Fs														
TCDD TEQ (ND = 0)	45	3					48	1	2				3	51
Pesticides														
Aldrin	7						7							7
Dieldrin	10						10							10
Total chlordanes	36	2					38	2	1				3	41
DDx	14	41	1				56	1	2				3	59
PAHs														
Total PAHs	1	5	39	17	1		63				3		3	66
Phthalates														
Bis(2-ethylhexyl) phthalate		6	40	9	1		56			1	1	1	3	59

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.2-14. Number of Surface and Subsurface Sediment Samples (Detected and Not Detected) for Indicator Contaminants by Concentration Range, Upriver Reach (RM 15.3 - 28.4).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges						
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**Subsurface Total**	**Grand Total**
Metals														
Arsenic		77					77		3				3	80
Chromium			66				66			3			3	69
Copper			72				72			3			3	75
Zinc			68	4			72			2	1		3	75
Butyltins														
Tributyltin ion	5	3					8	3					3	11
PCBs														
Total PCBs	5	56	20				81		2	1			3	84
PCDD/Fs Homologs														
Total PCDD/Fs		10	17	12			39				2	1	3	42
PCDD/Fs														
TCDD REQ (ND = 0)	46	3					49	1	2				3	52
Pesticides														
Aldrin	65	12					77	3					3	80
Dieldrin	65	12					77	3					3	80
Total chlordanes	62	15					77	2	1				3	80
DDx	26	54	1				81	1	2				3	84
PAHs	38	302	243	38	2		623		2	12	10		24	647
Total PAHs	1	15	44	17	1		78				3		3	81
Phthalates														
Bis(2-ethylhexyl) phthalate		8	51	12	1		72			1	1	1	3	75

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.2-15. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Downtown Reach (RM 11.8-15.3).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
All Downtown Surface Sediment Data																
Grain Size																
Fines	percent	135	135	100	0.3 T	89.4 T	WRS38	21.9	14.4 T	67.2	0.3 T	89.4 T	WRS38	21.9	14.4 T	67.2
Conventionals																
Total organic carbon	percent	208	208	100	0.033	13.1	G045	1.066	0.8475	2.327	0.033	13.1	G045	1.066	0.8475	2.327
Metals																
Arsenic	mg/kg	233	201	86.3	1.07	126	G006	6.2	3.05	16.4	1.07	126	G006	5.54	2.79	14.4 J
Chromium	mg/kg	265	265	100	1.24 J	758 J	R50	34.564	20.8 JT	103.22	1.24 J	758 J	R50	34.564	20.8 JT	103.22
Copper	mg/kg	269	264	98.1	5.51	2150 J	R38	98.603	27 J	371.1 J	0.184 UJ	2150 J	R38	96.831	26.8	369.6 J
Zinc	mg/kg	269	269	100	3.27 J	6480 J	R50	293.9	90.5 T	1218 J	3.27 J	6480 J	R50	293.9	90.5 T	1218 J
Butyltins																
Tributyltin ion	µg/kg	174	62	35.6	0.4 J	1990	WRS20	74.61	4.1	174.6	0.0013 U	1990	WRS20	26.67	0.29 U	39.35
PCBs[c]																
Total PCBs	µg/kg	265	195	73.6	0.798 JT	19700 T	--	612	45 T	3060	0.24 UT	19700 T	--	456	28 T	1120
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	67	62	92.5	9.45 JT	15400 JT	G030	1130	444 J	3590 J	9.45 JT	15400 JT	G030	1040	387 JT	3360 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	67	63	94	0.0112 JT	19.2 JT	G030	2.606	1.43 JT	9.224 J	0.0112 JT	19.2 JT	G030	2.454	1.26 JT	9.132 J
Pesticides																
Aldrin	µg/kg	145	22	15.2	0.0735 JT	0.7 NJ	UG08	0.2624	0.215 J	0.615 J	0.012 UJ	2 U	PA03; PA04	0.1064	0.07 U	0.381 J
Dieldrin	µg/kg	145	14	9.7	0.042 J	1.1	G062	0.266	0.155 J	0.762 J	0.03 U	2.1 U	O33-S010	0.119	0.07 U	0.466
Total chlordanes	µg/kg	145	110	75.9	0.039 JT	23.2 JT	G054	1.29	0.55 J	3.97 J	0.039 JT	23.2 JT	G054	1.09	0.4 JT	3.76 J
DDx	µg/kg	149	130	87.2	0.047 JT	73.3 JT	G048	6.59	3.09 J	19.9 J	0.047 JT	73.3 JT	G048	5.85	2.34 T	19 J
PAHs																
Total PAHs	µg/kg	269	248	92.2	0.0734 T	62500 T	PGC-10	2174	337.5 J	7860	0.0734 T	62500 T	PGC-10	2004	283 JT	7512
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	96	78	81.3	7.6 J	18000	GCRSP12E	418	75.5	623	7 U	18000	GCRSP12E	348	58.5	595
Excluding All Zidell Surface Sediment Data																
Grain Size																
Tributyltin ion	µg/kg	94	36	38.3	0.4 J	1700 JT	G005	55	1.3 J	50	0.06 U	1700 JT	G005	21.1	0.29 U	29.8
PCBs[c]																
Total PCBs	µg/kg	154	114	74	0.798 JT	4200 JT	--	108	21.9 J	371 J	0.73 UT	4200 JT	--	80.6	11 J	297 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	67	62	92.5	9.45 JT	15400 JT	G030	1130	444 J	3590 J	9.45 JT	15400 JT	G030	1040	387 JT	3360 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	67	63	94	0.0112 JT	19.2 JT	G030	2.606	1.43 JT	9.224 J	0.0112 JT	19.2 JT	G030	2.454	1.26 JT	9.132 J
Pesticides																
Aldrin	µg/kg	145	22	15.2	0.0735 JT	0.7 NJ	UG08	0.2624	0.215 J	0.615 J	0.012 UJ	2 U	PA03; PA04	0.1064	0.07 U	0.381 J
Dieldrin	µg/kg	145	14	9.7	0.042 J	1.1	G062	0.266	0.155 J	0.762 J	0.03 U	2.1 U	O33-S010	0.119	0.07 U	0.466
Total chlordanes	µg/kg	145	110	75.9	0.039 JT	23.2 JT	G054	1.29	0.55 J	3.97 J	0.039 JT	23.2 JT	G054	1.09	0.4 JT	3.76 J
DDx	µg/kg	149	130	87.2	0.047 JT	73.3 JT	G048	6.59	3.09 J	19.9 J	0.047 JT	73.3 JT	G048	5.85	2.34 T	19 J
Fines	percent	115	115	100	0.3 T	73.5 T	G015	19.8	14.3 T	60.9	0.3 T	73.5 T	G015	19.8	14.3 T	60.9
Conventionals																
Total organic carbon	percent	165	165	100	0.033	13.1	G045	1.069	0.81	2.292	0.033	13.1	G045	1.069	0.81	2.292
Metals																
Arsenic	mg/kg	159	155	97.5	1.07	126	G006	4.71	2.89 T	8.17 J	1.07	126	G006	4.62	2.79	7.94 J
Chromium	mg/kg	155	155	100	4.51	189	G115	19.4	17.2	36	4.51	189	G115	19.4	17.2	36
Copper	mg/kg	159	157	98.7	8.39	366	G094	32.6	23.9	71.4 J	8.39	366	G094	32.3	23.9	70.9 J
Zinc	mg/kg	159	159	100	22.8	1450	G094	113	77.7 J	293 J	22.8	1450	G094	113	77.7 J	293 J
Butyltins																
PAHs																
Total PAHs	µg/kg	157	150	95.5	0.57 JT	62500 T	PGC-10	1940	259 J	4910	0.57 JT	62500 T	PGC-10	1850	246 JT	4640
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	96	78	81.3	7.6 J	18000	GCRSP12E	418	75.5	623	7 U	18000	GCRSP12E	348	58.5	595

Table 5.2-15. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Surface Sediment, Downtown Reach (RM 11.8-15.3).

					Detected Concentrations												Detected and Not Detected Concentrations								
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**		**Maximum[a]**		**Maximum Location(s)**	**Mean**	**Median[b]**		**95th[b]**		**Minimum (full DL)[a]**		**Maximum (full DL)[a]**		**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**		**95th (half DL)[b]**	
Zidell Surface Sediment Data Only																									
Grain Size																									
Fines	percent	20	20	100	0.5		89.4	T	WRS38	34.3	26.8		80.5		0.5		89.4	T	WRS38	34.3	26.8		80.5		
Conventionals																									
Total organic carbon	percent	43	43	100	0.229		2.59		WRS-96	1.053	0.932		2.504		0.229		2.59		WRS-96	1.053	0.932		2.504		
Metals																									
Arsenic	mg/kg	74	46	62.2	1.29		78	J	R47	11.2	4.98	J	55.5	J	1.29		78	J	R47	7.51	2.87	J	34.7	J	
Chromium	mg/kg	110	110	100	1.24	J	758	J	R50	55.958	26.6		167.55	J	1.24	J	758	J	R50	55.958	26.6		167.55	J	
Copper	mg/kg	110	107	97.3	5.51		2150	J	R38	195.48	42.9		1125	J	0.184	UJ	2150	J	R38	190.17	41		1117.5	J	
Zinc	mg/kg	110	110	100	3.27	J	6480	J	R50	555.1	147.5	J	2536	J	3.27	J	6480	J	R50	555.1	147.5	J	2536	J	
Butyltins																									
Tributyltin ion	µg/kg	80	26	32.5	1.9		1990		WRS20	101.8	8		187.5		0.0013	U	1990		WRS20	33.19	0.2825	U	40.35		
PCBs[c]																									
Total PCBs	µg/kg	111	81	73	1.27	T	19700	T	--	1320	133	T	7780	T	0.24	UT	19700	T	--	977	80	UT	6220		
PAHs																									
Total PAHs	µg/kg	112	98	87.5	0.0734	T	32000	A	R20	2538	589		9835		0.0734	T	32000	A	R20	2221	419.5		8495		

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-16. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Downtown Reach (RM 11.8-15.3).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
All Downtown Subsurface Sediment Data																
Grain Size																
Fines	percent	129	129	100	0.31 T	89 T	WRS37	33.08	32.8 T	71.36	0.31 T	89 T	WRS37	33.08	32.8 T	71.36
Conventionals																
Total organic carbon	percent	159	156	98.1	0.034 J	22.4 J	C024	1.81	0.939	7.53	0.02 UJ	22.4 J	C024	1.78	0.92 J	7.44
Metals																
Arsenic	mg/kg	178	168	94.4	0.57	7.5	WRS46	2.96	2.85	5.05	0.57	7.5	WRS46	2.86	2.8	5.01
Chromium	mg/kg	178	174	97.8	4.56	143	WRS06	22.2	19.9	41.7	4.56	143	WRS06	22	19.6 J	41.3
Copper	mg/kg	178	178	100	9.48	1050	WRS07	46.3	30.9	101 J	9.48	1050	WRS07	46.3	30.9	101 J
Zinc	mg/kg	178	178	100	21.4	11100 J	PGC-06	379	99.4 J	1410 J	21.4	11100 J	PGC-06	379	99.4 J	1410 J
Butyltins																
Tributyltin ion	µg/kg	65	21	32.3	0.55 JT	14000	WRS06	1052	6	7300	0.0015 U	14000	WRS06	340.1	0.24 U	72.2
PCBs[c]																
Total PCBs	µg/kg	110	59	53.6	1.4 JT	610 T	C022	92.1	41 T	521 J	0.73 UT	610 T	C022	55.6	11	217 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	44	39	88.6	4.74 T	4590 T	C007	1090	541 JA	3030	2.88 UT	4590 T	C007	970	440	2920 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	44	41	93.2	0.00226 JT	12.8 T	C007	2.6527	1.67 T	6.02 T	0.00226 JT	12.8 T	C007	2.4736	1.37 J	5.9945
Pesticides																
Aldrin	µg/kg	94	8	8.5	0.079 J	1.7	C002	0.414	0.21 J	1.3 J	0.046 UJ	1.7	C002	0.114	0.08 U	0.324 UJ
Dieldrin	µg/kg	94	4	4.3	0.29 J	16 J	C031	7.06	5.98 J	14.7 J	0.03 U	16 J	C031	0.514	0.07 U	2.55 U
Total chlordanes	µg/kg	94	51	54.3	0.094 JT	54 JT	O33-C005	3.16	1.3 T	8.2 J	0.054 UT	54 JT	O33-C005	1.81	0.33 J	6.61 J
DDx	µg/kg	94	64	68.1	0.052 T	301 T	C031	16.3	5.71 J	67 J	0.052 T	301 T	C031	11.2	2.04 J	43.6 J
PAHs																
Total PAHs	µg/kg	161	157	97.5	0.25 JT	4850000 T	PGC-06	219700	680 T	2146000	0.25 JT	4850000 T	PGC-06	214200	640 JT	2140000 T
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	64	36	56.3	2.5 J	815 T	C031	103	37.5 J	535	2.3 U	815 T	C031	68.8	17.8 J	324
Excluding All Zidell Subsurface Sediment Data																
Grain Size																
Fines	percent	119	119	100	0.31 T	75.6 T	PGC-04	32.72	33.6 T	71.03	0.31 T	75.6 T	PGC-04	32.72	33.6 T	71.03
PCBs[c]																
Total PCBs	µg/kg	98	57	58.2	1.4 JT	610 T	C022	89.6	41 T	522 J	0.73 UT	610 T	C022	52.5	7.2	242
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	44	39	88.6	4.74 T	4590 T	C007	1090	541 JA	3030	2.88 UT	4590 T	C007	970	440	2920 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	44	41	93.2	0.00226 JT	12.8 T	C007	2.6527	1.67 T	6.02 T	0.00226 JT	12.8 T	C007	2.4736	1.37 J	5.9945
Pesticides																
Aldrin	µg/kg	94	8	8.5	0.079 J	1.7	C002	0.414	0.21 J	1.3 J	0.046 UJ	1.7	C002	0.114	0.08 U	0.324 UJ
Dieldrin	µg/kg	94	4	4.3	0.29 J	16 J	C031	7.06	5.98 J	14.7 J	0.03 U	16 J	C031	0.514	0.07 U	2.55 U
Total chlordanes	µg/kg	94	51	54.3	0.094 JT	54 JT	O33-C005	3.16	1.3 T	8.2 J	0.054 UT	54 JT	O33-C005	1.81	0.33 J	6.61 J
DDx	µg/kg	94	64	68.1	0.052 T	301 T	C031	16.3	5.71 J	67 J	0.052 T	301 T	C031	11.2	2.04 J	43.6 J
PAHs																
Conventionals																
Total organic carbon	percent	159	156	98.1	0.034 J	22.4 J	C024	1.81	0.939	7.53	0.02 UJ	22.4 J	C024	1.78	0.92 J	7.44
Metals																
Arsenic	mg/kg	148	148	100	0.57	7.18	C011	2.89	2.73	5.03	0.57	7.18	C011	2.89	2.73	5.03
Chromium	mg/kg	148	144	97.3	4.56	71.7 T	PGC-05	19.4	18.9	30.5 J	4.56	71.7 T	PGC-05	19.1	18.5	30.4 J
Copper	mg/kg	148	148	100	9.48	457	PGC-05	39	30.7 J	94.7	9.48	457	PGC-05	39	30.7 J	94.7
Zinc	mg/kg	148	148	100	21.4	11100 J	PGC-06	414	95.7 J	2070 J	21.4	11100 J	PGC-06	414	95.7 J	2070 J
Butyltins																
Tributyltin ion	µg/kg	42	8	19	0.55 JT	23	C004	4.48	1.05 J	17.5	0.067 U	23	C004	0.935	0.0525 U	1.39 J
Total PAHs	µg/kg	149	147	98.7	0.25 JT	4850000 T	PGC-06	235000	770 T	2160000	0.25 JT	4850000 T	PGC-06	231000	740 JT	2160000
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	64	36	56.3	2.5 J	815 T	C031	103	37.5 J	535	2.3 U	815 T	C031	68.8	17.8 J	324

Table 5.2-16. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Downtown Reach (RM 11.8-15.3).

					Detected Concentrations							Detected and Not Detected Concentrations							
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**		**Maximum Location(s)**	**Mean**	**Median[b]**		**95th[b]**	**Minimum (full DL)[a]**		**Maximum (full DL)[a]**		**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**		**95th (half DL)[b]**
Zidell Subsurface Sediment Data Only																					
Grain Size																					
Fines	percent	10	10	100	3.1	89	T	WRS37	37.4	25.1		87.7	3.1		89	T	WRS37	37.4	25.1		87.7
Metals																					
Arsenic	mg/kg	30	20	66.7	2	7.5		WRS46	3.5	3		5.1	2		7.5		WRS46	2.7	3		4.6
Chromium	mg/kg	30	30	100	14	143		WRS06	36	29.5		75.4	14		143		WRS06	36	29.5		75.4
Copper	mg/kg	30	30	100	14	1050		WRS07	82.1	40.5		169	14		1050		WRS07	82.1	40.5		169
Zinc	mg/kg	30	30	100	41	2270	J	WRS07	207	120	J	344 J	41		2270	J	WRS07	207	120	J	344 J
Butyltins																					
Tributyltin ion	µg/kg	23	13	56.5	1	14000		WRS06	1697	11		9980	0.0015	U	14000		WRS06	959.5	3		6625
PCBs[c]																					
Total PCBs	µg/kg	12	2	16.7	140 T	190	T	WRS28	170	170		190	110	UT	190	T	WRS28	81	65	U	160
PAHs																					
Total PAHs	µg/kg	12	10	83.3	4.8 T	451	T	WRS46	136.3	97.8	J	416.8	3.9	UT	451	T	WRS46	113.9	54.4		409.2

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-17. Number of Surface and Subsurface Sediment Samples (Detected Only) for Indicator Contaminants by Concentration Range, Downtown Reach (RM 11.8 - 15.3).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges							
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Subsurface Total**	**Grand Total**
Metals															
Arsenic		183	17	1			201	3	165					168	369
Chromium		33	218	14			265		12	161	1			174	439
Copper		6	222	29	7		264		2	167	8	1		178	442
Zinc		1	151	102	15		269			91	77	9	1	178	447
Butyltins															
Tributyltin ion	14	32	12	2	2		62	4	9	5	1	1	1	21	83
PCBs															
Total PCBs	1	47	81	51	12	3	195		13	31	15			59	254
PCDD/Fs Homologs															
Total PCDD/Fs		2	16	26	17	1	62		3	8	11	17		39	101
PCDD/Fs															
TCDD TEQ (ND = 0)	26	35	2				63	16	24	1				41	104
Pesticides															
Aldrin	22						22	7	1					8	30
Dieldrin	13	1					14	1	1	1				3	17
Total chlordanes	73	35	2				110	23	26	2				51	161
DDx	29	76	25				130	11	32	19	1			63	193
PAHs															
Total PAHs	3	17	41	121	55	11	248	7	6	23	52	39	30	157	405
Phthalates															
Bis(2-ethylhexyl) phthalate		5	39	32	1	1	78		5	23	8			36	114

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.2-18. Number of Surface and Subsurface Sediment Samples (Detected and Not Detected) for Indicator Contaminants by Concentration Range, Downtown Reach (RM 11.8 - 15.3).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges							
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Subsurface Total**	**Grand Total**
Metals															
Arsenic		215	17	1			233	3	175					178	411
Chromium		33	218	14			265		12	165	1			178	443
Copper	1	8	224	29	7		269		2	167	8	1		178	447
Zinc		1	151	102	15		269			91	77	9	1	178	447
Butyltins															
Tributyltin ion	123	35	12	2	2		174	46	11	5	1	1	1	65	239
PCBs															
Total PCBs	4	90	92	64	12	3	265	4	50	31	25			110	375
PCDD/Fs Homologs															
Total PCDD/Fs		2	21	26	17	1	67		5	11	11	17		44	111
PCDD/Fs															
TCDD TEQ (ND = 0)	30	35	2				67	19	24	1				44	111
Pesticides															
Aldrin	143	2					145	90	3					93	238
Dieldrin	141	4					145	86	6	1				93	238
Total chlordanes	99	43	3				145	64	27	2				93	238
DDx	44	80	25				149	40	33	19	1			93	242
PAHs															
Total PAHs	4	33	45	121	55	11	269	7	10	23	52	39	30	161	430
Phthalates															
Bis(2-ethylhexyl) phthalate		13	44	37	1	1	96		24	29	11			64	160

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.2-19. Summary Statistics for Contaminant Chemicals, Percent Fines, and TOC in Surface Sediment, Downstream Reach (RM 0-1.9).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Grain Size																
Fines	percent	21	21	100	2.13 T	95.4 T	DG03	53.3	59.9 T	94.5 T	2.13 T	95.4 T	DG03	53.3	59.9 T	94.5 T
Conventionals																
Total organic carbon	percent	25	25	100	0.13	2.63	DG07	1.16	1.15 T	2.44	0.13	2.63	DG07	1.16	1.15 T	2.44
Metals																
Arsenic	mg/kg	25	25	100	0.6 J	6.36	DG15	3.7	4.12	5.38	0.6 J	6.36	DG15	3.7	4.12	5.38
Chromium	mg/kg	25	25	100	10.4 J	42.2	DG07	24.7	27	36.7	10.4 J	42.2	DG07	24.7	27	36.7
Copper	mg/kg	25	25	100	8	45.7	DG07	25.5	27 T	41.4	8	45.7	DG07	25.5	27 T	41.4
Zinc	mg/kg	25	25	100	47.6	188	DG15	98.2	99.5 T	160	47.6	188	DG15	98.2	99.5 T	160
Butyltins																
Tributyltin ion	µg/kg	4	4	100	0.37 J	1.2 J	GSP01E	0.85	0.92 J	1.2 J	0.37 J	1.2 J	GSP01E	0.85	0.92 J	1.2 J
PCBs[c]																
Total PCBs	µg/kg	25	16	64	1.03 JT	410 T	DG15	33.7	6.8 J	127	1.03 JT	410 T	DG15	22.5	5 UT	29.2 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	21	21	100	1.563 JT	1780 JT	GCRSP01W	231.6	77.41 JT	957.6 JT	1.563 JT	1780 JT	GCRSP01W	231.6	77.41 JT	957.6 JT
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	21	21	100	0.0051 JT	2.62 JT	GCRSP01W	0.4013	0.164 JT	1.74 JT	0.0051 JT	2.62 JT	GCRSP01W	0.4013	0.164 JT	1.74 JT
Pesticides																
Aldrin	µg/kg	25	3	12	0.37 J	0.4 J	WR-BC-07; WR-BC-08	0.39	0.4 J	0.4 J	0.12 U	5.6 U	DG05	0.36	0.15 U	1 UJ
Dieldrin	µg/kg	25	1	4	0.069 J	0.069 J	GCA01E	0.069	0.069 J	0.069 J	0.03 U	5 U	DG05	0.475	0.265 U	1.08 U
Total chlordanes	µg/kg	25	15	60	0.067 NJT	4.5 JT	DG15	0.812	0.29 JT	3.1 J	0.067 NJT	10 UA	WR-BC-01; WR-BC-07; WR-BC-08	1.41	0.44 JT	5 U
DDx	µg/kg	25	22	88	0.2 A	30 JT	DG05	5.2	3.1 J	15 J	0.2 A	30 JT	DG05	4.7	3 A	14 J
PAHs																
Total PAHs	µg/kg	25	25	100	1.4 JT	18000 JT	DG05	1120	273 T	1870	1.4 JT	18000 JT	DG05	1120	273 T	1870
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	21	10	47.6	7.1 J	170	DG07	64	57	140	7.1 J	170	DG07	38	19 J	110

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-20. Summary Statistics for Indicator Contaminants, Percent Fines, and TOC in Subsurface Sediment, Downstream Reach (RM 0-1.9).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Grain Size																
Fines	percent	17	17	100	2.47 T	96.4 T	DC03	69.6	79.9 T	91.8	2.47 T	96.4 T	DC03	69.6	79.9 T	91.8
Conventionals																
Total organic carbon	percent	26	26	100	0.05	2.78	DC03	1	0.97	2.13	0.05	2.78	DC03	1	0.97	2.13
Metals																
Arsenic	mg/kg	26	26	100	0.6 J	13.3	DC02	4.06	3.75	8.67	0.6 J	13.3	DC02	4.06	3.75	8.67
Chromium	mg/kg	26	26	100	6.6	33.8	DC03	23.2	24.8	32	6.6	33.8	DC03	23.2	24.8	32
Copper	mg/kg	26	26	100	8.9	43.6	DC03	25.7	26.5	38.8	8.9	43.6	DC03	25.7	26.5	38.8
Zinc	mg/kg	26	26	100	10.8	242	DC02	118	125	209	10.8	242	DC02	118	125	209
PCBs[c]																
Total PCBs	µg/kg	26	13	50	5 T	250 T	DC03	67	46 JT	180 J	2.1 UT	250 T	DC03	35	5 U	130 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g	17	17	100	0.093 T	967.3 T	DC06	145	59.31 JT	487.7	0.093 T	967.3 T	DC06	145	59.31 JT	487.7
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g	17	16	94.1	0.00252 T	1.53 JT	DC06	0.2595	0.1135 J	0.86175 J	0.00252 T	1.53 JT	DC06	0.24447	0.108 JT	0.8172 J
Pesticides																
Aldrin	µg/kg	26	3	11.5	0.2 J	2.8 NJ	DC03	1.2	0.49 J	2.6 J	0.19 U	2.8 NJ	DC03	0.51	0.13 U	1 UJ
Dieldrin	µg/kg	26	0	0	--	--	--	--	--	--	0.36 U	5 U	WR-BC-03	0.55	0.24 U	1 U
Total chlordanes	µg/kg	26	5	19.2	0.75 NJT	2.2 NJT	DC03	1.5	1.6 JT	2.1 J	0.45 UT	10 UA	WR-BC-03; WR-GC-02; WR-GC-04; WR-GC-05; WR-GC-06	2.3	1.3 J	5 U
DDx	µg/kg	26	17	65.4	0.28 NJT	80 NJT	DC03	19	12 A	67 J	0.28 NJT	80 NJT	DC03	13	2.3 J	57 J
PAHs																
Total PAHs	µg/kg	26	26	100	0.49 JT	23000 T	DC03	1339	310 J	2202	0.49 JT	23000 T	DC03	1339	310 J	2202
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg	17	16	94.1	3.1 J	39	DC04	11	8.2 J	23 J	2.5 U	39	DC04	10	8.1 J	22 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.2-21. Number of Surface and Subsurface Samples (Detected Only) for Indicator Contaminants by Concentration Range, Downstream Reach (RM 0-1.9).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges							
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Subsurface Total**	**Grand Total**
Metals															
Arsenic	1	24					25	1	24	1				26	51
Chromium			25				25		1	25				26	51
Copper		2	23				25		2	24				26	51
Zinc			13	12			25			12	14			26	51
Butyltins															
Tributyltin ion	2	2					4								4
PCBs															
Total PCBs		11	4	1			16		2	8	3			13	29
PCDD/Fs Homologs															
Total PCDD/Fs		1	11	8	1		21	3	2	7	5			17	38
PCDD/Fs															
TCDD TEQ (ND = 0)	19	2					21	15	1					16	37
Pesticides															
Aldrin	3						3	2	1					3	6
Dieldrin	1						1								1
Total chlordanes	12	3					15	1	4					5	20
DDx	5	14	3				22	2	4	11				17	39
PAHs															
Total PAHs		1	6	16	1	1	25	2	2	7	10	4	1	26	51
Phthalates															
Bis(2-ethylhexyl) phthalate		1	7	2			10		11	5				16	26

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.2-22. Number of Surface and Subsurface Samples (Detected and Not Detected) for Indicator Contaminants by Concentration Range, Downstream Reach (RM 0-1.9).

	Surface Sediment Concentration Ranges							Subsurface Sediment Concentration Ranges							
Chemical	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Surface Total**	**<1**	**1-10**	**10-100**	**100-1000**	**1000-10000**	**>10000**	**Subsurface Total**	**Grand Total**
Metals															
Arsenic	1	24					25	1	24	1				26	51
Chromium			25				25		1	25				26	51
Copper		2	23				25		2	24				26	51
Zinc			13	12			25			12	14			26	51
Butyltins															
Tributyltin ion	2	2					4								4
PCBs															
Total PCBs		20	4	1			25		15	8	3			26	51
PCDD/Fs Homologs															
Total PCDD/Fs		1	11	8	1		21	3	2	7	5			17	38
PCDD/Fs															
TCDD TEQ (ND = 0)	19	2					21	16	1					17	38
Pesticides															
Aldrin	21	4					25	17	9					26	51
Dieldrin	19	6					25	17	9					26	51
Total chlordanes	17	8					25	8	18					26	51
DDx	5	17	3				25	6	9	11				26	51
PAHs															
Total PAHs		1	6	16	1	1	25	2	2	7	10	4	1	26	51
Phthalates															
Bis(2-ethylhexyl) phthalate		1	18	2			21		12	5				17	38

Notes:

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - non-detect
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Table 5.3-1. Average Heights of Sediment Collected in Sediment Traps Deployed in Willamette River (2007 & 2009).

Location	River Mile[a] (East or West Side)	Initial Deployment Date	Date Sampled Q1	Average Sediment Height (cm)	Date Sampled Q2	Average Sediment Height (cm)	Date Sampled Q3	Average Sediment Height (cm)	Date Sampled Q4	Average Sediment Height (cm)
LWG Sediment Traps										
ST001	1.9E	10/31/2006	1/30/2007	7	5/1/2007	2.4[b]	8/16/2007	1.5[b]	11/14/2007	6.1
ST002	1.8W	10/31/2006	1/30/2007	14.6	5/1/2007	5.1	8/16/2007	5.3	11/14/2007	6
ST003	2.9 (Multnomah Channel)	10/31/2006	2/1/2007	17.1	5/1/2007	4.6	8/16/2007	<1[b]	11/14/2007	1.4
ST004	6.0E	11/1/2006	1/30/2007	11.6	4/30/2007	4.2	8/8/2007	6.6	11/13/2007	5.8
ST005	6.0W	10/31/2006	1/30/2007	27.7	4/30/2007	10.2	8/8/2007	2.3	11/13/2007	7.9
ST006	9.0 (Swan Island Lagoon)	11/1/2006	sampler not found	---	5/1/2007	< 1[b]	8/16/2007	4	11/13/2007	2
ST007	11.3E	11/2/2006	1/31/2007	37.4	4/30/2007	10	8/17/2007	7.1	11/13/2007	7.9
ST008	11.5W	11/1/2006	1/31/2007	69.1	4/30/2007	16	8/17/2007	2.9[b]	11/13/2007	12.5
ST009	15.7E	11/2/2006	2/2/2007	6.3	4/30/2007	10.7	8/17/2007	4.9	11/13/2007	1.7
ST010	15.6W	11/2/2006	2/2/2007	52.3	4/30/2007	9.7	8/17/2007	1.4[b]	11/13/2007	6
ST011	3.5E	10/31/2006	2/1/2007	8.8	5/2/2007	3.4	8/16/2007	2	11/14/2007	5.9
ST012	4.5W	10/31/2006	2/1/2007	23.9	5/2/2007	6.8	8/16/2007	10	11/14/2007	6.2
ST013	6.7E	11/1/2006	2/1/2007	8.2	4/30/2007	1.6[b]	8/16/2007	1.1	11/13/2007	3.3
ST014	7.5W	10/30/2006	sampler not found	---	sampler not found	---	8/16/2007	12	11/13/2007	21
ST015	9.7W	10/30/2006	1/31/2007	20	5/1/2007	3.9	8/17/2007	16.7	11/13/2007	9.2
ST016	9.9E	11/1/2006	sampler not found	---	5/1/2007	7	8/17/2007	3[b]	11/13/2007	4
City of Portland RM 11E Sediment Traps										
ST001	11 E	6/25/2009	---	---	---	---	9/21/2009	10.0	1/13/2010	21.6
ST002	11.2 E	6/25/2009	---	---	---	---	9/21/2009	6.8	1/13/2010	18.5
ST003	11.3 E	6/25/2009	---	---	---	---	9/21/2009	6.6	1/13/2010	22.5
ST004	11.5 E	6/25/2009	---	---	---	---	9/21/2009	8.4	1/14/2010	23.6
ST005	11.7 E	6/25/2009	---	---	---	---	9/21/2009	7.9	1/14/2010	18.0
ST006	11.8 E	6/25/2009	---	---	---	---	9/22/2009	4.7	1/13/2010	24.1
ST007	12.1 E	6/25/2009	---	---	---	---	9/22/2009	3.5	1/14/2010	sampler not recovered

Notes:

[a] Based on site characterization and risk assessment (SCRA) data.

[b] Samples not collected; re-deployed with existing sediment.

Table 5.3-2. Sediment Trap Sediment Chemistry Results for Indicator Contaminants, Percent Fines, and TOC, First Quarter (Winter 2007).

		LW3-ST001	**LW3-ST002**	**LW3-ST003**	**LW3-ST004**	**LW3-ST005**	**LW3-ST007**	**LW3-ST008**	**LW3-ST009**	**LW3-ST010**	**LW3-ST011**	**LW3-ST012**	**LW3-ST013**	**LW3-ST015**
		1/30/2007	**1/30/2007**	**2/1/2007**	**1/30/2007**	**1/30/2007**	**1/31/2007**	**1/31/2007**	**2/2/2007**	**2/2/2007**	**2/1/2007**	**2/1/2007**	**2/1/2007**	**1/31/2007**
Analyte	**Units**	**LW3-ST1001**	**LW3-ST1002**	**LW3-ST1003**	**LW3-ST1004**	**LW3-ST1005-1**	**LW3-ST1007**	**LW3-ST1008**	**LW3-ST1009**	**LW3-ST1010**	**LW3-ST1011**	**LW3-ST1012**	**LW3-ST1013**	**LW3-ST1015**
Grain Size														
Fines	percent	94.99 T	82.18 T	85.02 T	81.07 T	84.4 T	67.13 T	28.3 T	21.66 T	40.41 T	92.62 T	92.9 T	95.37 T	83.82 T
Conventionals														
Total organic carbon	percent	2.52	2.3	2.7	2.53	3.02 T	2.4	1.41	1.11	1.89	2.54	2.97	2.64	2.47
Metals														
Arsenic	mg/kg	4.38	3.89	3.87	3.75	4.15 T	3.78 T	3.09	2.82	3.45	4.26	4.25	4.22	3.61
Chromium	mg/kg	38.6	40.4	37.3	35.2	40.4 T	38.1 T	34	31.2	36.1	40.2	41.3	47.1	37.4
Copper	mg/kg	46.6	46	43.7	46.5	48.5 T	41.8 T	32.3	26.4	36.2	48.2	48.5	52.5	43.5
Zinc	mg/kg	105	110	100	100	111 T	100 T	87.7	78	90	110	110	114	109
Butyltins														
Tributyltin ion	µg/kg	3.2	2.9	2.6 J	4.6	0.17 UT	0.83 U	0.12 U	1.9	0.6 U	3.3 J	1.8 J	3.7	4.2
PCBs														
Total PCBs[a]	µg/kg	12.8 JT	7.71 T	7.9 T	24.2 JT	10.6 JT	28.7 JT	9.53 JT	5.9 JT	5.46 JT	16.7 JT	11.5 T	23.7 T	17.9 T
PCDD/Fs Homologs														
Total PCDD/Fs	pg/g	563 T	157 JT	90.1 JT	253 T	363 T	252 T	165 T	141 T	72.2 JT	535 T	79.3 JT	209 T	268 T
PCDD/Fs														
TCDD TEQ (ND=0)	pg/g	1.65 JT	0.327 JT	0.225 JT	0.461 JT	1.07 JT	0.436 JT	0.515 JT	0.426 JT	0.192 JT	1.11 JT	0.149 JT	0.514 JT	0.499 JT
Pesticides														
Aldrin	µg/kg	0.83 J	0.61 U	0.63 J	0.41 U	1.1 NJT	1 U	1.6 U	1 U	1 U	0.43 U	0.9 J	0.43 U	0.4 U
Dieldrin	µg/kg	0.9 U	0.79 U	0.77 U	0.8 U	0.84 UT	0.67 U	3 U	0.52 U	0.66 U	0.82 U	0.84 U	0.83 U	0.78 U
Total chlordanes	µg/kg	1 NJT	1.1 JT	0.51 NJT	0.49 NJT	1.6 NJT	1 UT	3.7 NJT	0.24 JT	0.4 JT	0.39 JT	0.9 JT	2 JT	1.5 JT
DDx	µg/kg	4.3 JT	1.4 NJT	5.8 NJT	4.4 JT	6.5 JT	7.4 NJT	2.5 UT	0.98 JT	6.4 JT	3.5 NJT	7.8 JT	3.4 JT	2.1 NJT
Polycyclic Aromatic Hydrocarbons														
Total PAHs	µg/kg	190 JT	410 JT	930 T	1000 T	4000 T	120 JT	120 JT	100 JT	1300 JT	250 JT	760 T	200 JT	180 JT
Phthalates														
Bis(2-ethylhexyl) phthalate	µg/kg	88	100	120	220	130 T	110	96	35	76	110	190	230	130

Notes:

[a] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.3-3. Sediment Trap Sediment Chemistry Results for Indicator Contaminants, Percent Fines, and TOC, Second Quarter (Spring 2007).

		LW3-ST002	LW3-ST003	LW3-ST004	LW3-ST005	LW3-ST007	LW3-ST008	LW3-ST009	LW3-ST010	LW3-ST011	LW3-ST012	LW3-ST015	LW3-ST016
		5/1/2007	5/1/2007	4/30/2007	4/30/2007	4/30/2007	4/30/2007	4/30/2007	4/30/2007	5/2/2007	5/2/2007	5/1/2007	5/1/2007
Analyte	**Units**	**LW3-ST-2002**	**LW3-ST-2003**	**LW3-ST-2004**	**LW3-ST-2005**	**LW3-ST-2007**	**LW3-ST-2008**	**LW3-ST-2009**	**LW3-ST-2010**	**LW3-ST-2011**	**LW3-ST-2012**	**LW3-ST-2015**	**LW3-ST-2016**
Grain Size													
Fines	percent	98.29 T	82.97 T	91.74 T	94.44 T	75.56 T	82.14 T	71.34 T	80.94 T	95.66 T	95.97 T	88.82 T	89.43 T
Conventionals													
Total organic carbon	percent	2.46	2.69	2.7	3.06	2.62	3.14	3.11	2.99	2.8	3.05 T	2.73	2.61
Metals													
Arsenic	mg/kg	5.6	4.5	5.2	4.7	4.45 T	4.5	4.5	4.5	4.9	5.6	5.3	4.9
Chromium	mg/kg	36.2 J	28.7 J	31.8 J	31.3 J	31.4 JT	30.4 J	30.5 J	29.3 J	30 J	38.9 J	33.9 J	33.4 J
Copper	mg/kg	52.4	40.9	56	43	40.9 T	43.5	39.7	41.4	48.3	55.6	45.7	44.8
Zinc	mg/kg	135	125	132	127	113 T	116	93.5	109	115	135	143	127
Butyltins													
Tributyltin ion	µg/kg	1.7 J	1.6 J	4.9	1.5 J	1.4 J	0.48 J	0.42 U	0.65 U	3.4	1.5 J	0.74 J	0.59 J
PCBs													
Total PCBs[a]	µg/kg	7.69 JT	7.07 JT	11.7 T	11.3 T	840 T	6.42 JT	4.07 JT	4.82 JT	16.9 T	9.04 T	30.7 T	17 T
PCDD/Fs Homologs													
Total PCDD/Fs	pg/g	81.1 JT	5.16 JT	304 JT	230 JT	60.4 JT	249 JT	272 JT	32.2 JT	258 JT	114 JT	221 JT	183 JT
PCDD/Fs													
TCDD TEQ (ND=0)	pg/g	0.098 JT	0.0974 JT	0.461 JT	1.42 JT	0.0775 JT	0.236 JT	0.586 JT	0.0529 JT	0.354 JT	0.526 JT	0.393 JT	0.167 JT
Pesticides													
Aldrin	µg/kg	0.48 U	0.44 U	0.46 U	0.45 U	0.78 U	0.42 U	0.38 U	0.41 U	0.49 U	0.48 U	0.44 U	0.41 U
Dieldrin	µg/kg	0.92 U	0.84 U	0.88 U	0.86 U	0.72 U	0.81 U	0.73 U	0.79 U	0.95 U	0.92 U	0.84 U	0.79 U
Total chlordanes	µg/kg	1.2 UT	1.1 UT	0.49 JT	0.83 JT	0.84 JT	0.34 JT	0.93 UT	0.45 JT	1.3 UT	0.22 NJT	0.34 JT	1 UT
DDx	µg/kg	5.5 JT	6.2 JT	5.3 NJT	8.9 JT	7.3 NJT	5.9 JT	2.8 JT	6.3 NJT	4.1 JT	4.8 JT	9 NJT	6.4 NJT
Polycyclic Aromatic Hydrocarbons													
Total PAHs	µg/kg	290 JT	760 T	250 JT	4100 T	160 JT	170 JT	77 JT	79 JT	300 JT	470 JT	200 JT	120 JT
Phthalates													
Bis(2-ethylhexyl) phthalate	µg/kg	130	98	130	140	290	150	140	85	160	150	140	160

Notes:

[a] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.3-4. Sediment Trap Sediment Chemistry Results for Indicator Contaminants, Percent Fines, and TOC, Third Quarter (Summer 2007).

		LW3-ST002	**LW3-ST004**	**LW3-ST005**	**LW3-ST006**	**LW3-ST007**	**LW3-ST009**	**LW3-ST011**	**LW3-ST012**	**LW3-ST013**	**LW3-ST014**	**LW3-ST015**
		8/16/2007	**8/8/2007**	**8/8/2007**	**8/16/2007**	**8/17/2007**	**8/17/2007**	**8/16/2007**	**8/16/2007**	**8/16/2007**	**8/16/2007**	**8/17/2007**
Analyte	**Units**	**LW3-ST3002**	**LW3-ST3004**	**LW3-ST3005**	**LW3-ST3006**	**LW3-ST3007**	**LW3-ST3009**	**LW3-ST3011**	**LW3-ST3012**	**LW3-ST3013**	**LW3-ST3014**	**LW3-ST3015-1**
Grain Size												
Fines	percent	93.21 T	99.14 T	--	--	74.75 T	--	--	96.28 T	--	86.95 T	90.38 T
Conventionals												
Total organic carbon	percent	1.98	2.67	--	3.24	2.66	2.74	2.99	2.72	2.63	2.66	2.68 T
Metals												
Arsenic	mg/kg	3.22	3.94	--	5.65 T	3.04	5.5	5.4	3.6	--	3.18	3.4 JT
Chromium	mg/kg	21.7	32.1	--	42.6 T	34.3	59.5	39	32.4	--	29.2	28.7 T
Copper	mg/kg	32.2	42.4	--	93.6 T	37.8	75.1	53.2	37.6	--	34.4	37 JT
Zinc	mg/kg	115	117	--	319 T	117	184	181	111	--	108	122 T
Butyltins												
Tributyltin ion	µg/kg	7.1	7.9	--	64	4.9	0.24 U	--	3.7 J	--	13	2.3 JT
PCBs												
Total PCBs[a]	µg/kg	13.8 T	29.9 JT	20.7 JT	87.5 JT	4830 JT	3.14 JT	44.8 JT	12.2 JT	67.8 JT	16 JT	44.7 JT
PCDD/Fs Homologs												
Total PCDD/Fs	pg/g	1250 JT	120 JT	--	--	1820 JT	131 JT	--	191 JT	--	251 JT	188 JT
PCDD/Fs												
TCDD TEQ (ND=0)	pg/g	2.94 JT	0.157 JT	--	--	4.73 JT	0.257 JT	--	0.631 JT	--	0.723 JT	0.296 JT
Pesticides												
Aldrin	µg/kg	0.61 U	0.73 U	--	0.35 U	0.92 U	0.25 U	0.27 U	0.49 U	--	0.41 U	0.39 UT
Dieldrin	µg/kg	0.89 U	1.1 U	--	4.9	13 U	3.3 J	1.4 J	0.94 U	--	0.78 U	0.75 UT
Total chlordanes	µg/kg	0.71 UT	0.92 UT	--	3.1 NJT	98 UT	1 NJT	1.1 JT	0.8 UT	--	1.3 NJT	1.7 JT
DDx	µg/kg	2.4 JT	7.4 JT	--	25 NJT	24 T	5.9 JT	15 NJT	8 NJT	--	24 NJT	4.7 JT
Polycyclic Aromatic Hydrocarbons												
Total PAHs	µg/kg	420 JT	440 JT	--	2300 T	640 T	200 JT	1600 JT	950 T	--	1100 T	290 JT
Phthalates												
Bis(2-ethylhexyl) phthalate	µg/kg	110	81	--	1600	460	210	200	150	--	250	220 T

Notes:

[a] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.3-5. Sediment Trap Sediment Chemistry Results for Indicator Contaminants, Percent Fines, and TOC, Fourth Quarter (Fall 2007).

		LW3-ST001	LW3-ST002	LW3-ST003	LW3-ST004	LW3-ST005	LW3-ST006	LW3-ST007	LW3-ST008	LW3-ST009
		11/14/2007	11/14/2007	11/14/2007	11/13/2007	11/13/2007	11/13/2007	11/13/2007	11/13/2007	11/13/2007
Analyte	**Units**	**LW3-ST4-001**	**LW3-ST4-002**	**LW3-ST4-003**	**LW3-ST4-004**	**LW3-ST4-005**	**LW3-ST4-006**	**LW3-ST4-007**	**LW3-ST4-008-1**	**LW3-ST4-009**
Grain Size										
Fines	percent	96.07 T	90.97 T	--	86 T	90.24 T	--	42.59 T	73.29 T	--
Conventionals										
Total organic carbon	percent	2.26	2	2.05	2.86 T	2.72	2.07	2.09	2.58 T	3.47
Metals										
Arsenic	mg/kg	6.22 T	6.24	2.85	6.69	5.41	5.33	4.61	4.75 T	1.48 J
Chromium	mg/kg	37.4 T	32.2	16.8 J	39.3	34	28.8	38.5	33.8 T	10.8
Copper	mg/kg	51.3 T	49.1	25.1	63	51	60.4	51.9	45.3 T	15.2
Zinc	mg/kg	155 T	160	101	178	166	254	149	127 T	71.6
Butyltins										
Tributyltin ion	µg/kg	3.8	4 J	4.3	3.9	13	81	5.8	0.6 JT	--
PCBs										
Total PCBs[a]	µg/kg	24.2 JT	11.3 JT	13.7 JT	39.1 JT	25.3 JT	117 JT	11100 JT	13 JT	10.6 JT
PCDD/Fs Homologs										
Total PCDD/Fs	pg/g	142 JT	59 JT	364 JT	110 JT	155 JT	6100 JT	745 JT	64.1 JT	355 JT
PCDD/Fs										
TCDD TEQ (ND=0)	pg/g	0.213 JT	0.0728 JT	0.613 JT	0.172 JT	0.775 JT	16.3 JT	1.56 JT	0.476 JT	0.589 JT
Pesticides										
Aldrin	µg/kg	0.2 U	0.19 U	0.25 U	0.23 U	0.21 U	1.2 U	0.16 U	0.18 UT	0.67 U
Dieldrin	µg/kg	0.59 U	0.047 U	0.15 NJ	0.59 U	0.64 U	0.58 U	0.28 U	0.045 UT	0.34 NJ
Total chlordanes	µg/kg	0.58 JT	0.41 NJT	0.8 UT	0.62 JT	1.9 UT	1.5 UT	460 UT	1.5 NJT	0.63 UT
DDx	µg/kg	8.3 NJT	4.6 NJT	7.9 NJT	13 NJT	33 NJT	31 NJT	150 T	4.6 NJT	3 JT
Polycyclic Aromatic Hydrocarbons										
Total PAHs	µg/kg	370 JT	280 JT	2700 JT	790 T	11000 T	900 JT	450 T	190 JT	--
Phthalates										
Bis(2-ethylhexyl) phthalate	µg/kg	100	84	110	110	150 J	710	280	190 T	--

Table 5.3-5. Sediment Trap Sediment Chemistry Results for Indicator Contaminants, Percent Fines, and TOC, Fourth Quarter (Fall 2007).

Analyte	Units	LW3-ST010 11/13/2007 LW3-ST4-010	LW3-ST011 11/14/2007 LW3-ST4-011	LW3-ST012 11/14/2007 LW3-ST4-012	LW3-ST013 11/13/2007 LW3-ST4-013	LW3-ST014 11/13/2007 LW3-ST4-014	LW3-ST015 11/13/2007 LW3-ST4-015	LW3-ST016 11/13/2007 LW3-ST4-016
Grain Size								
Fines	percent	92.42 T	105.6 T	85.01 T	96.71 T	78.12 T	79.71 T	77.66 T
Conventionals								
Total organic carbon	percent	3.18	2.51	2.57	2.7	2.4	2.56	2.59
Metals								
Arsenic	mg/kg	4.63	7.01	5.29	6.07	4.42	4.33	5.03
Chromium	mg/kg	35.3	38.8	34.4	35.3	29.7	30	33.3
Copper	mg/kg	43	57.9	51.5	58.2	47	47.1	47.2
Zinc	mg/kg	125	163	156	173	136	171	145
Butyltins								
Tributyltin ion	µg/kg	0.24 U	6.5	4.8	4.5	9.1	0.87 U	0.33 U
PCBs								
Total PCBs[a]	µg/kg	7.56 JT	32.3 T	18 JT	106 JT	20.9 T	73.7 JT	24.3 JT
PCDD/Fs Homologs								
Total PCDD/Fs	pg/g	37.4 JT	129 JT	107 JT	87.3 JT	1060 JT	114 JT	69.2 JT
PCDD/Fs								
TCDD TEQ (ND=0)	pg/g	0.0678 JT	0.192 JT	0.209 JT	0.0952 JT	1.82 JT	0.185 JT	0.136 JT
Pesticides								
Aldrin	µg/kg	0.27 U	0.22 U	0.21 U	0.25 U	0.61 NJ	0.18 U	0.21 U
Dieldrin	µg/kg	0.47 U	0.36 U	0.35 U	0.5 U	0.26 U	0.19 U	0.35 U
Total chlordanes	µg/kg	0.83 JT	3.4 NJT	0.78 NJT	0.74 JT	0.91 NJT	1.1 NJT	1.8 JT
DDx	µg/kg	2.6 T	6 T	13 T	8.1 NJT	17 JT	12 NJT	5.5 JT
Polycyclic Aromatic Hydrocarbons								
Total PAHs	µg/kg	290 JT	980 T	1200 T	430 JT	580 T	590 T	240 JT
Phthalates								
Bis(2-ethylhexyl) phthalate	µg/kg	480 J	250 J	110	220	68	310	150

Notes:

[a] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.3-6. Sediment Trap Sediment Chemistry Results for Indicator Contaminants, Percent Fines, and TOC, Third Quarter (Summer 2009).

		RM11E_STST001	**RM11E_STST002**	**RM11E_STST003**	**RM11E_STST004**	**RM11E_STST005**	**RM11E_STST006**	**RM11E_STST007**
		9/21/2009	**9/21/2009**	**9/21/2009**	**9/21/2009**	**9/21/2009**	**9/22/2009**	**9/22/2009**
Analyte	**Units**	**RM11E_STST001-Q3**	**RM11E_STST002-Q3**	**RM11E_STST003-Q3**	**RM11E_STST004-Q3**	**RM11E_STST005-Q3**	**RM11E_STST006-Q3**	**RM11E_STST007-Q3**
Grain Size								
Fines	percent	81.4 T	--	--	--	--	--	--
Conventionals								
Total organic carbon	percent	2.78	3.23	2.17	2.82	--	3.62	2.36
Metals								
Arsenic	mg/kg	3.55 T	4.05	2.75	3.14	--	3.72 T	3.18
Chromium	mg/kg	26.7 T	27	30.8	24	--	27.9 T	21.5
Copper	mg/kg	37.8 JT	40.9 J	37.7 J	35.3 J	--	42.7 T	34.9
Zinc	mg/kg	106 T	101	108	105	--	135 T	110
Butyltins								
Tributyltin ion	µg/kg	54	2 J	3.5	2.9 J	--	2.1 J	1.3 U
PCBs								
Total PCBs[a]	µg/kg	119 JT	119 JT	549 JT	78.6 JT	22.5 JT	22.1 JT	22.6 JT
PCDD/Fs Homologs								
Total PCDD/Fs	pg/g	1641.632 JT	293.81 JT	1121.68 JT	1282.45 JT	--	900.8 JT	516.805 JT
PCDD/Fs								
TCDD TEQ (ND=0)	pg/g	3.1 JT	0.553 JT	3.01 JT	3.3 JT	--	2.61 JT	1.15 JT
Pesticides								
Aldrin	µg/kg	0.071 U	0.37 U	0.28 U	0.31 U	0.41 U	0.085 U	0.065 U
Dieldrin	µg/kg	0.52 U	0.094 U	0.41 U	0.71 U	0.12 U	0.13 U	0.073 U
Total chlordanes	µg/kg	3.2 UT	0.36 JT	4.3 UT	0.31 UT	0.95 UT	0.37 UT	0.21 JT
DDx	µg/kg	1.56 JT	1.44 JT	14 T	2.8 JT	0.71 UT	1.1 JT	1.98 JT
Polycyclic Aromatic Hydrocarbons								
Total PAHs	µg/kg	709 JT	475 JT	1160 T	510 T	309 JT	478 JT	876 T
Phthalates								
Bis(2-ethylhexyl) phthalate	µg/kg	190	300	180 J	180 J	--	920	600 J

Notes:

[a] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.3-7. Sediment Trap Sediment Chemistry Results for Indicator Contaminants, Percent Fines, and TOC, Fourth Quarter (Fall 2009).

		RM11E_STST001	**RM11E_STST002**	**RM11E_STST003**	**RM11E_STST004**	**RM11E_STST005**	**RM11E_STST006**
		1/13/2010	**1/13/2010**	**1/13/2010**	**1/14/2010**	**1/14/2010**	**1/13/2010**
Analyte	**Units**	**RM11E_STST001-Q4**	**RM11E_STST002-Q4**	**RM11E_STST003-Q4**	**RM11E_STST004-Q4**	**RM11E_STST005-Q4**	**RM11E_STST006-Q4**
Grain Size							
Fines	percent	82.9 T	91.04 T	68.51 T	44.7 T	73.65 T	56.34 T
Conventionals							
Total organic carbon	percent	4.06 T	3.3	2.66	2.62 T	3.17	13.6
Metals							
Arsenic	mg/kg	3.4	3.59	2.82	2.77 T	3.22	2.69
Chromium	mg/kg	23.1	24.2	24.8	17.5 T	21.7	16.9
Copper	mg/kg	34.2	35.4	30.7	28 T	31.3	25.4
Zinc	mg/kg	82.1	81.3	74.9	71.5 T	76.2	63.4
Butyltins							
Tributyltin ion	µg/kg	1.4 U	2.8 J	1.8 J	2.7 JT	1.3 U	1.3 U
PCBs							
Total PCBs[a]	µg/kg	53.5 JT	11.1 JT	71.9 JT	13.8 JT	7.98 JT	0.925 JT
PCDD/Fs Homologs							
Total PCDD/Fs	pg/g	409.41 JT	241.21 T	226.44 T	434.61 T	878.88 T	156.01 T
PCDD/Fs							
TCDD TEQ (ND=0)	pg/g	0.615 JT	0.837 JT	0.482 JT	1.44 JT	2.3 JT	0.339 JT
Pesticides							
Aldrin	µg/kg	0.27 U	0.22 J	0.28 U	0.1115 JT	0.095 U	0.3 U
Dieldrin	µg/kg	0.32 U	0.14 U	0.071 U	0.16 JT	0.082 U	0.17 U
Total chlordanes	µg/kg	1.3 UT	0.47 UT	86 UT	0.3 UT	0.31 UT	0.76 UT
DDx	µg/kg	14.6 T	0.94 JT	20.4 JT	4.66 JT	0.69 T	2.1 JT
Polycyclic Aromatic Hydrocarbons							
Total PAHs	µg/kg	1220 T	393 JT	278 JT	918 JT	436 JT	255 JT
Phthalates							
Bis(2-ethylhexyl) phthalate	µg/kg	650	340	340	240 JT	590	370

Notes:

[a] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-1 Surface Water Sampling Event and Station Summary.

			Round 2A						Round 3A							
			Nov-04		Mar-05		Jul-05		Jan-06		Sep-06		Nov-06		Jan-Mar 2007	
			Low Flow		Low Flow		Low Flow		High Flow		Low Flow		Stormwater-Influenced Flow		High Flow	
Transect Stations	**River Mile**	**Sampling Method**	**Peristaltic**	**XAD**	**Peristaltic**	**XAD**	**Peristaltic**	**XAD**	**Peristaltic**	**XAD**	**Peristaltic**	**XAD**	**Peristaltic**	**XAD**	**Peristaltic**	**XAD**
W005	3.9	EDI-VI	X	X	X	X	X	X	X [a]	X [a]						
		EDI-NS/NB									X	X	X	X	X	X
W011	6.3	EDI-VI	X	X	X	X	X	X								
		EDI-NS/NB									X	X	X	X	X	X
W023	11	EDI-VI	X	X	X	X	X	X	X [a,b]	X [a]						
		VI(E,M,W)									X	X	X	X	X [d]	X [d]
W024	16	EDI-NS/NB							X [a,c]	X [a,c]	X	X	X	X	X	X
W025	2	VI(E,M,W)									X	X	X	X	X [d]	X [d]
W027	MC	EDI-NS/NB									X	X	X	X	X	X
Single-Point Stations																
W001	2.0E	NB	X		X		X									
W002	2.2W	NB	X		XR		XR									
W003	3.0W	NB	X		X		X									
W004	3.7E (International Slip)	NB	X		XR		X									
W006	4.0W	NB	X		X		X									
W007	4.4E (T4/Slip 1)	NB	X		X		X									
W008	4.6E (T4/Slip 3)	NB	X		X		X									
W009	5.6W	NB	X		X		X									
W010	5.7E	VI	X [e]		X		X									
W012	6.3W	NB	X		X		X									
W013	6.9E	NB	XR	XR	XR	XR	XR	XR								
W014	6.9E	VI	X		X		X									
W015	6.9W	NB	X	X	X	X	X	X								
W016	7.2W	NB	XR	X	XR	X	XR	X								
W017	7.5W	NB	X		X		X									
W018	8.3 (Swan Island Lagoon)	NB	X	X	X	X	X	X								
W019	8.6W	NB	X		X		X									
W020	9.1 (Swan Island Lagoon)	VI	X		X		X									
W021	8.7 (Swan Island Lagoon)	NB	X		X		X									
W022	9.7W	NB	X		X		X									
W026	2.1E	NS/NB											X	X	X	X
W028	3.6E	NS/NB											X	X	X	X
W029	4.4W	NS/NB											X	X	X	X
W030	5.5E	NS/NB											X	X	X	X
W031	6.1W	NS/NB											X	X	X	X
W032	6.9E	NS/NB											X	X	X	X
W033	7.0W	NS/NB											XR	XR	XR	X
W034	7.5W	NS/NB											X	X	X	X
W035	8.5 (Swan Island Lagoon)	NS/NB											X	X	X	X
W036	8.6W	NS/NB											XR	X	X	X
W037	9.6W	NS/NB											X	X	X	X
W038	9.9E	NS/NB											X	X	X	X

Notes:

E - East
EDI - Equal discharge increment
M - Mid-channel
MC - Multnomah Channel
NB - Near bottom
NS - Near surface
T4 - Terminal 4
VI - Vertically integrated
W - West
X - indicates sample was collected
XR - indicates that a sample and a replicate sample were collected
XAD - hydrophobic crosslinked polystyrene copolymer resin

[a] Due to extreme high flow conditions, samples were collected at a single point mid-channel. Sample depth was held constant near the mid-point of the water column.
[b] Field replicate for peristaltic pump samples only.
[c] No field replicates collected.
[d] Mid-channel station re-sampled in March. Shown as a field replicate in the SCRA.
[e] Sampled as NB in the Nov 2004 event. Sampled as VI for all other events.

Table 5.4-2 Number of Surface Water Stations by Sampling Event for Each Sample Collection Method.

	Low Flow				Storm Water Influenced	High Flow	
	Nov-04	**Mar-05**	**Jul-05**	**Sep-06**	**Nov-06**	**Jan-06**	**Jan-07**
Peristaltic	23	23	23	6	18	3	18 [a]
Peristaltic Replicates	2	4	3	0	2	1	1 [b]
XAD	7	7	7	6	18	3	18 [a]
XAD Replicates	1	1	1	0	1	0	0 [b]
Total # Stations[c]	**33**	**35**	**34**	**12**	**39**	**7**	**37**

Notes:

[a] This count does include the second High Flow sampling conducted in March at W023-M2 and W025-M2. Those samples are shown as field reps in the SCRA.

[b] This count does not include the second High Flow sampling conducted in March at W023-M2 and W025-M2. Those samples are shown as field reps in the SCRA.

[c] Note that E, M, W transect samples were counted as a single transect station in this table.

XAD - hydrophobic crosslinked polystyrene copolymer resin

Table 5.4-3 Number of Surface Water Samples by Sampling Event for Each Sample Collection Method.

	Low Flow				**Storm Water Influenced Flow**	**High Flow**	
	Nov-04	**Mar-05**	**Jul-05**	**Sep-06**	**Nov-06**	**Jan-06**	**Jan-07**
Peristaltic	23	23	23	14	38	3	40
Peristaltic Replicates	2	4	3	0	4	1	2
XAD	7	7	7	14	38	3	40
XAD Replicates	1	1	1	0	2	0	0
Total # Samples	**33**	**35**	**34**	**28**	**82**	**7**	**82**

Notes:

XAD - hydrophobic crosslinked polystyrene copolymer resin

Table 5.4-4 Number of Surface Water Samples by Sampling Event and Sample Collection Method for Each Sample Type.

	Peristaltic							**XAD**						
	Low Flow				**Storm Water Influenced Flow**	**High Flow**		**Low Flow**				**Storm Water Influenced Flow**	**High Flow**	
	Nov-04	**Mar-05**	**Jul-05**	**Sep-06**	**Nov-06**	**Jan-06**	**Jan-07**	**Nov-04**	**Mar-05**	**Jul-05**	**Sep-06**	**Nov-06**	**Jan-06**	**Jan-07**
SP-NS					14		13					13		12
SP-NB	20	21	20		14		13	5	5	5 [a]		13		12
SP-VI	2 [b]	3	3											
T-Stationary[c]						4							3	
T-EDI-VI	3	3	3					3	3	3				
T-E-VI				2	2		2				2	2		2
T-M-VI				2	2		4 [d]				2	2		4 [d]
T-W-VI				2	2		2				2	2		2
T-EDI-NS				4	4		4				4	4		4
T-EDI-NB				4	4		4				4	4		4
Total # Samples	**25**	**27**	**26**	**14**	**42**	**4**	**42**	**8**	**8**	**8**	**14**	**40**	**3**	**40**

Notes:

[a] Five samples including field replicate at W013-2, which was contaminated at the lab and not analyzed.

[b] Sample collected at W010 in November 2004 should have been vertically integrated (VI), but was collected as near-bottom (NB).

[c] The Jan 2006 High Flow samples were collected mid-channel at a single fixed depth for each of the 3 transect stations sampled. No vertical integration was performed.

[d] Stations W023-M and W025-M were first sampled in Jan 2007, then re-occupied in March 2007 (W023-M2, W025-M2) due to changing flow conditions.

SP-NS	Single-point, near-surface
SP-NB	Single-point, near bottom
SP-VI	Single-point, vertically-integrated
T-Stationary	Stationary samples collected at transect locations (mid-channel and mid-depth)
T-EDI-VI	Transect, equal-discharge-increment, vertically-integrated
T-EDI-NS	Transect, equal-discharge-increment, near-surface
T-EDI-NB	Transect, equal-discharge-increment, near-bottom
T-E-VI	Transect, East-channel, vertically integrated
T-M-VI	Transect, Mid-channel, vertically integrated
T-W-VI	Transect, West-channel, vertically integrated

XAD - hydrophobic crosslinked polystyrene copolymer resin

Table 5.4-5. Summary of Surface Water Sampling Event Flow Conditions.

Sample Event Round	Event	Flow Conditions	Sampling Event Period	Number of Days Sampled	Start Date Flow[a] (cfs)	End Date Flow[a] (cfs)	Average Flow[a,b] During Sample Event (cfs)	Maximum Flow[a] During Sample Event (cfs)	Minimum Flow[a] During Sample Event (cfs)
2A	Nov 2004	Low Flow	11/8 - 12/2	15	24,700	18,300	19,400	24,700	14,900
2A	Mar 2005	Low Flow	3/1 - 3/17	13	11,900	8,640	9,970	11,900	8,390
2A	Jul 2005	Low Flow	7/5 - 7/20	12	10,800	8,910	10,100	10,800	8,910
3A	Jan 2006	High Flow	1/19 - 1/21	3	169,000	167,000	168,000	169,000	167,000
3A	Sep 2006	Low Flow	9/4 - 9/13	7	8,450	9,080	8,810	9,240	8,320
3A	Nov 2006	Stormwater-Influenced	11/2 - 11/5	4	18,700	30,100	23,000	30,100	18,700
3A	Jan 2007[c]	High Flow	1/15 - 1/18, 2/21 - 3/10	18	60,100	49,900	59,800	72,600	46,400
Siltronic	May 2005	Low Flow	5/16 - 5/19, 5/23 - 5/27, 5/31 - 6/1	11	29,500	20,800	31,918	43,400	20,800
NW Natural	October 2007	Low Flow	10/1 - 10/9	9	14,100	10,700	13,722	15,000	10,700
City of Portland	Monthly, 1992 - 2006[d]	--	Monthly, 2/5/1992 - 3/15/2006	439	32,900	33,700	34,558	420,000	5,240

Notes:

[a] This velocity-discharge rating is considered unknown at discharges below 20,000 cfs.

[b] Average of daily flows reported for USGS gauging station Willamette River at Morrison Bridge (station ID 14211720).

[c] The January 2007 high flow event was cancelled after two days of sampling due to an unexpected change in flow conditions. Sampling resumed on February 21, 2007.

[d] The City of Portland sampling occurred on a monthly basis from February 2, 1992 through March 15, 2006. Flow data presented are the range of mean daily discharge data for this time period.

cfs - cubic feet per second.

Table 5.4-6. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (Transect Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	20	20	100	0.184	0.281 J	W027	0.219	0.21	0.274 J	0.184	0.281 J	W027	0.219	0.21	0.274 J
Arsenic	Peristaltic - particulate	µg/L	20	20	100	0.05	0.33	W005; W023	0.128	0.0905	0.33	0.05	0.33	W005; W023	0.128	0.0905	0.33
Arsenic	Peristaltic - total	µg/L	20	20	100	0.254 T	0.54	W005; W023	0.347	0.321 J	0.54	0.254 T	0.54	W005; W023	0.347	0.321 J	0.54
Chromium	Peristaltic - dissolved	µg/L	20	10	50	0.46 J	0.83	W024	0.612	0.57 J	0.817	0.17 U	0.83	W024	0.37	0.318 J	0.802
Chromium	Peristaltic - particulate[d]	µg/L	20	20	100	0	1.68	W024	0.799	0.74	1.62	0	1.68	W024	0.799	0.74	1.62
Chromium	Peristaltic - total	µg/L	20	20	100	0.58	1.73	W027	1.11	0.995	1.68	0.58	1.73	W027	1.11	0.995	1.68
Copper	Peristaltic - dissolved	µg/L	20	20	100	0.43	2.39 J	W023	0.844	0.665 J	1.32 J	0.43	2.39 J	W023	0.844	0.665 J	1.32 J
Copper	Peristaltic - particulate	µg/L	20	20	100	0.57	2.89 J	W024	1.21	0.935	2.78 J	0.57	2.89 J	W024	1.21	0.935	2.78 J
Copper	Peristaltic - total	µg/L	20	20	100	1.1	3.68 J	W023	2.05	1.83	3.58 J	1.1	3.68 J	W023	2.05	1.83	3.58 J
Zinc	Peristaltic - dissolved	µg/L	20	1	5	2.5	2.5	W005	2.5	2.5	2.5	0.6 U	2.9 U	W011	0.85	0.775 U	1.5
Zinc	Peristaltic - particulate	µg/L	20	20	100	1.85	6.38	W023; W024	3.95	4	6.38	1.85	6.38	W023; W024	3.95	4	6.38
Zinc	Peristaltic - total	µg/L	20	20	100	1.85 T	6.38	W023; W024	4.07	4.1	6.38	1.85 T	6.38	W023; W024	4.07	4.1	6.38
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	20	0	0	--	--	--	--	--	--	0.0006 U	0.014 U	W023	0.00157	0.0003 U	0.00653 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	19	19	100	0.0000346 JT	0.0000996 JT	W027	0.0000653	0.0000674 JT	0.0000995 J	0.0000346 JT	0.0000996 JT	W027	0.0000653	0.0000674 JT	0.0000995 J
Total PCBs	XAD Filter - particulate	µg/L	19	19	100	0.00000733 JT	0.000313 JT	W005	0.0000908	0.000076 JT	0.00019 J	0.00000733 JT	0.000313 JT	W005	0.0000908	0.000076 JT	0.00019 J
Total PCBs	XAD Column+Filter - total	µg/L	19	19	100	0.0000419 J	0.000391 J	W005	0.000156	0.000137 J	0.000287 J	0.0000419 J	0.000391 J	W005	0.000156	0.000137 J	0.000287 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	19	19	100	0.00000141 JT	0.00000443 JT	W024	0.00000297	0.00000331 JT	0.00000416 J	0.00000141 JT	0.00000443 JT	W024	0.00000297	0.00000331 JT	0.00000416 J
Total PCDD/Fs	XAD Filter - particulate	µg/L	19	19	100	0.0000032 JT	0.0000402 T	W005	0.0000182	0.0000181 T	0.0000306	0.0000032 JT	0.0000402 T	W005	0.0000182	0.0000181 T	0.0000306
Total PCDD/Fs	XAD Column+Filter - total	µg/L	19	19	100	0.00000536 J	0.000044	W005	0.0000212	0.0000216 J	0.0000338 J	0.00000536 J	0.000044	W005	0.0000212	0.0000216 J	0.0000338 J
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	19	19	100	0.00000000288 T	0.0000000182 JT	W024	0.00000000865	0.00000000836 JT	0.0000000153 J	0.00000000288 T	0.0000000182 JT	W024	0.00000000865	0.00000000836 JT	0.0000000153 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	19	19	100	0.00000000497 JT	0.0000000763 JT	W023	0.0000000386	0.000000039 JT	0.0000000717 J	0.00000000497 JT	0.0000000763 JT	W023	0.0000000386	0.000000039 JT	0.0000000717 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	19	19	100	0.0000000113 J	0.0000000912 J	W023	0.0000000472	0.0000000474 J	0.0000000867 J	0.0000000113 J	0.0000000912 J	W023	0.0000000472	0.0000000474 J	0.0000000867 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	19	19	100	0.00000124 J	0.00000467 J	W025M	0.00000232	0.00000206 J	0.00000329 J	0.00000124 J	0.00000467 J	W025M	0.00000232	0.00000206 J	0.00000329 J
Aldrin	XAD Filter - particulate	µg/L	19	17	89	0.000000415 J	0.00000197 J	W023	0.0000011	0.000000943 J	0.00000192 J	0.000000415 J	0.00000197 J	W023	0.00000101	0.000000917 J	0.00000192 J
Aldrin	XAD Column+Filter - total	µg/L	19	19	100	0.00000124 J	0.00000599 J	W025M	0.00000331	0.00000333 J	0.00000487 J	0.00000124 J	0.00000599 J	W025M	0.00000331	0.00000333 J	0.00000487 J
Dieldrin	XAD Column - dissolved	µg/L	19	19	100	0.0000632	0.00033	W005	0.000142	0.000126	0.000305	0.0000632	0.00033	W005	0.000142	0.000126	0.000305
Dieldrin	XAD Filter - particulate	µg/L	19	18	95	0.00000612 J	0.0000537	W005	0.0000205	0.0000176 J	0.0000514	0.00000612 J	0.0000537	W005	0.0000196	0.0000175 J	0.0000513
Dieldrin	XAD Column+Filter - total	µg/L	19	19	100	0.0000705 J	0.000384	W005	0.000162	0.000144 J	0.000356	0.0000705 J	0.000384	W005	0.000162	0.000144 J	0.000356
Total chlordanes	XAD Column - dissolved	µg/L	19	19	100	0.0000265 JT	0.0000557 JT	W005	0.0000391	0.0000378 JT	0.000054 J	0.0000265 JT	0.0000557 JT	W005	0.0000391	0.0000378 JT	0.000054 J
Total chlordanes	XAD Filter - particulate	µg/L	19	19	100	0.00000291 JT	0.0000434 JT	W023E	0.0000225	0.0000253 JT	0.0000408 J	0.00000291 JT	0.0000434 JT	W023E	0.0000225	0.0000253 JT	0.0000408 J
Total chlordanes	XAD Column+Filter - total	µg/L	19	19	100	0.0000336 J	0.0000943 J	W005	0.0000616	0.0000663 J	0.0000914 J	0.0000336 J	0.0000943 J	W005	0.0000616	0.0000663 J	0.0000914 J
DDx	XAD Column - dissolved	µg/L	19	19	100	0.0000959 JT	0.00021 JT	W024	0.000152	0.000154 JT	0.000201 J	0.0000959 JT	0.00021 JT	W024	0.000152	0.000154 JT	0.000201 J
DDx	XAD Filter - particulate	µg/L	19	19	100	0.0000296 JT	0.000436 JT	W023E	0.000274	0.000323 JT	0.00043 J	0.0000296 JT	0.000436 JT	W023E	0.000274	0.000323 JT	0.00043 J
DDx	XAD Column+Filter - total	µg/L	19	19	100	0.000162 J	0.000618 J	W023E	0.000426	0.000471 J	0.000601 J	0.000162 J	0.000618 J	W023E	0.000426	0.000471 J	0.000601 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	19	19	100	0.00554 JT	0.0483 JT	W005	0.0125	0.00809 JT	0.0286 J	0.00554 JT	0.0483 JT	W005	0.0125	0.00809 JT	0.0286 J
Total PAHs	XAD Filter - particulate	µg/L	19	19	100	0.000144 JT	0.0111 JT	W005	0.00383	0.00372 JT	0.00723 J	0.000144 JT	0.0111 JT	W005	0.00383	0.00372 JT	0.00723 J
Total PAHs	Peristaltic - total	µg/L	20	8	40	0.0026 JT	0.0362 JT	W005	0.0162	0.0175 J	0.0305 J	0.0026 JT	0.0362 JT	W005	0.0103	0.0065 U	0.0208 J
Total PAHs	XAD Column+Filter - total	µg/L	19	19	100	0.00568 J	0.0594 J	W005	0.0163	0.0115 J	0.0356 J	0.00568 J	0.0594 J	W005	0.0163	0.0115 J	0.0356 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	20	6	30	1.1 J	2.2 J	W011	1.57	1.45 J	2.18 J	0.12 U	2.2 J	W011	0.647	0.355 UJ	2.11 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-7a. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	26	26	100	0.185 J	0.341 J	W034	0.238	0.224 J	0.293 J	0.185 J	0.341 J	W034	0.238	0.224 J	0.293 J
Arsenic	Peristaltic - particulate	µg/L	26	26	100	0.04 J	0.286 J	W034	0.111	0.0945 J	0.207 J	0.04 J	0.286 J	W034	0.111	0.0945 J	0.207 J
Arsenic	Peristaltic - total	µg/L	26	26	100	0.3	0.627 J	W034	0.349	0.329 J	0.454 J	0.3	0.627 J	W034	0.349	0.329 J	0.454 J
Chromium	Peristaltic - dissolved	µg/L	26	4	15	0.43	0.64	W034	0.5	0.465	0.619	0.12 U	0.64	W034	0.201	0.143 U	0.483
Chromium	Peristaltic - particulate	µg/L	26	26	100	0.24	1.92	W031	0.947	0.88	1.68	0.24	1.92	W031	0.947	0.88	1.68
Chromium	Peristaltic - total	µg/L	26	26	100	0.7	1.92	W031	1.02	0.94	1.68	0.7	1.92	W031	1.02	0.94	1.68
Copper	Peristaltic - dissolved	µg/L	26	26	100	0.55	1.22	W035	0.749	0.65	1.17	0.55	1.22	W035	0.749	0.65	1.17
Copper	Peristaltic - particulate	µg/L	26	26	100	0.6	2.59	W031	1.21	1.15	2.06	0.6	2.59	W031	1.21	1.15	2.06
Copper	Peristaltic - total	µg/L	26	26	100	1.47	3.49	W031	1.96	1.81	2.72	1.47	3.49	W031	1.96	1.81	2.72
Zinc	Peristaltic - dissolved	µg/L	26	0	0	--	--	--	--	--	--	0.5 U	4 U	W038	0.944	0.95 U	1.75 U
Zinc	Peristaltic - particulate	µg/L	26	26	100	3	8.4	W031	4.35	4.08	6.28	3	8.4	W031	4.35	4.08	6.28
Zinc	Peristaltic - total	µg/L	26	26	100	3	8.4	W031	4.35	4.08	6.28	3	8.4	W031	4.35	4.08	6.28
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	26	2	8	0.0021 J	0.0035 J	W035	0.0028	0.0028 J	0.00343 J	0.0006 U	0.0035 J	W035	0.000492	0.0003 U	0.00165 J
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	24	24	100	0.0000602 JT	0.000285 JT	W028	0.000124	0.00011 J	0.000249 J	0.0000602 JT	0.000285 JT	W028	0.000124	0.00011 J	0.000249 J
Total PCBs	XAD Filter - particulate	µg/L	24	24	100	0.0000337 JT	0.000496 JT	W035	0.000159	0.000109 J	0.00046 J	0.0000337 JT	0.000496 JT	W035	0.000159	0.000109 J	0.00046 J
Total PCBs	XAD Column+Filter - total	µg/L	24	24	100	0.000111 J	0.000749 J	W035	0.000283	0.000213 J	0.000667 J	0.000111 J	0.000749 J	W035	0.000283	0.000213 J	0.000667 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	6	6	100	0.00000179 T	0.00000533 T	W033	0.00000398	0.00000439	0.0000053	0.00000179 T	0.00000533 T	W033	0.00000398	0.00000439	0.0000053
Total PCDD/Fs	XAD Filter - particulate	µg/L	6	6	100	0.0000196 T	0.0000707 JT	W035	0.0000401	0.0000277	0.0000705 J	0.0000196 T	0.0000707 JT	W035	0.0000401	0.0000277	0.0000705 J
Total PCDD/Fs	XAD Column+Filter - total	µg/L	6	6	100	0.0000247	0.0000749	W035	0.000044	0.0000318	0.0000748 J	0.0000247	0.0000749	W035	0.000044	0.0000318	0.0000748 J
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	6	6	100	0.00000000274 T	0.0000000143 JT	W033	0.00000000703	0.00000000659	0.0000000128 J	0.00000000274 T	0.0000000143 JT	W033	0.00000000703	0.00000000659	0.0000000128 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	6	6	100	0.0000000437 JT	0.000000162 JT	W035	0.000000089	0.000000071 J	0.000000157 J	0.0000000437 JT	0.000000162 JT	W035	0.000000089	0.000000071 J	0.000000157 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	6	6	100	0.0000000491 J	0.000000168 J	W035	0.000000096	0.0000000795 J	0.000000163 J	0.0000000491 J	0.000000168 J	W035	0.000000096	0.0000000795 J	0.000000163 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	10	6	60	0.00000174 J	0.00000259 J	W033	0.00000213	0.00000207 J	0.00000257 J	0.00000174 J	0.00000283 U	W031	0.00000174	0.00000178 J	0.00000255 J
Aldrin	XAD Filter - particulate	µg/L	10	7	70	0.000000514 J	0.00000148 J	W033	0.000000938	0.00000101 J	0.0000014 J	0.000000514 J	0.00000148 J	W033	0.000000812	0.00000069 J	0.00000135 J
Aldrin	Peristaltic - total	µg/L	14	1	7	0.0052	0.0052	W030	0.0052	0.0052	0.0052	0.00048 U	0.0058 U	W030	0.000953	0.000385 U	0.00371
Aldrin	XAD Column+Filter - total	µg/L	10	8	80	0.000000514 J	0.00000407 J	W033	0.00000242	0.00000244 J	0.00000388 J	0.000000514 J	0.00000407 J	W033	0.00000217	0.0000023 J	0.00000382 J
Dieldrin	XAD Column - dissolved	µg/L	10	10	100	0.0000985	0.000158	W033	0.000117	0.000113	0.000155	0.0000985	0.000158	W033	0.000117	0.000113	0.000155
Dieldrin	XAD Filter - particulate	µg/L	10	10	100	0.00000867 J	0.0000324	W033	0.0000155	0.0000114 J	0.000031	0.00000867 J	0.0000324	W033	0.0000155	0.0000114 J	0.000031
Dieldrin	Peristaltic - total	µg/L	14	3	21	0.001 NJ	0.0012 J	W028; W036	0.00113	0.0012 J	0.0012 J	0.0004 UJ	0.0012 J	W028; W036	0.0004	0.0002 U	0.0012 J
Dieldrin	XAD Column+Filter - total	µg/L	10	10	100	0.000108 J	0.00019	W033	0.000133	0.000124 J	0.000186	0.000108 J	0.00019	W033	0.000133	0.000124 J	0.000186
Total chlordanes	XAD Column - dissolved	µg/L	10	10	100	0.0000332 JT	0.0000495 JT	W033	0.000039	0.0000365 J	0.0000477 J	0.0000332 JT	0.0000495 JT	W033	0.000039	0.0000365 J	0.0000477 J
Total chlordanes	XAD Filter - particulate	µg/L	10	10	100	0.0000115 JT	0.0000393 JT	W031	0.000022	0.0000176 J	0.000038 J	0.0000115 JT	0.0000393 JT	W031	0.000022	0.0000176 J	0.000038 J
Total chlordanes	Peristaltic - total	µg/L	14	3	21	0.00029 JT	0.0006 NJT	W030	0.000467	0.00051 T	0.000591 J	0.00029 JT	0.00073 UT	W026; W028; W029; W036; W037; W038	0.000387	0.000365 U	0.000542 J
Total chlordanes	XAD Column+Filter - total	µg/L	10	10	100	0.0000466 J	0.0000859 J	W033	0.000061	0.0000524 J	0.0000848 J	0.0000466 J	0.0000859 J	W033	0.000061	0.0000524 J	0.0000848 J
DDx	XAD Column - dissolved	µg/L	10	10	100	0.000105 JT	0.000287 JT	W031	0.000167	0.000132 J	0.000277 J	0.000105 JT	0.000287 JT	W031	0.000167	0.000132 J	0.000277 J
DDx	XAD Filter - particulate	µg/L	10	10	100	0.000153 JT	0.00057 JT	W031	0.000262	0.000193 J	0.000501 J	0.000153 JT	0.00057 JT	W031	0.000262	0.000193 J	0.000501 J
DDx	Peristaltic - total	µg/L	14	12	86	0.00017 JT	0.00205 NJT	W037	0.000573	0.000435 J	0.00145 J	0.00017 JT	0.00205 NJT	W037	0.000558	0.00047 U	0.00134 J
DDx	XAD Column+Filter - total	µg/L	10	10	100	0.000266 J	0.000857 J	W031	0.000429	0.000316 J	0.000752 J	0.000266 J	0.000857 J	W031	0.000429	0.000316 J	0.000752 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	6	6	100	0.00606 JT	0.0204 JT	W035	0.0103	0.00747 J	0.0189 J	0.00606 JT	0.0204 JT	W035	0.0103	0.00747 J	0.0189 J
Total PAHs	XAD Filter - particulate	µg/L	6	6	100	0.00316 JT	0.0863 JT	W035	0.0261	0.00601 J	0.0775 J	0.00316 JT	0.0863 JT	W035	0.0261	0.00601 J	0.0775 J
Total PAHs	Peristaltic - total	µg/L	26	9	35	0.0047 JT	7.4 T	W031	0.89	0.058 JT	4.55 J	0.0047 JT	7.4 T	W031	0.312	0.0065 U	0.23 J
Total PAHs	XAD Column+Filter - total	µg/L	6	6	100	0.0104 J	0.107 J	W035	0.0364	0.0123 J	0.0963 J	0.0104 J	0.107 J	W035	0.0364	0.0123 J	0.0963 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	26	5	19	0.98 J	3.5 J	W032	2.04	1.9 J	3.36 J	0.098 U	3.5 J	W032	0.601	0.308 U	2.58 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
ND - not detected
PCDD/F - dioxin/furan
XAD - hydrophobic crosslinked polystyrene copolymer resin
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
PAH - polycyclic aromatic hydrocarbon
TCDD - tetrachlorodibenzo-p-dioxin
DL - detection limit
PCB - polychlorinated biphenyl
TEQ - toxicity equivalent

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-7b. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
RM 01.9<03																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.23 J	0.26 J	W026	0.245	0.245 J	0.259 J	0.23 J	0.26 J	W026	0.245	0.245 J	0.259 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.06 J	0.09 J	W026	0.075	0.075 J	0.0885 J	0.06 J	0.09 J	W026	0.075	0.075 J	0.0885 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.32 J	0.32 J	W026	0.32	0.32 J	0.32 J	0.32 J	0.32 J	W026	0.32	0.32 J	0.32 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.23 U	0.24 U	W026	0.118	0.118 U	0.12 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	0.79	0.86	W026	0.825	0.825	0.857	0.79	0.86	W026	0.825	0.825	0.857
Chromium	Peristaltic - total	µg/L	2	2	100	0.79	0.86	W026	0.825	0.825	0.857	0.79	0.86	W026	0.825	0.825	0.857
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.57	0.65	W026	0.61	0.61	0.646	0.57	0.65	W026	0.61	0.61	0.646
Copper	Peristaltic - particulate	µg/L	2	2	100	0.9	0.99	W026	0.945	0.945	0.986	0.9	0.99	W026	0.945	0.945	0.986
Copper	Peristaltic - total	µg/L	2	2	100	1.47	1.64	W026	1.56	1.56	1.63	1.47	1.64	W026	1.56	1.56	1.63
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	1.1 U	1.3 U	W026	0.6	0.6 U	0.645 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	3.4	3.6	W026	3.5	3.5	3.59	3.4	3.6	W026	3.5	3.5	3.59
Zinc	Peristaltic - total	µg/L	2	2	100	3.4	3.6	W026	3.5	3.5	3.59	3.4	3.6	W026	3.5	3.5	3.59
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W026	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000127 JT	0.000154 JT	W026	0.000141	0.000141 J	0.000153 J	0.000127 JT	0.000154 JT	W026	0.000141	0.000141 J	0.000153 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000096 JT	0.000114 JT	W026	0.000105	0.000105 J	0.000113 J	0.000096 JT	0.000114 JT	W026	0.000105	0.000105 J	0.000113 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000223 J	0.000268 J	W026	0.000246	0.000246 J	0.000266 J	0.000223 J	0.000268 J	W026	0.000246	0.000246 J	0.000266 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00064 U	0.0007 U	W026	0.000335	0.000335 U	0.000349 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W026	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00073 UT	0.00073 UT	W026	0.000365	0.000365 U	0.000365 U
DDx	Peristaltic - total	µg/L	2	2	100	0.00032 JT	0.00057 JT	W026	0.000445	0.000445 J	0.000558 J	0.00032 JT	0.00057 JT	W026	0.000445	0.000445 J	0.000558 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W026	0.0065	0.0065 U	0.0065 U
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.23 U	0.63 U	W026	0.215	0.215 U	0.305 U
RM 03<04																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.202 J	0.213 J	W028	0.208	0.208 J	0.212 J	0.202 J	0.213 J	W028	0.208	0.208 J	0.212 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.104 J	0.12 J	W028	0.112	0.112 J	0.119 J	0.104 J	0.12 J	W028	0.112	0.112 J	0.119 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.306 J	0.333 J	W028	0.32	0.32 J	0.332 J	0.306 J	0.333 J	W028	0.32	0.32 J	0.332 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.14 U	0.15 U	W028	0.0725	0.0725 U	0.0748 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	1.02	1.07	W028	1.05	1.05	1.07	1.02	1.07	W028	1.05	1.05	1.07
Chromium	Peristaltic - total	µg/L	2	2	100	1.02	1.07	W028	1.05	1.05	1.07	1.02	1.07	W028	1.05	1.05	1.07
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.61	0.62	W028	0.615	0.615	0.62	0.61	0.62	W028	0.615	0.615	0.62
Copper	Peristaltic - particulate	µg/L	2	2	100	1.34	1.36	W028	1.35	1.35	1.36	1.34	1.36	W028	1.35	1.35	1.36
Copper	Peristaltic - total	µg/L	2	2	100	1.95	1.98	W028	1.97	1.97	1.98	1.95	1.98	W028	1.97	1.97	1.98
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	1.1 U	1.3 U	W028	0.6	0.6 U	0.645 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	3.6	4.3	W028	3.95	3.95	4.27	3.6	4.3	W028	3.95	3.95	4.27
Zinc	Peristaltic - total	µg/L	2	2	100	3.6	4.3	W028	3.95	3.95	4.27	3.6	4.3	W028	3.95	3.95	4.27
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W028	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000102 JT	0.000285 JT	W028	0.000194	0.000194 J	0.000276 J	0.000102 JT	0.000285 JT	W028	0.000194	0.000194 J	0.000276 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000541 JT	0.000175 JT	W028	0.000115	0.000115 J	0.000169 J	0.0000541 JT	0.000175 JT	W028	0.000115	0.000115 J	0.000169 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000156 J	0.00046 J	W028	0.000308	0.000308 J	0.000445 J	0.000156 J	0.00046 J	W028	0.000308	0.000308 J	0.000445 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00048 U	0.00069 U	W028	0.000293	0.000293 U	0.00034 U
Dieldrin	Peristaltic - total	µg/L	2	1	50	0.0012 J	0.0012 J	W028	0.0012	0.0012 J	0.0012 J	0.0004 U	0.0012 J	W028	0.0007	0.0007 J	0.00115 J
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00073 UT	0.00073 UT	W028	0.000365	0.000365 U	0.000365 U
DDx	Peristaltic - total	µg/L	2	2	100	0.00017 JT	0.00018 NJT	W028	0.000175	0.000175 J	0.00018 J	0.00017 JT	0.00018 NJT	W028	0.000175	0.000175 J	0.00018 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W028	0.0065	0.0065 U	0.0065 U
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.098 U	0.25 U	W028	0.087	0.087 U	0.121 U
RM 05<06																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.185 J	0.222 J	W030	0.204	0.204 J	0.22 J	0.185 J	0.222 J	W030	0.204	0.204 J	0.22 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.095 J	0.143 J	W030	0.119	0.119 J	0.141 J	0.095 J	0.143 J	W030	0.119	0.119 J	0.141 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.317 J	0.328 J	W030	0.323	0.323 J	0.327 J	0.317 J	0.328 J	W030	0.323	0.323 J	0.327 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.2 U	0.23 U	W030	0.108	0.108 U	0.114 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	0.95	0.99	W030	0.97	0.97	0.988	0.95	0.99	W030	0.97	0.97	0.988
Chromium	Peristaltic - total	µg/L	2	2	100	0.95	0.99	W030	0.97	0.97	0.988	0.95	0.99	W030	0.97	0.97	0.988

Table 5.4-7b. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.64	0.65	W030	0.645	0.645	0.65	0.64	0.65	W030	0.645	0.645	0.65
Copper	Peristaltic - particulate	µg/L	2	2	100	1.19	1.29	W030	1.24	1.24	1.29	1.19	1.29	W030	1.24	1.24	1.29
Copper	Peristaltic - total	µg/L	2	2	100	1.83	1.94	W030	1.89	1.89	1.93	1.83	1.94	W030	1.89	1.89	1.93
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	1.9 U	2 U	W030	0.975	0.975 U	0.998 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	3.3	3.9	W030	3.6	3.6	3.87	3.3	3.9	W030	3.6	3.6	3.87
Zinc	Peristaltic - total	µg/L	2	2	100	3.3	3.9	W030	3.6	3.6	3.87	3.3	3.9	W030	3.6	3.6	3.87
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W030	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000076 JT	0.0000768 JT	W030	0.0000764	0.0000764 J	0.0000768 J	0.000076 JT	0.0000768 JT	W030	0.0000764	0.0000764 J	0.0000768 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000337 JT	0.0000729 JT	W030	0.0000533	0.0000533 J	0.0000709 J	0.0000337 JT	0.0000729 JT	W030	0.0000533	0.0000533 J	0.0000709 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000111 J	0.000149 J	W030	0.00013	0.00013 J	0.000147 J	0.000111 J	0.000149 J	W030	0.00013	0.00013 J	0.000147 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	1	50	0.0052	0.0052	W030	0.0052	0.0052	0.0052	0.0052	0.0058 U	W030	0.00405	0.00405	0.00509
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W030	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	2	2	100	0.00051 T	0.0006 NJT	W030	0.000555	0.000555 J	0.000596 J	0.00051 T	0.0006 NJT	W030	0.000555	0.000555 J	0.000596 J
DDx	Peristaltic - total	µg/L	2	1	50	0.00022 JT	0.00022 JT	W030	0.00022	0.00022 JT	0.00022 JT	0.00022 JT	0.00094 UT	W030	0.000345	0.000345 J	0.000458 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	1	50	0.013 JT	0.013 JT	W030	0.013	0.013 JT	0.013 JT	0.013 UT	0.013 UT	W030	0.00975	0.00975 J	0.0127 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.26 U	0.58 U	W030	0.21	0.21 U	0.282 U
RM 06<07																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.22	0.22	W032	0.22	0.22	0.22	0.22	0.22	W032	0.22	0.22	0.22
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.085	0.1	W032	0.0925	0.0925	0.0993	0.085	0.1	W032	0.0925	0.0925	0.0993
Arsenic	Peristaltic - total	µg/L	2	2	100	0.305 T	0.32	W032	0.313	0.313	0.319	0.305 T	0.32	W032	0.313	0.313	0.319
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.23 U	0.24 U	W032	0.118	0.118 U	0.12 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	0.7	0.725	W032	0.713	0.713	0.724	0.7	0.725	W032	0.713	0.713	0.724
Chromium	Peristaltic - total	µg/L	2	2	100	0.7	0.725 T	W032	0.713	0.713	0.724	0.7	0.725 T	W032	0.713	0.713	0.724
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.64	0.64	W032	0.64	0.64	0.64	0.64	0.64	W032	0.64	0.64	0.64
Copper	Peristaltic - particulate	µg/L	2	2	100	0.99	1.05	W032	1.02	1.02	1.05	0.99	1.05	W032	1.02	1.02	1.05
Copper	Peristaltic - total	µg/L	2	2	100	1.63	1.69 T	W032	1.66	1.66	1.69	1.63	1.69 T	W032	1.66	1.66	1.69
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	1 U	1.6 U	W032	0.65	0.65 U	0.785 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	3.4	4.3	W032	3.85	3.85	4.26	3.4	4.3	W032	3.85	3.85	4.26
Zinc	Peristaltic - total	µg/L	2	2	100	3.4 T	4.3	W032	3.85	3.85	4.26	3.4 T	4.3	W032	3.85	3.85	4.26
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W032	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000125 JT	0.00014 JT	W032	0.000133	0.000133 J	0.000139 J	0.000125 JT	0.00014 JT	W032	0.000133	0.000133 J	0.000139 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000121 JT	0.000195 JT	W032	0.000158	0.000158 J	0.000191 J	0.000121 JT	0.000195 JT	W032	0.000158	0.000158 J	0.000191 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000261 J	0.00032 J	W032	0.000291	0.000291 J	0.000317 J	0.000261 J	0.00032 J	W032	0.000291	0.000291 J	0.000317 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	2	2	100	0.00000278 T	0.00000506 T	W032	0.00000392	0.00000392	0.00000495	0.00000278 T	0.00000506 T	W032	0.00000392	0.00000392	0.00000495
Total PCDD/Fs	XAD Filter - particulate	µg/L	2	2	100	0.0000196 T	0.0000261 T	W032	0.0000229	0.0000229	0.0000258	0.0000196 T	0.0000261 T	W032	0.0000229	0.0000229	0.0000258
Total PCDD/Fs	XAD Column+Filter - total	µg/L	2	2	100	0.0000247	0.0000289	W032	0.0000268	0.0000268	0.0000287	0.0000247	0.0000289	W032	0.0000268	0.0000268	0.0000287
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	2	2	100	0.00000000378 T	0.00000000719 T	W032	0.00000000549	0.00000000549	0.00000000702	0.00000000378 T	0.00000000719 T	W032	0.00000000549	0.00000000549	0.00000000702
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	2	2	100	0.0000000437 JT	0.0000000453 JT	W032	0.0000000445	0.0000000445 J	0.0000000452 J	0.0000000437 JT	0.0000000453 JT	W032	0.0000000445	0.0000000445 J	0.0000000452 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	2	2	100	0.0000000491 J	0.0000000509 J	W032	0.00000005	0.00000005 J	0.0000000508 J	0.0000000491 J	0.0000000509 J	W032	0.00000005	0.00000005 J	0.0000000508 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	2	2	100	0.00000174 J	0.00000182 J	W032	0.00000178	0.00000178 J	0.00000182 J	0.00000174 J	0.00000182 J	W032	0.00000178	0.00000178 J	0.00000182 J
Aldrin	XAD Filter - particulate	µg/L	2	2	100	0.00000061 J	0.000000714 J	W032	0.000000662	0.000000662 J	0.000000709 J	0.00000061 J	0.000000714 J	W032	0.000000662	0.000000662 J	0.000000709 J
Aldrin	XAD Column+Filter - total	µg/L	2	2	100	0.00000243 J	0.00000245 J	W032	0.00000244	0.00000244 J	0.00000245 J	0.00000243 J	0.00000245 J	W032	0.00000244	0.00000244 J	0.00000245 J
Dieldrin	XAD Column - dissolved	µg/L	2	2	100	0.0000993	0.000109	W032	0.000104	0.000104	0.000109	0.0000993	0.000109	W032	0.000104	0.000104	0.000109
Dieldrin	XAD Filter - particulate	µg/L	2	2	100	0.000012 J	0.0000135 J	W032	0.0000128	0.0000128 J	0.0000134 J	0.000012 J	0.0000135 J	W032	0.0000128	0.0000128 J	0.0000134 J
Dieldrin	XAD Column+Filter - total	µg/L	2	2	100	0.000111 J	0.000123 J	W032	0.000117	0.000117 J	0.000122 J	0.000111 J	0.000123 J	W032	0.000117	0.000117 J	0.000122 J
Total chlordanes	XAD Column - dissolved	µg/L	2	2	100	0.0000332 JT	0.0000352 JT	W032	0.0000342	0.0000342 J	0.0000351 J	0.0000332 JT	0.0000352 JT	W032	0.0000342	0.0000342 J	0.0000351 J
Total chlordanes	XAD Filter - particulate	µg/L	2	2	100	0.0000145 JT	0.0000171 JT	W032	0.0000158	0.0000158 J	0.000017 J	0.0000145 JT	0.0000171 JT	W032	0.0000158	0.0000158 J	0.000017 J
Total chlordanes	XAD Column+Filter - total	µg/L	2	2	100	0.0000477 J	0.0000523 J	W032	0.00005	0.00005 J	0.0000521 J	0.0000477 J	0.0000523 J	W032	0.00005	0.00005 J	0.0000521 J
DDx	XAD Column - dissolved	µg/L	2	2	100	0.000113 JT	0.000126 JT	W032	0.00012	0.00012 J	0.000125 J	0.000113 JT	0.000126 JT	W032	0.00012	0.00012 J	0.000125 J
DDx	XAD Filter - particulate	µg/L	2	2	100	0.000153 JT	0.000212 JT	W032	0.000183	0.000183 J	0.000209 J	0.000153 JT	0.000212 JT	W032	0.000183	0.000183 J	0.000209 J
DDx	XAD Column+Filter - total	µg/L	2	2	100	0.000266 J	0.000338 J	W032	0.000302	0.000302 J	0.000334 J	0.000266 J	0.000338 J	W032	0.000302	0.000302 J	0.000334 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	2	2	100	0.0061 JT	0.00883 JT	W032	0.00747	0.00747 J	0.00869 J	0.0061 JT	0.00883 JT	W032	0.00747	0.00747 J	0.00869 J
Total PAHs	XAD Filter - particulate	µg/L	2	2	100	0.00316 JT	0.00432 JT	W032	0.00374	0.00374 J	0.00426 J	0.00316 JT	0.00432 JT	W032	0.00374	0.00374 J	0.00426 J
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0065 UT	0.013 UT	W032	0.00488	0.00488 U	0.00634 U

Table 5.4-7b. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Total PAHs	XAD Column+Filter - total	µg/L	2	2	100	0.0104 J	0.012 J	W032	0.0112	0.0112 J	0.0119 J	0.0104 J	0.012 J	W032	0.0112	0.0112 J	0.0119 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	1	50	3.5 J	3.5 J	W032	3.5	3.5 J	3.5 J	0.71 U	3.5 J	W032	1.93	1.93 J	3.34 J
RM 08<09																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.281 J	0.296 J	W035	0.289	0.289 J	0.295 J	0.281 J	0.296 J	W035	0.289	0.289 J	0.295 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.074 J	0.087 J	W035	0.0805	0.0805 J	0.0864 J	0.074 J	0.087 J	W035	0.0805	0.0805 J	0.0864 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.355 J	0.383 J	W035	0.369	0.369 J	0.382 J	0.355 J	0.383 J	W035	0.369	0.369 J	0.382 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.45 U	0.48 U	W035	0.233	0.233 U	0.239 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	0.86	0.88	W035	0.87	0.87	0.879	0.86	0.88	W035	0.87	0.87	0.879
Chromium	Peristaltic - total	µg/L	2	2	100	0.86	0.88	W035	0.87	0.87	0.879	0.86	0.88	W035	0.87	0.87	0.879
Copper	Peristaltic - dissolved	µg/L	2	2	100	1.22	1.22	W035	1.22	1.22	1.22	1.22	1.22	W035	1.22	1.22	1.22
Copper	Peristaltic - particulate	µg/L	2	2	100	0.85	0.99	W035	0.92	0.92	0.983	0.85	0.99	W035	0.92	0.92	0.983
Copper	Peristaltic - total	µg/L	2	2	100	2.07	2.21	W035	2.14	2.14	2.2	2.07	2.21	W035	2.14	2.14	2.2
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	3.2 U	3.6 U	W035	1.7	1.7 U	1.79 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	5.6	6.5	W035	6.05	6.05	6.46	5.6	6.5	W035	6.05	6.05	6.46
Zinc	Peristaltic - total	µg/L	2	2	100	5.6	6.5	W035	6.05	6.05	6.46	5.6	6.5	W035	6.05	6.05	6.46
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	2	100	0.0021 J	0.0035 J	W035	0.0028	0.0028 J	0.00343 J	0.0021 J	0.0035 J	W035	0.0028	0.0028 J	0.00343 J
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000223 JT	0.000253 JT	W035	0.000238	0.000238 J	0.000252 J	0.000223 JT	0.000253 JT	W035	0.000238	0.000238 J	0.000252 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.00048 JT	0.000496 JT	W035	0.000488	0.000488 J	0.000495 J	0.00048 JT	0.000496 JT	W035	0.000488	0.000488 J	0.000495 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000703 J	0.000749 J	W035	0.000726	0.000726 J	0.000747 J	0.000703 J	0.000749 J	W035	0.000726	0.000726 J	0.000747 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	2	2	100	0.00000371 T	0.0000052 T	W035	0.00000446	0.00000446	0.00000513	0.00000371 T	0.0000052 T	W035	0.00000446	0.00000446	0.00000513
Total PCDD/Fs	XAD Filter - particulate	µg/L	2	2	100	0.0000697 T	0.0000707 JT	W035	0.0000702	0.0000702 J	0.0000707 J	0.0000697 T	0.0000707 JT	W035	0.0000702	0.0000702 J	0.0000707 J
Total PCDD/Fs	XAD Column+Filter - total	µg/L	2	2	100	0.0000744 J	0.0000749	W035	0.0000747	0.0000747 J	0.0000749 J	0.0000744 J	0.0000749	W035	0.0000747	0.0000747 J	0.0000749 J
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	2	2	100	0.00000000598 T	0.00000000817 T	W035	0.00000000708	0.00000000708	0.00000000806	0.00000000598 T	0.00000000817 T	W035	0.00000000708	0.00000000708	0.00000000806
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	2	2	100	0.000000141 JT	0.000000162 JT	W035	0.000000152	0.000000152 J	0.000000161 J	0.000000141 JT	0.000000162 JT	W035	0.000000152	0.000000152 J	0.000000161 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	2	2	100	0.000000149 J	0.000000168 J	W035	0.000000159	0.000000159 J	0.000000167 J	0.000000149 J	0.000000168 J	W035	0.000000159	0.000000159 J	0.000000167 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	2	2	100	0.00000197 J	0.00000251 J	W035	0.00000224	0.00000224 J	0.00000248 J	0.00000197 J	0.00000251 J	W035	0.00000224	0.00000224 J	0.00000248 J
Aldrin	XAD Filter - particulate	µg/L	2	2	100	0.00000101 J	0.00000104 J	W035	0.00000103	0.00000103 J	0.00000104 J	0.00000101 J	0.00000104 J	W035	0.00000103	0.00000103 J	0.00000104 J
Aldrin	XAD Column+Filter - total	µg/L	2	2	100	0.00000301 J	0.00000352 J	W035	0.00000327	0.00000327 J	0.00000349 J	0.00000301 J	0.00000352 J	W035	0.00000327	0.00000327 J	0.00000349 J
Dieldrin	XAD Column - dissolved	µg/L	2	2	100	0.0000985	0.0000995	W035	0.000099	0.000099	0.0000995	0.0000985	0.0000995	W035	0.000099	0.000099	0.0000995
Dieldrin	XAD Filter - particulate	µg/L	2	2	100	0.00000997 J	0.0000101 J	W035	0.00001	0.00001 J	0.0000101 J	0.00000997 J	0.0000101 J	W035	0.00001	0.00001 J	0.0000101 J
Dieldrin	XAD Column+Filter - total	µg/L	2	2	100	0.000108 J	0.00011 J	W035	0.000109	0.000109 J	0.00011 J	0.000108 J	0.00011 J	W035	0.000109	0.000109 J	0.00011 J
Total chlordanes	XAD Column - dissolved	µg/L	2	2	100	0.0000332 JT	0.0000344 JT	W035	0.0000338	0.0000338 J	0.0000343 J	0.0000332 JT	0.0000344 JT	W035	0.0000338	0.0000338 J	0.0000343 J
Total chlordanes	XAD Filter - particulate	µg/L	2	2	100	0.0000178 JT	0.0000192 JT	W035	0.0000185	0.0000185 J	0.0000191 J	0.0000178 JT	0.0000192 JT	W035	0.0000185	0.0000185 J	0.0000191 J
Total chlordanes	XAD Column+Filter - total	µg/L	2	2	100	0.0000522 J	0.0000524 J	W035	0.0000523	0.0000523 J	0.0000524 J	0.0000522 J	0.0000524 J	W035	0.0000523	0.0000523 J	0.0000524 J
DDx	XAD Column - dissolved	µg/L	2	2	100	0.000105 JT	0.000121 JT	W035	0.000113	0.000113 J	0.00012 J	0.000105 JT	0.000121 JT	W035	0.000113	0.000113 J	0.00012 J
DDx	XAD Filter - particulate	µg/L	2	2	100	0.000169 JT	0.000173 JT	W035	0.000171	0.000171 J	0.000173 J	0.000169 JT	0.000173 JT	W035	0.000171	0.000171 J	0.000173 J
DDx	XAD Column+Filter - total	µg/L	2	2	100	0.000278 J	0.00029 J	W035	0.000284	0.000284 J	0.000289 J	0.000278 J	0.00029 J	W035	0.000284	0.000284 J	0.000289 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	2	2	100	0.0142 JT	0.0204 JT	W035	0.0173	0.0173 J	0.0201 J	0.0142 JT	0.0204 JT	W035	0.0173	0.0173 J	0.0201 J
Total PAHs	XAD Filter - particulate	µg/L	2	2	100	0.051 JT	0.0863 JT	W035	0.0687	0.0687 J	0.0845 J	0.051 JT	0.0863 JT	W035	0.0687	0.0687 J	0.0845 J
Total PAHs	Peristaltic - total	µg/L	2	2	100	0.088 JT	0.11 JT	W035	0.099	0.099 J	0.109 J	0.088 JT	0.11 JT	W035	0.099	0.099 J	0.109 J
Total PAHs	XAD Column+Filter - total	µg/L	2	2	100	0.0652 J	0.107 J	W035	0.086	0.086 J	0.105 J	0.0652 J	0.107 J	W035	0.086	0.086 J	0.105 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.31 U	0.36 U	W035	0.168	0.168 U	0.179 U
RM 09<10																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.21	0.21	W038	0.21	0.21	0.21	0.21	0.21	W038	0.21	0.21	0.21
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.09	0.1	W038	0.095	0.095	0.0995	0.09	0.1	W038	0.095	0.095	0.0995
Arsenic	Peristaltic - total	µg/L	2	2	100	0.3	0.31	W038	0.305	0.305	0.31	0.3	0.31	W038	0.305	0.305	0.31
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.17 U	0.24 U	W038	0.103	0.103 U	0.118 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	0.82	0.85	W038	0.835	0.835	0.849	0.82	0.85	W038	0.835	0.835	0.849
Chromium	Peristaltic - total	µg/L	2	2	100	0.82	0.85	W038	0.835	0.835	0.849	0.82	0.85	W038	0.835	0.835	0.849
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.57	0.6	W038	0.585	0.585	0.599	0.57	0.6	W038	0.585	0.585	0.599
Copper	Peristaltic - particulate	µg/L	2	2	100	1.12	1.18	W038	1.15	1.15	1.18	1.12	1.18	W038	1.15	1.15	1.18
Copper	Peristaltic - total	µg/L	2	2	100	1.72	1.75	W038	1.74	1.74	1.75	1.72	1.75	W038	1.74	1.74	1.75
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	2.1 U	4 U	W038	1.53	1.53 U	1.95 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	3.3	4.7	W038	4	4	4.63	3.3	4.7	W038	4	4	4.63
Zinc	Peristaltic - total	µg/L	2	2	100	3.3	4.7	W038	4	4	4.63	3.3	4.7	W038	4	4	4.63

Table 5.4-7b. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W038	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.0000602 JT	0.000065 JT	W038	0.0000626	0.0000626 J	0.0000648 J	0.0000602 JT	0.000065 JT	W038	0.0000626	0.0000626 J	0.0000648 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000548 JT	0.000103 JT	W038	0.0000789	0.0000789 J	0.000101 J	0.0000548 JT	0.000103 JT	W038	0.0000789	0.0000789 J	0.000101 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000115 J	0.000168 J	W038	0.000142	0.000142 J	0.000165 J	0.000115 J	0.000168 J	W038	0.000142	0.000142 J	0.000165 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00048 U	0.00048 U	W038	0.00024	0.00024 U	0.00024 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 UJ	0.0004 UJ	W038	0.0002	0.0002 UJ	0.0002 UJ
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00073 UT	0.00073 UT	W038	0.000365	0.000365 U	0.000365 U
DDx	Peristaltic - total	µg/L	2	1	50	0.0004 JT	0.0004 JT	W038	0.0004	0.0004 JT	0.0004 JT	0.0004 JT	0.00094 UT	W038	0.000435	0.000435 J	0.000467 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	1	50	0.05 JT	0.05 JT	W038	0.05	0.05 JT	0.05 JT	0.013 UT	0.05 JT	W038	0.0283	0.0283 J	0.0478 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	1	50	1 J	1 J	W038	1	1 J	1 J	0.82 U	1 J	W038	0.705	0.705 J	0.971 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - River Mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-7c. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (Mid-Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
No data for this table.																	

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

-- data not available.
DL - detection limit

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-7d. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
RM 04<05																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.206 J	0.223 J	W029	0.215	0.215 J	0.222 J	0.206 J	0.223 J	W029	0.215	0.215 J	0.222 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.094 J	0.123 J	W029	0.109	0.109 J	0.122 J	0.094 J	0.123 J	W029	0.109	0.109 J	0.122 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.317 JT	0.329 J	W029	0.323	0.323 J	0.328 J	0.317 JT	0.329 J	W029	0.323	0.323 J	0.328 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.12 U	0.13 U	W029	0.0625	0.0625 U	0.0648 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	0.865	0.88	W029	0.873	0.873	0.879	0.865	0.88	W029	0.873	0.873	0.879
Chromium	Peristaltic - total	µg/L	2	2	100	0.865 T	0.88	W029	0.873	0.873	0.879	0.865 T	0.88	W029	0.873	0.873	0.879
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.59	0.6	W029	0.595	0.595	0.6	0.59	0.6	W029	0.595	0.595	0.6
Copper	Peristaltic - particulate	µg/L	2	2	100	1.13	1.17	W029	1.15	1.15	1.17	1.13	1.17	W029	1.15	1.15	1.17
Copper	Peristaltic - total	µg/L	2	2	100	1.73	1.76 T	W029	1.75	1.75	1.76	1.73	1.76 T	W029	1.75	1.75	1.76
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.5 U	0.7 U	W029	0.3	0.3 U	0.345 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	3	3.2	W029	3.1	3.1	3.19	3	3.2	W029	3.1	3.1	3.19
Zinc	Peristaltic - total	µg/L	2	2	100	3	3.2 T	W029	3.1	3.1	3.19	3	3.2 T	W029	3.1	3.1	3.19
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W029	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.0000839 JT	0.0000844 JT	W029	0.0000842	0.0000842 J	0.0000844 J	0.0000839 JT	0.0000844 JT	W029	0.0000842	0.0000842 J	0.0000844 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000883 JT	0.0000934 JT	W029	0.0000909	0.0000909 J	0.0000931 J	0.0000883 JT	0.0000934 JT	W029	0.0000909	0.0000909 J	0.0000931 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000173 J	0.000177 J	W029	0.000175	0.000175 J	0.000177 J	0.000173 J	0.000177 J	W029	0.000175	0.000175 J	0.000177 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0018 U	0.0018 U	W029	0.0009	0.0009 U	0.0009 U
Dieldrin	Peristaltic - total	µg/L	2	1	50	0.001 NJ	0.001 NJ	W029	0.001	0.001 NJ	0.001 NJ	0.0004 U	0.001 NJ	W029	0.0006	0.0006 J	0.00096 J
Total chlordanes	Peristaltic - total	µg/L	2	1	50	0.00029 JT	0.00029 JT	W029	0.00029	0.00029 JT	0.00029 JT	0.00029 JT	0.00073 UT	W029	0.000328	0.000328 J	0.000361 J
DDx	Peristaltic - total	µg/L	2	2	100	0.00047 NJT	0.00096 NJT	W029	0.000715	0.000715 J	0.000936 J	0.00047 NJT	0.00096 NJT	W029	0.000715	0.000715 J	0.000936 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W029	0.0065	0.0065 U	0.0065 U
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	1	50	1.9 J	1.9 J	W029	1.9	1.9 J	1.9 J	0.75 U	1.9 J	W029	1.14	1.14 J	1.82 J
RM 06<07																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.26 J	0.261 J	W031	0.261	0.261 J	0.261 J	0.26 J	0.261 J	W031	0.261	0.261 J	0.261 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.064 J	0.217 J	W031	0.141	0.141 J	0.209 J	0.064 J	0.217 J	W031	0.141	0.141 J	0.209 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.324 J	0.478 J	W031	0.401	0.401 J	0.47 J	0.324 J	0.478 J	W031	0.401	0.401 J	0.47 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.55 U	0.59 U	W031	0.285	0.285 U	0.294 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	1.01	1.92	W031	1.47	1.47	1.87	1.01	1.92	W031	1.47	1.47	1.87
Chromium	Peristaltic - total	µg/L	2	2	100	1.01	1.92	W031	1.47	1.47	1.87	1.01	1.92	W031	1.47	1.47	1.87
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.9	0.93	W031	0.915	0.915	0.929	0.9	0.93	W031	0.915	0.915	0.929
Copper	Peristaltic - particulate	µg/L	2	2	100	0.75	2.59	W031	1.67	1.67	2.5	0.75	2.59	W031	1.67	1.67	2.5
Copper	Peristaltic - total	µg/L	2	2	100	1.68	3.49	W031	2.59	2.59	3.4	1.68	3.49	W031	2.59	2.59	3.4
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	1.9 U	2.2 U	W031	1.03	1.03 U	1.09 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	3.5	8.4	W031	5.95	5.95	8.16	3.5	8.4	W031	5.95	5.95	8.16
Zinc	Peristaltic - total	µg/L	2	2	100	3.5	8.4	W031	5.95	5.95	8.16	3.5	8.4	W031	5.95	5.95	8.16
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W031	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.0000982 JT	0.000111 JT	W031	0.000105	0.000105 J	0.00011 J	0.0000982 JT	0.000111 JT	W031	0.000105	0.000105 J	0.00011 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000898 JT	0.000348 JT	W031	0.000219	0.000219 J	0.000335 J	0.0000898 JT	0.000348 JT	W031	0.000219	0.000219 J	0.000335 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000188 J	0.000459 J	W031	0.000324	0.000324 J	0.000445 J	0.000188 J	0.000459 J	W031	0.000324	0.000324 J	0.000445 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.00000215 U	0.00000283 U	W031	0.00000125	0.00000125 U	0.0000014 U
Aldrin	XAD Filter - particulate	µg/L	2	1	50	0.0000012 J	0.0000012 J	W031	0.0000012	0.0000012 J	0.0000012 J	0.000000882 U	0.0000012 J	W031	0.000000821	0.000000821 J	0.00000116 J
Aldrin	XAD Column+Filter - total	µg/L	2	1	50	0.0000012 J	0.0000012 J	W031	0.0000012	0.0000012 J	0.0000012 J	0.0000012 J	0.00000215 U	W031	0.00000114	0.00000114 J	0.00000119 J
Dieldrin	XAD Column - dissolved	µg/L	2	2	100	0.000117	0.000119	W031	0.000118	0.000118	0.000119	0.000117	0.000119	W031	0.000118	0.000118	0.000119
Dieldrin	XAD Filter - particulate	µg/L	2	2	100	0.0000108 J	0.0000192 J	W031	0.000015	0.000015 J	0.0000188 J	0.0000108 J	0.0000192 J	W031	0.000015	0.000015 J	0.0000188 J
Dieldrin	XAD Column+Filter - total	µg/L	2	2	100	0.00013 J	0.000136 J	W031	0.000133	0.000133 J	0.000136 J	0.00013 J	0.000136 J	W031	0.000133	0.000133 J	0.000136 J
Total chlordanes	XAD Column - dissolved	µg/L	2	2	100	0.0000422 JT	0.0000441 JT	W031	0.0000432	0.0000432 J	0.000044 J	0.0000422 JT	0.0000441 JT	W031	0.0000432	0.0000432 J	0.000044 J
Total chlordanes	XAD Filter - particulate	µg/L	2	2	100	0.0000174 JT	0.0000393 JT	W031	0.0000284	0.0000284 J	0.0000382 J	0.0000174 JT	0.0000393 JT	W031	0.0000284	0.0000284 J	0.0000382 J
Total chlordanes	XAD Column+Filter - total	µg/L	2	2	100	0.0000596 J	0.0000834 J	W031	0.0000715	0.0000715 J	0.0000822 J	0.0000596 J	0.0000834 J	W031	0.0000715	0.0000715 J	0.0000822 J
DDx	XAD Column - dissolved	µg/L	2	2	100	0.000264 JT	0.000287 JT	W031	0.000276	0.000276 J	0.000286 J	0.000264 JT	0.000287 JT	W031	0.000276	0.000276 J	0.000286 J
DDx	XAD Filter - particulate	µg/L	2	2	100	0.00026 JT	0.00057 JT	W031	0.000415	0.000415 J	0.000555 J	0.00026 JT	0.00057 JT	W031	0.000415	0.000415 J	0.000555 J
DDx	XAD Column+Filter - total	µg/L	2	2	100	0.000524 J	0.000857 J	W031	0.000691	0.000691 J	0.00084 J	0.000524 J	0.000857 J	W031	0.000691	0.000691 J	0.00084 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	2	100	0.058 JT	7.4 T	W031	3.73	3.73 J	7.03 J	0.058 JT	7.4 T	W031	3.73	3.73 J	7.03 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.35 U	0.73 U	W031	0.27	0.27 U	0.356 U

Table 5.4-7d. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
RM 07<08																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	6	6	100	0.23 J	0.341 J	W034	0.276	0.27 J	0.327 J	0.23 J	0.341 J	W034	0.276	0.27 J	0.327 J
Arsenic	Peristaltic - particulate	µg/L	6	6	100	0.04 J	0.286 J	W034	0.111	0.076 J	0.245 J	0.04 J	0.286 J	W034	0.111	0.076 J	0.245 J
Arsenic	Peristaltic - total	µg/L	6	6	100	0.32 J	0.627 J	W034	0.387	0.345 J	0.56 J	0.32 J	0.627 J	W034	0.387	0.345 J	0.56 J
Chromium	Peristaltic - dissolved	µg/L	6	4	67	0.43	0.64	W034	0.5	0.465	0.619	0.26 U	0.64	W034	0.392	0.43	0.605
Chromium	Peristaltic - particulate	µg/L	6	6	100	0.24	1.06	W033	0.644	0.573	1.04	0.24	1.06	W033	0.644	0.573	1.04
Chromium	Peristaltic - total	µg/L	6	6	100	0.88	1.08	W033	0.978	0.96	1.08	0.88	1.08	W033	0.978	0.96	1.08
Copper	Peristaltic - dissolved	µg/L	6	6	100	0.62	1.02	W034	0.87	0.88	1.01	0.62	1.02	W034	0.87	0.88	1.01
Copper	Peristaltic - particulate	µg/L	6	6	100	0.6	1.43	W033	0.963	0.84	1.39	0.6	1.43	W033	0.963	0.84	1.39
Copper	Peristaltic - total	µg/L	6	6	100	1.62	2.14	W033	1.83	1.75	2.12	1.62	2.14	W033	1.83	1.75	2.12
Zinc	Peristaltic - dissolved	µg/L	6	0	0	--	--	--	--	--	--	1.5 U	2.5 U	W034	0.992	0.975 U	1.21 U
Zinc	Peristaltic - particulate	µg/L	6	6	100	3.5	4.5	W033	4.04	4.08	4.45	3.5	4.5	W033	4.04	4.08	4.45
Zinc	Peristaltic - total	µg/L	6	6	100	3.5	4.5	W033	4.04	4.08	4.45	3.5	4.5	W033	4.04	4.08	4.45
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W033; W034	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	4	4	100	0.0000785 JT	0.000109 JT	W034	0.0000895	0.0000853 J	0.000106 J	0.0000785 JT	0.000109 JT	W034	0.0000895	0.0000853 J	0.000106 J
Total PCBs	XAD Filter - particulate	µg/L	4	4	100	0.0000906 JT	0.000122 JT	W033	0.000102	0.0000978 J	0.000119 J	0.0000906 JT	0.000122 JT	W033	0.000102	0.0000978 J	0.000119 J
Total PCBs	XAD Column+Filter - total	µg/L	4	4	100	0.000172 J	0.000204 J	W033	0.000192	0.000195 J	0.000203 J	0.000172 J	0.000204 J	W033	0.000192	0.000195 J	0.000203 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	2	2	100	0.00000179 T	0.00000533 T	W033	0.00000356	0.00000356	0.00000515	0.00000179 T	0.00000533 T	W033	0.00000356	0.00000356	0.00000515
Total PCDD/Fs	XAD Filter - particulate	µg/L	2	2	100	0.0000249 JT	0.0000293 T	W033	0.0000271	0.0000271 J	0.0000291 J	0.0000249 JT	0.0000293 T	W033	0.0000271	0.0000271 J	0.0000291 J
Total PCDD/Fs	XAD Column+Filter - total	µg/L	2	2	100	0.0000267 J	0.0000346	W033	0.0000307	0.0000307 J	0.0000342 J	0.0000267 J	0.0000346	W033	0.0000307	0.0000307 J	0.0000342 J
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	2	2	100	0.00000000274 T	0.0000000143 JT	W033	0.00000000852	0.00000000852 J	0.0000000137 J	0.00000000274 T	0.0000000143 JT	W033	0.00000000852	0.00000000852 J	0.0000000137 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	2	2	100	0.0000000607 JT	0.0000000813 JT	W033	0.000000071	0.000000071 J	0.0000000803 J	0.0000000607 JT	0.0000000813 JT	W033	0.000000071	0.000000071 J	0.0000000803 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	2	2	100	0.000000075 J	0.000000084 J	W033	0.0000000795	0.0000000795 J	0.0000000836 J	0.000000075 J	0.000000084 J	W033	0.0000000795	0.0000000795 J	0.0000000836 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	4	2	50	0.00000216 J	0.00000259 J	W033	0.00000238	0.00000238 J	0.00000257 J	0.00000182 U	0.00000259 J	W033	0.00000172	0.0000017 J	0.00000253 J
Aldrin	XAD Filter - particulate	µg/L	4	2	50	0.000000514 J	0.00000148 J	W033	0.000000997	0.000000997 J	0.00000143 J	0.000000514 J	0.00000148 J	W033	0.000000776	0.00000059 J	0.00000136 J
Aldrin	XAD Column+Filter - total	µg/L	4	3	75	0.000000514 J	0.00000407 J	W033	0.00000225	0.00000216 J	0.00000388 J	0.000000514 J	0.00000407 J	W033	0.00000199	0.0000017 J	0.00000378 J
Dieldrin	XAD Column - dissolved	µg/L	4	4	100	0.000105	0.000158	W033	0.000133	0.000134	0.000157	0.000105	0.000158	W033	0.000133	0.000134	0.000157
Dieldrin	XAD Filter - particulate	µg/L	4	4	100	0.00000867 J	0.0000324	W033	0.00002	0.0000194 J	0.0000319	0.00000867 J	0.0000324	W033	0.00002	0.0000194 J	0.0000319
Dieldrin	XAD Column+Filter - total	µg/L	4	4	100	0.000115 J	0.00019	W033	0.000152	0.000152 J	0.000189	0.000115 J	0.00019	W033	0.000152	0.000152 J	0.000189
Total chlordanes	XAD Column - dissolved	µg/L	4	4	100	0.0000351 JT	0.0000495 JT	W033	0.000042	0.0000417 J	0.0000489 J	0.0000351 JT	0.0000495 JT	W033	0.000042	0.0000417 J	0.0000489 J
Total chlordanes	XAD Filter - particulate	µg/L	4	4	100	0.0000115 JT	0.0000364 JT	W033	0.0000236	0.0000233 J	0.0000359 J	0.0000115 JT	0.0000364 JT	W033	0.0000236	0.0000233 J	0.0000359 J
Total chlordanes	XAD Column+Filter - total	µg/L	4	4	100	0.0000466 J	0.0000859 J	W033	0.0000656	0.000065 J	0.0000848 J	0.0000466 J	0.0000859 J	W033	0.0000656	0.000065 J	0.0000848 J
DDx	XAD Column - dissolved	µg/L	4	4	100	0.000119 JT	0.000208 JT	W033	0.000162	0.000161 J	0.000204 J	0.000119 JT	0.000208 JT	W033	0.000162	0.000161 J	0.000204 J
DDx	XAD Filter - particulate	µg/L	4	4	100	0.000155 JT	0.000416 JT	W033	0.000272	0.000258 J	0.000406 J	0.000155 JT	0.000416 JT	W033	0.000272	0.000258 J	0.000406 J
DDx	XAD Column+Filter - total	µg/L	4	4	100	0.000289 J	0.000624 J	W033	0.000434	0.000412 J	0.00061 J	0.000289 J	0.000624 J	W033	0.000434	0.000412 J	0.00061 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	2	2	100	0.00606 JT	0.00608 JT	W033	0.00607	0.00607 J	0.00608 J	0.00606 JT	0.00608 JT	W033	0.00607	0.00607 J	0.00608 J
Total PAHs	XAD Filter - particulate	µg/L	2	2	100	0.00542 JT	0.0066 JT	W033	0.00601	0.00601 J	0.00654 J	0.00542 JT	0.0066 JT	W033	0.00601	0.00601 J	0.00654 J
Total PAHs	Peristaltic - total	µg/L	6	1	17	0.0047 JT	0.0047 JT	W033	0.0047	0.0047 JT	0.0047 JT	0.0047 JT	0.013 UT	W033; W034	0.0062	0.0065 U	0.0065 U
Total PAHs	XAD Column+Filter - total	µg/L	2	2	100	0.0115 J	0.0127 J	W033	0.0121	0.0121 J	0.0126 J	0.0115 J	0.0127 J	W033	0.0121	0.0121 J	0.0126 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	6	1	17	0.98 J	0.98 J	W033	0.98	0.98 J	0.98 J	0.4 U	0.98 J	W033	0.419	0.323 U	0.848 J
RM 08<09																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.201 J	0.208 J	W036	0.205	0.205 J	0.208 J	0.201 J	0.208 J	W036	0.205	0.205 J	0.208 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.158 J	0.176 J	W036	0.167	0.167 J	0.175 J	0.158 J	0.176 J	W036	0.167	0.167 J	0.175 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.366 JT	0.377 J	W036	0.372	0.372 J	0.376 J	0.366 JT	0.377 J	W036	0.372	0.372 J	0.376 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.31 U	0.39 U	W036	0.175	0.175 U	0.193 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	1.62	1.7	W036	1.66	1.66	1.7	1.62	1.7	W036	1.66	1.66	1.7
Chromium	Peristaltic - total	µg/L	2	2	100	1.62	1.7 T	W036	1.66	1.66	1.7	1.62	1.7 T	W036	1.66	1.66	1.7
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.65	0.68	W036	0.665	0.665	0.679	0.65	0.68	W036	0.665	0.665	0.679
Copper	Peristaltic - particulate	µg/L	2	2	100	2.04	2.06	W036	2.05	2.05	2.06	2.04	2.06	W036	2.05	2.05	2.06
Copper	Peristaltic - total	µg/L	2	2	100	2.71	2.72 T	W036	2.72	2.72	2.72	2.71	2.72 T	W036	2.72	2.72	2.72
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	1.5 U	1.9 U	W036	0.85	0.85 U	0.94 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	5.5	5.55	W036	5.53	5.53	5.55	5.5	5.55	W036	5.53	5.53	5.55
Zinc	Peristaltic - total	µg/L	2	2	100	5.5	5.55 T	W036	5.53	5.53	5.55	5.5	5.55 T	W036	5.53	5.53	5.55
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W036	0.0003	0.0003 U	0.0003 U

Table 5.4-7d. Summary Statistics for Indicator Contaminants in Surface Water, High-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000116 JT	0.000137 JT	W036	0.000127	0.000127 J	0.000136 J	0.000116 JT	0.000137 JT	W036	0.000127	0.000127 J	0.000136 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000165 JT	0.000223 JT	W036	0.000194	0.000194 J	0.00022 J	0.000165 JT	0.000223 JT	W036	0.000194	0.000194 J	0.00022 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000302 J	0.000339 J	W036	0.000321	0.000321 J	0.000337 J	0.000302 J	0.000339 J	W036	0.000321	0.000321 J	0.000337 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00084 U	0.00099 U	W036	0.000458	0.000458 U	0.000491 U
Dieldrin	Peristaltic - total	µg/L	2	1	50	0.0012 NJ	0.0012 NJ	W036	0.0012	0.0012 NJ	0.0012 NJ	0.0004 U	0.0012 NJ	W036	0.0007	0.0007 J	0.00115 J
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00073 UT	0.00073 UT	W036	0.000365	0.000365 U	0.000365 U
DDx	Peristaltic - total	µg/L	2	2	100	0.0003 JT	0.00049 JT	W036	0.000395	0.000395 J	0.000481 J	0.0003 JT	0.00049 JT	W036	0.000395	0.000395 J	0.000481 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	2	100	0.018 JT	0.27 JT	W036	0.144	0.144 J	0.257 J	0.018 JT	0.27 JT	W036	0.144	0.144 J	0.257 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	1	50	2.8 J	2.8 J	W036	2.8	2.8 J	2.8 J	0.56 U	2.8 J	W036	1.54	1.54 J	2.67 J
RM 09<10																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.211 J	0.224 J	W037	0.218	0.218 J	0.223 J	0.211 J	0.224 J	W037	0.218	0.218 J	0.223 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.094 J	0.145 J	W037	0.12	0.12 J	0.142 J	0.094 J	0.145 J	W037	0.12	0.12 J	0.142 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.318 J	0.356 J	W037	0.337	0.337 J	0.354 J	0.318 J	0.356 J	W037	0.337	0.337 J	0.354 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.32 U	0.36 U	W037	0.17	0.17 U	0.179 U
Chromium	Peristaltic - particulate	µg/L	2	2	100	1.08	1.17	W037	1.13	1.13	1.17	1.08	1.17	W037	1.13	1.13	1.17
Chromium	Peristaltic - total	µg/L	2	2	100	1.08	1.17	W037	1.13	1.13	1.17	1.08	1.17	W037	1.13	1.13	1.17
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.55	0.73	W037	0.64	0.64	0.721	0.55	0.73	W037	0.64	0.64	0.721
Copper	Peristaltic - particulate	µg/L	2	2	100	1.35	1.41	W037	1.38	1.38	1.41	1.35	1.41	W037	1.38	1.38	1.41
Copper	Peristaltic - total	µg/L	2	2	100	1.96	2.08	W037	2.02	2.02	2.07	1.96	2.08	W037	2.02	2.02	2.07
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	1.3 U	3 U	W037	1.08	1.08 U	1.46 U
Zinc	Peristaltic - particulate	µg/L	2	2	100	4.4	5.3	W037	4.85	4.85	5.26	4.4	5.3	W037	4.85	4.85	5.26
Zinc	Peristaltic - total	µg/L	2	2	100	4.4	5.3	W037	4.85	4.85	5.26	4.4	5.3	W037	4.85	4.85	5.26
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W037	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000146 JT	0.000154 JT	W037	0.00015	0.00015 J	0.000154 J	0.000146 JT	0.000154 JT	W037	0.00015	0.00015 J	0.000154 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000186 JT	0.000225 JT	W037	0.000206	0.000206 J	0.000223 J	0.000186 JT	0.000225 JT	W037	0.000206	0.000206 J	0.000223 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.00034 J	0.000371 J	W037	0.000356	0.000356 J	0.000369 J	0.00034 J	0.000371 J	W037	0.000356	0.000356 J	0.000369 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00069 U	0.00088 U	W037	0.000393	0.000393 U	0.000435 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W037	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00073 UT	0.00073 UT	W037	0.000365	0.000365 U	0.000365 U
DDx	Peristaltic - total	µg/L	2	2	100	0.00074 NJT	0.00205 NJT	W037	0.0014	0.0014 J	0.00198 J	0.00074 NJT	0.00205 NJT	W037	0.0014	0.0014 J	0.00198 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W037	0.0065	0.0065 U	0.0065 U
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.41 U	0.78 U	W037	0.298	0.298 U	0.381 U

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - River Mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-8. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (Transect Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	23	20	87	0.19	0.6	W025M	0.419	0.43	0.581	0.19	0.6	W025M	0.39	0.402	0.574
Arsenic	Peristaltic - particulate	µg/L	23	23	100	0.01	0.51	W005	0.11	0.055	0.457	0.01	0.51	W005	0.11	0.055	0.457
Arsenic	Peristaltic - total	µg/L	23	23	100	0.349 T	0.64 T	W025E	0.474	0.46	0.605	0.349 T	0.64 T	W025E	0.474	0.46	0.605
Chromium	Peristaltic - dissolved	µg/L	23	8	35	0.12 J	0.29	W011	0.215	0.22 J	0.28	0.12 J	0.29	W011	0.15	0.125 U	0.26
Chromium	Peristaltic - particulate[d]	µg/L	23	22	96	0	1.09	W005	0.352	0.363	0.548	0	1.09	W005	0.343	0.355	0.546
Chromium	Peristaltic - total	µg/L	23	21	91	0.29	1.09	W005	0.436	0.38	0.61	0.29	1.09	W005	0.415	0.38	0.604
Copper	Peristaltic - dissolved	µg/L	23	23	100	0.45	0.83 J	W011	0.678	0.68	0.82	0.45	0.83 J	W011	0.678	0.68	0.82
Copper	Peristaltic - particulate	µg/L	23	23	100	0.14	0.78	W005	0.373	0.35	0.617 J	0.14	0.78	W005	0.373	0.35	0.617 J
Copper	Peristaltic - total	µg/L	23	23	100	0.68	1.55	W005	1.05	1.06	1.41 J	0.68	1.55	W005	1.05	1.06	1.41 J
Zinc	Peristaltic - dissolved	µg/L	23	9	39	1.4	2.2	W023	1.75	1.75	2.19	1.4	7.4 U	W025W	1.48	1.35 U	2.2
Zinc	Peristaltic - particulate	µg/L	23	23	100	0.14	6.1	W023W	2.38	2.6	4.47	0.14	6.1	W023W	2.38	2.6	4.47
Zinc	Peristaltic - total	µg/L	23	23	100	2.1	6.1	W023W	3.07	2.83	4.47	2.1	6.1	W023W	3.07	2.83	4.47
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	23	0	0	--	--	--	--	--	--	0.0006 UJ	0.0071 U	W005; W011; W023	0.000744	0.0003 U	0.00355 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	23	23	100	0.0000424 JT	0.000472 JT	W005	0.000283	0.00028 JT	0.000465 J	0.0000424 JT	0.000472 JT	W005	0.000283	0.00028 JT	0.000465 J
Total PCBs	XAD Filter - particulate	µg/L	23	23	100	0.0000135 JT	0.000663 JT	W023E	0.000205	0.000171 JT	0.000561 J	0.0000135 JT	0.000663 JT	W023E	0.000205	0.000171 JT	0.000561 J
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UT	0.0026 UT	W005	0.00127	0.00125 UT	0.0013 U
Total PCBs	XAD Column+Filter - total	µg/L	23	23	100	0.000159 J	0.00095 J	W005	0.000488	0.000432 J	0.00095 J	0.000159 J	0.00095 J	W005	0.000488	0.000432 J	0.00095 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	23	23	100	0.00000049 T	0.00000583 JT	W023W	0.00000224	0.00000186 JT	0.00000403 J	0.00000049 T	0.00000583 JT	W023W	0.00000224	0.00000186 JT	0.00000403 J
Total PCDD/Fs	XAD Filter - particulate	µg/L	23	23	100	0.00000217 JT	0.0000507 T	W005	0.0000214	0.0000228 T	0.0000491	0.00000217 JT	0.0000507 T	W005	0.0000214	0.0000228 T	0.0000491
Total PCDD/Fs	XAD Column+Filter - total	µg/L	23	23	100	0.0000059 J	0.0000516 J	W005	0.0000236	0.0000239	0.0000513	0.0000059 J	0.0000516 J	W005	0.0000236	0.0000239	0.0000513
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	23	23	100	0.000000000558 T	0.0000000214 JT	W025M	0.00000000754	0.0000000051 JT	0.000000017 J	0.000000000558 T	0.0000000214 JT	W025M	0.00000000754	0.0000000051 JT	0.000000017 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	23	23	100	0.00000000419 JT	0.000000317 JT	W005	0.0000000725	0.0000000589 JT	0.00000019 J	0.00000000419 JT	0.000000317 JT	W005	0.0000000725	0.0000000589 JT	0.00000019 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	23	23	100	0.0000000181 J	0.000000327 J	W005	0.00000008	0.0000000643 J	0.000000193 J	0.0000000181 J	0.000000327 J	W005	0.00000008	0.0000000643 J	0.000000193 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	23	20	87	0.000000646 J	0.00000446 J	W005	0.00000227	0.00000219 J	0.00000411 J	0.000000341 UJ	0.00000446 J	W005	0.00000203	0.00000198 J	0.00000401 J
Aldrin	XAD Filter - particulate	µg/L	23	16	70	0.000000107 J	0.00000224 J	W011	0.000000803	0.00000055 J	0.00000218 J	0.000000107 J	0.00000526 U	W025E	0.000000737	0.000000451 J	0.00000223 J
Aldrin	XAD Column+Filter - total	µg/L	23	21	91	0.000000296 J	0.00000662 J	W005	0.00000278	0.00000274 J	0.00000505 J	0.000000296 J	0.00000662 J	W005	0.00000257	0.00000231 J	0.00000501 J
Dieldrin	XAD Column - dissolved	µg/L	23	23	100	0.0000143	0.0000444	W011	0.0000375	0.0000392	0.0000442	0.0000143	0.0000444	W011	0.0000375	0.0000392	0.0000442
Dieldrin	XAD Filter - particulate	µg/L	23	13	57	0.000000989 J	0.00000526 J	W005	0.00000265	0.00000243 J	0.00000514 J	0.000000192 UJ	0.00000526 J	W005	0.00000193	0.00000187 U	0.0000049 J
Dieldrin	XAD Column+Filter - total	µg/L	23	23	100	0.0000167 J	0.0000487 J	W005	0.000039	0.0000405 J	0.0000469 J	0.0000167 J	0.0000487 J	W005	0.000039	0.0000405 J	0.0000469 J
Total chlordanes	XAD Column - dissolved	µg/L	23	23	100	0.00000787 JT	0.0000401 JT	W005	0.0000253	0.0000259 JT	0.0000335 J	0.00000787 JT	0.0000401 JT	W005	0.0000253	0.0000259 JT	0.0000335 J
Total chlordanes	XAD Filter - particulate	µg/L	23	20	87	0.000000101 JT	0.0000187 JT	W005	0.0000075	0.00000633 J	0.0000179 J	0.000000101 JT	0.0000187 JT	W005	0.00000715	0.00000568 JT	0.0000174 J
Total chlordanes	XAD Column+Filter - total	µg/L	23	23	100	0.0000134 J	0.0000588 J	W005	0.0000318	0.0000307 J	0.0000475 J	0.0000134 J	0.0000588 J	W005	0.0000318	0.0000307 J	0.0000475 J
DDx	XAD Column - dissolved	µg/L	23	23	100	0.0000124 JT	0.000311 JT	W027	0.000142	0.0000949 T	0.000308 J	0.0000124 JT	0.000311 JT	W027	0.000142	0.0000949 T	0.000308 J
DDx	XAD Filter - particulate	µg/L	23	23	100	0.0000104 JT	0.000274 JT	W005	0.0000758	0.0000388 JT	0.000256 J	0.0000104 JT	0.000274 JT	W005	0.0000758	0.0000388 JT	0.000256 J
DDx	XAD Column+Filter - total	µg/L	23	23	100	0.0000428 J	0.000546 J	W005	0.000218	0.000176 J	0.000496 J	0.0000428 J	0.000546 J	W005	0.000218	0.000176 J	0.000496 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	23	23	100	0.00346 JT	0.0655 JT	W023	0.0235	0.0274 JT	0.0482 J	0.00346 JT	0.0655 JT	W023	0.0235	0.0274 JT	0.0482 J
Total PAHs	XAD Filter - particulate	µg/L	23	23	100	0.000482 T	0.0359 JT	W005	0.00819	0.0045 JT	0.0303 J	0.000482 T	0.0359 JT	W005	0.00819	0.0045 JT	0.0303 J
Total PAHs	Peristaltic - total	µg/L	23	14	61	0.01 JT	0.046 JT	W027	0.024	0.021 J	0.0435 J	0.0074 UT	0.046 JT	W027	0.0173	0.015 JT	0.0416 J
Total PAHs	XAD Column+Filter - total	µg/L	23	23	100	0.00397 J	0.0661 J	W005	0.0317	0.035 J	0.0654 J	0.00397 J	0.0661 J	W005	0.0317	0.035 J	0.0654 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	XAD Column - dissolved	µg/L	9	3	33	0.00361 J	0.0171	W023	0.00901	0.00631 J	0.016 J	0.00312 U	0.0171	W023	0.00439	0.00247 U	0.0128 J
Bis(2-ethylhexyl) phthalate	XAD Filter - particulate	µg/L	9	3	33	0.00476 J	0.00589 J	W023	0.00538	0.00548 J	0.00585 J	0.00351 U	0.00647 U	W023	0.00366	0.0032 U	0.00573 J
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	23	4	17	0.7	1.5	W025E	1.18	1.25	1.47	0.12 U	1.5	W025E	0.358	0.17 U	1.29
Bis(2-ethylhexyl) phthalate	XAD Column+Filter - total	µg/L	9	3	33	0.00909 J	0.023 J	W023	0.0144	0.0111 J	0.0218 J	0.00432 U	0.023 J	W023	0.00671	0.0032 U	0.0182 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-9a. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	65	65	100	0.249	0.64	W001	0.384	0.372	0.505	0.249	0.64	W001	0.384	0.372	0.505
Arsenic	Peristaltic - particulate	µg/L	65	65	100	0.02	0.175	W022	0.0679	0.065	0.104	0.02	0.175	W022	0.0679	0.065	0.104
Arsenic	Peristaltic - total	µg/L	65	65	100	0.328 T	0.745 T	W001	0.451	0.435	0.624	0.328 T	0.745 T	W001	0.451	0.435	0.624
Chromium	Peristaltic - dissolved	µg/L	65	36	55	0.1 J	0.33	W004	0.171	0.16 J	0.283	0.1 J	0.33	W004	0.135	0.12 J	0.248
Chromium	Peristaltic - particulate[d]	µg/L	65	48	74	0 J	0.625	W001	0.243	0.195 J	0.57	0 J	0.625	W001	0.231	0.19 J	0.548
Chromium	Peristaltic - total	µg/L	65	45	69	0.2	0.91	W004	0.38	0.33	0.62	0.2	0.91	W004	0.323	0.3	0.598
Copper	Peristaltic - dissolved	µg/L	65	63	97	0.37	1.64 J	W022	0.711	0.66	1.1	0.37	1.64 J	W022	0.697	0.65	1.09
Copper	Peristaltic - particulate[d]	µg/L	65	65	100	0 J	1.14	W004	0.451	0.4	0.972	0 J	1.14	W004	0.451	0.4	0.972
Copper	Peristaltic - total	µg/L	65	65	100	0.685 T	2.09	W004	1.13	1.02	1.73 J	0.685 T	2.09	W004	1.13	1.02	1.73 J
Zinc	Peristaltic - dissolved	µg/L	65	58	89	0.9 J	41.9	W022	2.82	1.8	4.7 J	0.9 J	41.9	W022	2.6	1.8 J	4.62 J
Zinc	Peristaltic - particulate[d]	µg/L	65	65	100	0	16	W022	1.39	0.9	3.36 J	0	16	W022	1.39	0.9	3.36 J
Zinc	Peristaltic - total	µg/L	65	64	98	1.65 T	57.9	W022	3.84	2.65	5.93 J	1.65 T	57.9	W022	3.8	2.6	5.88 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	65	6	9	0.00095 J	0.0023 J	W004	0.00127	0.0011 J	0.00203 J	0.0006 U	0.0071 U	W001; W002; W003; W004; W006; W007; W008; W009; W010; W012; W013-1; W013-2; W014; W015; W016-1; W016-2; W017; W018; W019; W020: W021: W022	0.00151	0.0003 U	0.00355 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	15	15	100	0.000137 JT	0.00242 JT	W013-1	0.000809	0.000581 JT	0.00224 J	0.000137 JT	0.00242 JT	W013-1	0.000809	0.000581 JT	0.00224 J
Total PCBs	XAD Filter - particulate	µg/L	14	14	100	0.000201 JT	0.00956 JT	W013-1	0.00187	0.000908 J	0.00719 J	0.000201 JT	0.00956 JT	W013-1	0.00187	0.000908 J	0.00719 J
Total PCBs	Peristaltic - total	µg/L	50	6	12	0.00467 JT	0.0154 T	W014	0.00946	0.0086 J	0.015 J	0.0025 UJT	0.0154 T	W014	0.00225	0.00125 U	0.00883 J
Total PCBs	XAD Column+Filter - total	µg/L	15	15	100	0.000375 J	0.012 J	W013-1	0.00256	0.00169 J	0.00918 J	0.000375 J	0.012 J	W013-1	0.00256	0.00169 J	0.00918 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	9	9	100	0.000000897 JT	0.0000125 JT	W013-2	0.00000401	0.00000296 T	0.0000101 J	0.000000897 JT	0.0000125 JT	W013-2	0.00000401	0.00000296 T	0.0000101 J
Total PCDD/Fs	XAD Filter - particulate	µg/L	9	9	100	0.0000263 T	0.000156 T	W013-1	0.0000593	0.0000474 T	0.000125	0.0000263 T	0.000156 T	W013-1	0.0000593	0.0000474 T	0.000125
Total PCDD/Fs	XAD Column+Filter - total	µg/L	9	9	100	0.0000307	0.000162	W013-1	0.0000633	0.0000504	0.00013	0.0000307	0.000162	W013-1	0.0000633	0.0000504	0.00013
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	9	9	100	0.00000000106 T	0.0000000382 JT	W013-2	0.0000000163	0.0000000122 JT	0.0000000363 J	0.00000000106 T	0.0000000382 JT	W013-2	0.0000000163	0.0000000122 JT	0.0000000363 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	9	9	100	0.000000109 JT	0.00000091 JT	W013-2	0.000000327	0.000000333 JT	0.000000734 J	0.000000109 JT	0.00000091 JT	W013-2	0.000000327	0.000000333 JT	0.000000734 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	9	9	100	0.00000011 J	0.000000917 J	W013-2	0.000000343	0.000000357 J	0.000000751 J	0.00000011 J	0.000000917 J	W013-2	0.000000343	0.000000357 J	0.000000751 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	15	12	80	0.000000537 J	0.00000327 J	W015	0.00000123	0.00000117 J	0.00000226 J	0.000000418 UJ	0.00000327 J	W015	0.0000011	0.000000972 J	0.00000199 J
Aldrin	XAD Filter - particulate	µg/L	15	14	93	0.000000122 J	0.000013	W015	0.00000147	0.000000518 J	0.00000537 J	0.000000122 J	0.000013	W015	0.00000138	0.000000406 J	0.00000478 J
Aldrin	Peristaltic - total	µg/L	52	0	0	--	--	--	--	--	--	0.000472 UJ	0.000538 UJ	W002	0.000248	0.000245 U	0.000263 UJ
Aldrin	XAD Column+Filter - total	µg/L	15	15	100	0.00000031 J	0.0000163 J	W015	0.00000236	0.0000014 J	0.00000657 J	0.00000031 J	0.0000163 J	W015	0.00000236	0.0000014 J	0.00000657 J
Dieldrin	XAD Column - dissolved	µg/L	15	15	100	0.0000227	0.0000468	W015	0.0000342	0.0000349	0.0000449	0.0000227	0.0000468	W015	0.0000342	0.0000349	0.0000449
Dieldrin	XAD Filter - particulate	µg/L	15	12	80	0.00000024 J	0.0000157	W015	0.00000406	0.00000286 J	0.0000108 J	0.00000024 J	0.0000157	W015	0.00000344	0.00000214 J	0.0000095 J
Dieldrin	Peristaltic - total	µg/L	52	0	0	--	--	--	--	--	--	0.000472 UJ	0.000538 UJ	W002	0.000248	0.000245 U	0.000263 UJ
Dieldrin	XAD Column+Filter - total	µg/L	15	15	100	0.0000227	0.0000625	W015	0.0000374	0.0000374 J	0.0000544 J	0.0000227	0.0000625	W015	0.0000374	0.0000374 J	0.0000544 J
Total chlordanes	XAD Column - dissolved	µg/L	15	15	100	0.0000126 JT	0.0000555 JT	W015	0.0000219	0.0000206 JT	0.0000353 J	0.0000126 JT	0.0000555 JT	W015	0.0000219	0.0000206 JT	0.0000353 J
Total chlordanes	XAD Filter - particulate	µg/L	15	15	100	0.000000936 JT	0.000185 JT	W015	0.00002	0.00000707 JT	0.0000675 J	0.000000936 JT	0.000185 JT	W015	0.00002	0.00000707 JT	0.0000675 J
Total chlordanes	Peristaltic - total	µg/L	52	1	2	0.00212 JT	0.00212 JT	W002	0.00212	0.00212 JT	0.00212 JT	0.000472 UJT	0.00212 JT	W002	0.000284	0.000245 U	0.000263 UJ
Total chlordanes	XAD Column+Filter - total	µg/L	15	15	100	0.0000173 J	0.000241 J	W015	0.0000419	0.0000272 J	0.000102 J	0.0000173 J	0.000241 J	W015	0.0000419	0.0000272 J	0.000102 J
DDx	XAD Column - dissolved	µg/L	15	15	100	0.0000254 JT	0.00346 T	W015	0.000819	0.0000778 JT	0.00312	0.0000254 JT	0.00346 T	W015	0.000819	0.0000778 JT	0.00312
DDx	XAD Filter - particulate	µg/L	15	15	100	0.00000763 JT	0.00679 T	W016-1	0.00127	0.0000514 JT	0.00498	0.00000763 JT	0.00679 T	W016-1	0.00127	0.0000514 JT	0.00498
DDx	Peristaltic - total	µg/L	52	4	8	0.000693 JT	0.0187 NJT	W001	0.00535	0.000995	0.0161 J	0.000472 UJT	0.0187 NJT	W001	0.00064	0.000249 UJ	0.000759 J
DDx	XAD Column+Filter - total	µg/L	15	15	100	0.0000492 J	0.00976	W016-1	0.00209	0.000103 J	0.0083	0.0000492 J	0.00976	W016-1	0.00209	0.000103 J	0.0083
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	15	15	100	0.00748 JT	0.169 JT	W015	0.0395	0.0219 JT	0.0978 J	0.00748 JT	0.169 JT	W015	0.0395	0.0219 JT	0.0978 J
Total PAHs	XAD Filter - particulate	µg/L	15	15	100	0.000916 T	0.0619 T	W015	0.0157	0.00686 T	0.0452	0.000916 T	0.0619 T	W015	0.0157	0.00686 T	0.0452
Total PAHs	Peristaltic - total	µg/L	65	49	75	0.0026 JT	2.46 JT	W012	0.106	0.0177 JT	0.205 J	0.0026 JT	2.46 JT	W012	0.0812	0.0123 JT	0.0793 J
Total PAHs	XAD Column+Filter - total	µg/L	15	15	100	0.0125 J	0.231 J	W015	0.0552	0.0275 J	0.139 J	0.0125 J	0.231 J	W015	0.0552	0.0275 J	0.139 J

Table 5.4-9a. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Phthalates																	
Bis(2-ethylhexyl) phthalate	XAD Column - dissolved	µg/L	15	5	33	0.00351 J	0.0198	W013-1	0.00874	0.00435 J	0.0183	0.00338 U	0.0198	W013-1	0.00433	0.00272 U	0.0144
Bis(2-ethylhexyl) phthalate	XAD Filter - particulate	µg/L	15	5	33	0.00424 J	0.033	W015	0.0106	0.0052 J	0.0276 J	0.00257 U	0.033	W015	0.0057	0.00416 U	0.0141 J
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	64	0	0	--	--	--	--	--	--	0.27 U	4.1 U	W017	0.273	0.148 UJ	0.706 U
Bis(2-ethylhexyl) phthalate	XAD Column+Filter - total	µg/L	15	6	40	0.00775 J	0.033	W015	0.0161	0.011 J	0.031 J	0.00543 U	0.033	W015	0.00855	0.00428 U	0.0274 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-9b. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
RM 01.9<03																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.286	0.64	W001	0.428	0.359	0.612	0.286	0.64	W001	0.428	0.359	0.612
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.042	0.105	W001	0.0708	0.0655	0.101	0.042	0.105	W001	0.0708	0.0655	0.101
Arsenic	Peristaltic - total	µg/L	3	3	100	0.328 T	0.745 T	W001	0.499	0.425 T	0.713	0.328 T	0.745 T	W001	0.499	0.425 T	0.713
Chromium	Peristaltic - dissolved	µg/L	3	2	67	0.13 J	0.22 T	W001	0.175	0.175 J	0.216 J	0.13 J	0.22 T	W001	0.14	0.13 J	0.211 J
Chromium	Peristaltic - particulate	µg/L	3	3	100	0.175 J	0.625	W001	0.353	0.26	0.589	0.175 J	0.625	W001	0.353	0.26	0.589
Chromium	Peristaltic - total	µg/L	3	3	100	0.305 T	0.625 T	W001	0.47	0.48 T	0.611	0.305 T	0.625 T	W001	0.47	0.48 T	0.611
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.45	0.84	W001	0.652	0.665 T	0.823	0.45	0.84	W001	0.652	0.665 T	0.823
Copper	Peristaltic - particulate	µg/L	3	3	100	0.35	0.85	W001	0.537	0.41	0.806	0.35	0.85	W001	0.537	0.41	0.806
Copper	Peristaltic - total	µg/L	3	3	100	0.8 T	1.69 T	W001	1.19	1.08 T	1.63	0.8 T	1.69 T	W001	1.19	1.08 T	1.63
Zinc	Peristaltic - dissolved	µg/L	3	2	67	1.4	1.4	W001	1.4	1.4	1.4	1.21 UJ	1.4	W001	1.14	1.4	1.4
Zinc	Peristaltic - particulate	µg/L	3	3	100	0.25	3.47 J	W001	1.54	0.9	3.21 J	0.25	3.47 J	W001	1.54	0.9	3.21 J
Zinc	Peristaltic - total	µg/L	3	3	100	1.65 T	3.47 JT	W001	2.47	2.3 T	3.35 J	1.65 T	3.47 JT	W001	2.47	2.3 T	3.35 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W001	0.00172	0.0013 U	0.00333 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	1	33	0.0063 JT	0.0063 JT	W001	0.0063	0.0063 JT	0.0063 JT	0.0025 UJT	0.0063 JT	W001	0.00293	0.00125 UT	0.0058 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000472 UJ	0.00049 U	W001	0.000241	0.000241 UJ	0.000245 UJ
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000472 UJ	0.00049 U	W001	0.000241	0.000241 UJ	0.000245 UJ
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000472 UJT	0.00049 UT	W001	0.000241	0.000241 UJT	0.000245 UJ
DDx	Peristaltic - total	µg/L	3	1	33	0.0187 NJT	0.0187 NJT	W001	0.0187	0.0187 NJT	0.0187 NJT	0.000472 UJT	0.0187 NJT	W001	0.00639	0.000241 UJT	0.0169 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	3	100	0.0101 JT	0.012 JT	W001	0.011	0.0109 JT	0.0119 J	0.0101 JT	0.012 JT	W001	0.011	0.0109 JT	0.0119 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.28 U	0.47 U	W001	0.175	0.15 U	0.227 U
RM 03<04																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.315	0.41	W004	0.377	0.406	0.41	0.315	0.41	W004	0.377	0.406	0.41
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.07	0.083	W004	0.076	0.075	0.0822	0.07	0.083	W004	0.076	0.075	0.0822
Arsenic	Peristaltic - total	µg/L	3	3	100	0.39	0.489	W004	0.453	0.48	0.488	0.39	0.489	W004	0.453	0.48	0.488
Chromium	Peristaltic - dissolved	µg/L	3	2	67	0.13 J	0.33	W004	0.23	0.23 J	0.32 J	0.13 J	0.33	W004	0.18	0.13 J	0.31 J
Chromium	Peristaltic - particulate	µg/L	3	2	67	0.38 J	0.58	W004	0.48	0.48 J	0.57 J	0.38 J	0.58	W004	0.4	0.38 J	0.56 J
Chromium	Peristaltic - total	µg/L	3	2	67	0.51	0.91	W004	0.71	0.71	0.89	0.48 U	0.91	W004	0.553	0.51	0.87
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.61	0.95	W004	0.81	0.87	0.942	0.61	0.95	W004	0.81	0.87	0.942
Copper	Peristaltic - particulate	µg/L	3	3	100	0.51	1.14	W004	0.723	0.52	1.08	0.51	1.14	W004	0.723	0.52	1.08
Copper	Peristaltic - total	µg/L	3	3	100	1.13	2.09	W004	1.53	1.38	2.02	1.13	2.09	W004	1.53	1.38	2.02
Zinc	Peristaltic - dissolved	µg/L	3	3	100	1.88 J	4.3	W004	2.89	2.5	4.12	1.88 J	4.3	W004	2.89	2.5	4.12
Zinc	Peristaltic - particulate	µg/L	3	3	100	1.4 J	4.5	W004	2.6	1.9	4.24	1.4 J	4.5	W004	2.6	1.9	4.24
Zinc	Peristaltic - total	µg/L	3	3	100	3.28 J	8.8	W004	5.49	4.4	8.36	3.28 J	8.8	W004	5.49	4.4	8.36
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	1	33	0.0023 J	0.0023 J	W004	0.0023	0.0023 J	0.0023 J	0.0006 U	0.0071 U	W004	0.00205	0.0023 J	0.00343 J
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	4	3	75	0.00589 JT	0.0136 JT	W004	0.0101	0.0109 T	0.0133 J	0.0025 UJT	0.0136 JT	W004	0.00791	0.0084 J	0.0132 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000485 U	0.000526 UJ	W004	0.00025	0.000246 U	0.000261 UJ
Dieldrin	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000485 U	0.000526 UJ	W004	0.00025	0.000246 U	0.000261 UJ
Total chlordanes	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000485 UT	0.000526 UJT	W004	0.00025	0.000246 U	0.000261 UJ
DDx	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000485 UT	0.000526 UJT	W004	0.00025	0.000246 UJ	0.000261 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	3	100	0.0055 JT	0.0797 JT	W004	0.0334	0.0149 JT	0.0732 J	0.0055 JT	0.0797 JT	W004	0.0334	0.0149 JT	0.0732 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.28 U	0.69 U	W004	0.212	0.15 U	0.326 U
RM 04<05																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	6	6	100	0.315	0.43	W008	0.374	0.374	0.428	0.315	0.43	W008	0.374	0.374	0.428
Arsenic	Peristaltic - particulate	µg/L	6	6	100	0.042	0.0755	W007	0.0582	0.058	0.073	0.042	0.0755	W007	0.0582	0.058	0.073
Arsenic	Peristaltic - total	µg/L	6	6	100	0.381 T	0.48	W007; W008	0.433	0.433	0.48	0.381 T	0.48	W007; W008	0.433	0.433	0.48
Chromium	Peristaltic - dissolved	µg/L	6	2	33	0.13 J	0.14 J	W008	0.135	0.135 J	0.14 J	0.13 J	0.25 U	W008	0.113	0.113 U	0.138 J
Chromium	Peristaltic - particulate	µg/L	6	2	33	0.07 J	0.165 J	W008	0.118	0.118 J	0.16 J	0.07 J	0.37 U	W007	0.144	0.15 U	0.18 J
Chromium	Peristaltic - total	µg/L	6	2	33	0.2 JT	0.305 T	W008	0.253	0.253 J	0.3 J	0.2 JT	0.37 U	W007	0.189	0.17 U	0.279 J
Copper	Peristaltic - dissolved	µg/L	6	6	100	0.46	0.87	W007	0.663	0.65	0.863	0.46	0.87	W007	0.663	0.65	0.863
Copper	Peristaltic - particulate	µg/L	6	6	100	0.23	0.49 J	W007	0.303	0.255 J	0.453 J	0.23	0.49 J	W007	0.303	0.255 J	0.453 J
Copper	Peristaltic - total	µg/L	6	6	100	0.77 T	1.36 J	W007	0.967	0.89	1.29 J	0.77 T	1.36 J	W007	0.967	0.89	1.29 J
Zinc	Peristaltic - dissolved	µg/L	6	6	100	1.5	4.7 J	W008	2.73	2.15 J	4.58 J	1.5	4.7 J	W008	2.73	2.15 J	4.58 J
Zinc	Peristaltic - particulate	µg/L	6	6	100	0.45	1.4 J	W008	0.783	0.65 J	1.3 J	0.45	1.4 J	W008	0.783	0.65 J	1.3 J
Zinc	Peristaltic - total	µg/L	6	6	100	1.95 T	6.1 J	W008	3.52	3 J	5.78 J	1.95 T	6.1 J	W008	3.52	3 J	5.78 J

Table 5.4-9b. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	6	3	50	0.00095 J	0.0012 J	W008	0.00105	0.00099 J	0.00118 J	0.0006 U	0.0071 U	W007; W008	0.00176	0.0011 J	0.00355 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.0025 UT	0.00261 UT	W007	0.00127	0.00125 U	0.0013 U
Pesticides																	
Aldrin	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.000472 U	0.000524 U	W007	0.00025	0.000249 U	0.000261 U
Dieldrin	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.000472 U	0.000524 U	W007	0.00025	0.000249 U	0.000261 U
Total chlordanes	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.000472 UT	0.000524 UT	W007	0.00025	0.000249 U	0.000261 U
DDx	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.000472 UJT	0.000524 UJT	W007	0.00025	0.000249 UJ	0.000261 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	6	5	83	0.0102 JT	0.0751 JT	W008	0.0402	0.0411 JT	0.0716 J	0.0075 UJT	0.0751 JT	W008	0.0341	0.029 J	0.0708 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.29 U	0.44 U	W007; W008	0.171	0.148 U	0.22 U
RM 05<06																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.322	0.46	W010	0.381	0.36	0.45	0.322	0.46	W010	0.381	0.36	0.45
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.058	0.08	W010	0.0657	0.059	0.0779	0.058	0.08	W010	0.0657	0.059	0.0779
Arsenic	Peristaltic - total	µg/L	3	3	100	0.38	0.54	W010	0.446	0.419	0.528	0.38	0.54	W010	0.446	0.419	0.528
Chromium	Peristaltic - dissolved	µg/L	3	1	33	0.14 J	0.14 J	W010	0.14	0.14 J	0.14 J	0.14 J	0.19 U	W010	0.108	0.095 U	0.136 J
Chromium	Peristaltic - particulate	µg/L	3	2	67	0.18 J	0.36	W010	0.27	0.27 J	0.351 J	0.18 J	0.43 U	W010	0.252	0.215 U	0.346
Chromium	Peristaltic - total	µg/L	3	2	67	0.32	0.36	W010	0.34	0.34	0.358	0.32	0.43 U	W010	0.298	0.32	0.356
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.5	0.9 J	W010	0.663	0.59	0.869 J	0.5	0.9 J	W010	0.663	0.59	0.869 J
Copper	Peristaltic - particulate	µg/L	3	3	100	0.27	0.4	W010	0.323	0.3 J	0.39 J	0.27	0.4	W010	0.323	0.3 J	0.39 J
Copper	Peristaltic - total	µg/L	3	3	100	0.86	1.2 J	W010	0.987	0.9	1.17 J	0.86	1.2 J	W010	0.987	0.9	1.17 J
Zinc	Peristaltic - dissolved	µg/L	3	3	100	1.7	4.7	W010	2.8	2 J	4.43 J	1.7	4.7	W010	2.8	2 J	4.43 J
Zinc	Peristaltic - particulate[d]	µg/L	3	3	100	0	0.8 J	W010	0.4	0.4	0.76 J	0	0.8 J	W010	0.4	0.4	0.76 J
Zinc	Peristaltic - total	µg/L	3	3	100	2.1	2.8 J	W010	2.37	2.2	2.74 J	2.1	2.8 J	W010	2.37	2.2	2.74 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W010	0.00138	0.0003 U	0.00323 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UT	0.00267 UT	W010	0.00128	0.00125 UT	0.00133 U
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000476 U	0.0005 U	W010	0.000246	0.00025 U	0.00025 U
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000476 U	0.0005 U	W010	0.000246	0.00025 U	0.00025 U
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000476 UT	0.0005 UT	W010	0.000246	0.00025 UT	0.00025 U
DDx	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000476 UT	0.0005 UJT	W010	0.000246	0.00025 UJT	0.00025 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	1	33	0.0177 JT	0.0177 JT	W010	0.0177	0.0177 JT	0.0177 JT	0.0074 UT	0.0177 JT	W010	0.00837	0.0037 UT	0.0163 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.28 U	4 U	W010	0.853	0.42 U	1.84 U
RM 06<07																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	8	8	100	0.252	0.46	W014	0.336	0.316	0.431	0.252	0.46	W014	0.336	0.316	0.431
Arsenic	Peristaltic - particulate	µg/L	8	8	100	0.043	0.107	W013-2	0.0701	0.0605	0.103	0.043	0.107	W013-2	0.0701	0.0605	0.103
Arsenic	Peristaltic - total	µg/L	8	8	100	0.359	0.52	W014	0.406	0.387	0.49	0.359	0.52	W014	0.406	0.387	0.49
Chromium	Peristaltic - dissolved	µg/L	8	5	62	0.13 J	0.22	W013-2	0.168	0.17 J	0.214 J	0.13 J	0.22	W013-2	0.139	0.13 J	0.21 J
Chromium	Peristaltic - particulate[d]	µg/L	8	6	75	0 J	0.46	W013-2	0.201	0.163 J	0.423	0 J	0.46	W013-2	0.197	0.185 U	0.408
Chromium	Peristaltic - total	µg/L	8	5	62	0.24	0.68	W013-2	0.371	0.31	0.609	0.24	0.68	W013-2	0.304	0.27	0.556
Copper	Peristaltic - dissolved	µg/L	8	6	75	0.45	0.87	W014	0.655	0.61	0.868	0.44 U	0.87	W014	0.553	0.56	0.867
Copper	Peristaltic - particulate	µg/L	8	8	100	0.3	0.98	W013-2	0.609	0.508 J	0.966	0.3	0.98	W013-2	0.609	0.508 J	0.966
Copper	Peristaltic - total	µg/L	8	8	100	0.87	1.48	W013-2	1.1	0.973	1.47 J	0.87	1.48	W013-2	1.1	0.973	1.47 J
Zinc	Peristaltic - dissolved	µg/L	8	6	75	0.9 J	2.3 J	W014	1.68	1.7	2.25 J	0.9 J	2.3 J	W014	1.5	1.5	2.23 J
Zinc	Peristaltic - particulate[d]	µg/L	8	8	100	0	2.91 J	W013-1	1.32	0.95 J	2.91 J	0	2.91 J	W013-1	1.32	0.95 J	2.91 J
Zinc	Peristaltic - total	µg/L	8	7	88	1.65 T	4.7	W013-2	2.75	2.6	4.25 J	1.65 T	4.7	W013-2	2.55	2.45	4.18 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	8	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W013-1; W013-2; W014	0.00152	0.0003 U	0.00355 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	6	6	100	0.000624 JT	0.00242 JT	W013-1	0.00144	0.00139 J	0.00236 J	0.000624 JT	0.00242 JT	W013-1	0.00144	0.00139 J	0.00236 J
Total PCBs	XAD Filter - particulate	µg/L	5	5	100	0.00138 JT	0.00956 JT	W013-1	0.00427	0.00262 T	0.00883 J	0.00138 JT	0.00956 JT	W013-1	0.00427	0.00262 T	0.00883 J
Total PCBs	Peristaltic - total	µg/L	5	1	20	0.0154 T	0.0154 T	W014	0.0154	0.0154 T	0.0154 T	0.0025 UT	0.0154 T	W014	0.00409	0.00125 UT	0.0126
Total PCBs	XAD Column+Filter - total	µg/L	6	6	100	0.00206 J	0.012 J	W013-1	0.00501	0.00293 J	0.011 J	0.00206 J	0.012 J	W013-1	0.00501	0.00293 J	0.011 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	6	6	100	0.000000897 JT	0.0000125 JT	W013-2	0.00000452	0.00000311 J	0.000011 J	0.000000897 JT	0.0000125 JT	W013-2	0.00000452	0.00000311 J	0.000011 J
Total PCDD/Fs	XAD Filter - particulate	µg/L	6	6	100	0.0000263 T	0.000156 T	W013-1	0.0000607	0.0000466	0.00013	0.0000263 T	0.000156 T	W013-1	0.0000607	0.0000466	0.00013
Total PCDD/Fs	XAD Column+Filter - total	µg/L	6	6	100	0.0000307	0.000162	W013-1	0.0000653	0.0000504 J	0.000135 J	0.0000307	0.000162	W013-1	0.0000653	0.0000504 J	0.000135 J

Table 5.4-9b. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	6	6	100	0.00000000106 T	0.0000000382 JT	W013-2	0.0000000109	0.00000000591 J	0.0000000317 J	0.00000000106 T	0.0000000382 JT	W013-2	0.0000000109	0.00000000591 J	0.0000000317 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	6	6	100	0.000000109 JT	0.00000091 JT	W013-2	0.000000287	0.000000121 J	0.000000771 J	0.000000109 JT	0.00000091 JT	W013-2	0.000000287	0.000000121 J	0.000000771 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	6	6	100	0.00000011 J	0.000000917 J	W013-2	0.000000298	0.000000141 J	0.000000779 J	0.00000011 J	0.000000917 J	W013-2	0.000000298	0.000000141 J	0.000000779 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	6	5	83	0.000000537 J	0.00000144 J	W013-2	0.00000105	0.00000119 J	0.00000141 J	0.000000418 UJ	0.00000144 J	W013-2	0.000000908	0.000000991 J	0.0000014 J
Aldrin	XAD Filter - particulate	µg/L	6	6	100	0.000000122 J	0.000000953 J	W013-1	0.000000419	0.00000036 J	0.000000816 J	0.000000122 J	0.000000953 J	W013-1	0.000000419	0.00000036 J	0.000000816 J
Aldrin	Peristaltic - total	µg/L	5	0	0	--	--	--	--	--	--	0.000472 U	0.000526 U	W013-2	0.000246	0.000245 U	0.000259 U
Aldrin	XAD Column+Filter - total	µg/L	6	6	100	0.00000031 J	0.00000214 J	W013-1	0.00000129	0.00000129 J	0.00000205 J	0.00000031 J	0.00000214 J	W013-1	0.00000129	0.00000129 J	0.00000205 J
Dieldrin	XAD Column - dissolved	µg/L	6	6	100	0.0000227	0.00004	W013-1	0.0000307	0.0000296	0.0000393	0.0000227	0.00004	W013-1	0.0000307	0.0000296	0.0000393
Dieldrin	XAD Filter - particulate	µg/L	6	5	83	0.00000024 J	0.00000427 J	W013-1	0.0000022	0.00000214 J	0.00000389 J	0.00000024 J	0.00000427 J	W013-1	0.000002	0.00000207 J	0.00000379 J
Dieldrin	Peristaltic - total	µg/L	5	0	0	--	--	--	--	--	--	0.000472 U	0.000526 U	W013-2	0.000246	0.000245 U	0.000259 U
Dieldrin	XAD Column+Filter - total	µg/L	6	6	100	0.0000227	0.0000443 J	W013-1	0.0000325	0.0000318 J	0.0000426 J	0.0000227	0.0000443 J	W013-1	0.0000325	0.0000318 J	0.0000426 J
Total chlordanes	XAD Column - dissolved	µg/L	6	6	100	0.0000126 JT	0.0000263 JT	W013-2	0.0000176	0.0000162 J	0.0000252 J	0.0000126 JT	0.0000263 JT	W013-2	0.0000176	0.0000162 J	0.0000252 J
Total chlordanes	XAD Filter - particulate	µg/L	6	6	100	0.000000936 JT	0.0000134 JT	W013-1	0.00000585	0.00000505 J	0.0000116 J	0.000000936 JT	0.0000134 JT	W013-1	0.00000585	0.00000505 J	0.0000116 J
Total chlordanes	Peristaltic - total	µg/L	5	0	0	--	--	--	--	--	--	0.000472 UT	0.000526 UT	W013-2	0.000246	0.000245 UT	0.000259 U
Total chlordanes	XAD Column+Filter - total	µg/L	6	6	100	0.0000173 J	0.0000353 J	W013-1	0.0000235	0.0000216 J	0.0000333 J	0.0000173 J	0.0000353 J	W013-1	0.0000235	0.0000216 J	0.0000333 J
DDx	XAD Column - dissolved	µg/L	6	6	100	0.0000254 JT	0.00013 JT	W013-1	0.0000567	0.00004 J	0.000117 J	0.0000254 JT	0.00013 JT	W013-1	0.0000567	0.00004 J	0.000117 J
DDx	XAD Filter - particulate	µg/L	6	6	100	0.00000763 JT	0.000111 JT	W013-1	0.0000416	0.0000305 J	0.0000948 J	0.00000763 JT	0.000111 JT	W013-1	0.0000416	0.0000305 J	0.0000948 J
DDx	Peristaltic - total	µg/L	5	0	0	--	--	--	--	--	--	0.000472 UT	0.000526 UT	W013-2	0.000246	0.000245 UT	0.000259 U
DDx	XAD Column+Filter - total	µg/L	6	6	100	0.0000492 J	0.000241 J	W013-1	0.0000982	0.0000754 J	0.000204 J	0.0000492 J	0.000241 J	W013-1	0.0000982	0.0000754 J	0.000204 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	6	6	100	0.0129 JT	0.0344 JT	W013-2	0.0218	0.0218 J	0.0315 J	0.0129 JT	0.0344 JT	W013-2	0.0218	0.0218 J	0.0315 J
Total PAHs	XAD Filter - particulate	µg/L	6	6	100	0.000916 T	0.0105 T	W013-1	0.00468	0.00396 J	0.00928 J	0.000916 T	0.0105 T	W013-1	0.00468	0.00396 J	0.00928 J
Total PAHs	Peristaltic - total	µg/L	8	5	62	0.0026 JT	0.0293 JT	W013-2	0.0149	0.0148 JT	0.0265 J	0.0026 JT	0.0293 JT	W013-2	0.0117	0.0101 J	0.0245 J
Total PAHs	XAD Column+Filter - total	µg/L	6	6	100	0.0162 J	0.0353 J	W013-2	0.0265	0.0275 J	0.0334 J	0.0162 J	0.0353 J	W013-2	0.0265	0.0275 J	0.0334 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	XAD Column - dissolved	µg/L	6	2	33	0.0121	0.0198	W013-1	0.016	0.016	0.0194	0.00338 U	0.0198	W013-1	0.00671	0.00244 U	0.0179
Bis(2-ethylhexyl) phthalate	XAD Filter - particulate	µg/L	6	1	17	0.0052 J	0.0052 J	W013-1	0.0052	0.0052 J	0.0052 J	0.00257 U	0.00859 U	W013-1	0.00325	0.00313 U	0.00497 J
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	7	0	0	--	--	--	--	--	--	0.27 U	0.91 U	W014	0.211	0.15 U	0.389 U
Bis(2-ethylhexyl) phthalate	XAD Column+Filter - total	µg/L	6	2	33	0.0121	0.025 J	W013-1	0.0186	0.0186 J	0.0244 J	0.00543 U	0.025 J	W013-1	0.0084	0.00388 U	0.0218 J
RM 08<09																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	6	6	100	0.249	0.43	W021	0.342	0.333	0.425	0.249	0.43	W021	0.342	0.333	0.425
Arsenic	Peristaltic - particulate	µg/L	6	6	100	0.041	0.088	W018	0.0668	0.0675	0.0878	0.041	0.088	W018	0.0668	0.0675	0.0878
Arsenic	Peristaltic - total	µg/L	6	6	100	0.337	0.48	W018; W021	0.409	0.397	0.48	0.337	0.48	W018; W021	0.409	0.397	0.48
Chromium	Peristaltic - dissolved	µg/L	6	5	83	0.11 J	0.25	W021	0.174	0.16 J	0.246	0.11 J	0.25	W021	0.165	0.14 J	0.245
Chromium	Peristaltic - particulate[d]	µg/L	6	5	83	0	0.19 J	W018	0.106	0.1 J	0.186 J	0	0.36 U	W018	0.118	0.135 J	0.188 J
Chromium	Peristaltic - total	µg/L	6	4	67	0.21	0.4	W018	0.288	0.27	0.387	0.21	0.4	W018	0.248	0.22	0.378
Copper	Peristaltic - dissolved	µg/L	6	6	100	0.61	1.23 J	W021	0.815	0.755 J	1.15 J	0.61	1.23 J	W021	0.815	0.755 J	1.15 J
Copper	Peristaltic - particulate	µg/L	6	6	100	0.21	0.51 J	W021	0.383	0.395 J	0.488 J	0.21	0.51 J	W021	0.383	0.395 J	0.488 J
Copper	Peristaltic - total	µg/L	6	6	100	0.86	1.74 J	W021	1.2	1.17	1.63 J	0.86	1.74 J	W021	1.2	1.17	1.63 J
Zinc	Peristaltic - dissolved	µg/L	6	6	100	1.61	4.9	W018	2.78	2.49	4.48	1.61	4.9	W018	2.78	2.49	4.48
Zinc	Peristaltic - particulate[d]	µg/L	6	6	100	0	1.71	W021	0.563	0.5	1.45	0	1.71	W021	0.563	0.5	1.45
Zinc	Peristaltic - total	µg/L	6	6	100	2	3.34	W018	2.83	2.85	3.34	2	3.34	W018	2.83	2.85	3.34
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W018; W021	0.00144	0.000475 U	0.00355 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	3	3	100	0.000162 JT	0.000567 JT	W018	0.000405	0.000487 JT	0.000559 J	0.000162 JT	0.000567 JT	W018	0.000405	0.000487 JT	0.000559 J
Total PCBs	XAD Filter - particulate	µg/L	3	3	100	0.000277 JT	0.00112 JT	W018	0.000579	0.000341 JT	0.00104 J	0.000277 JT	0.00112 JT	W018	0.000579	0.000341 JT	0.00104 J
Total PCBs	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.0025 UT	0.0026 UT	W021	0.00126	0.00125 U	0.00129 U
Total PCBs	XAD Column+Filter - total	µg/L	3	3	100	0.000439 J	0.00169 J	W018	0.000985	0.000828 J	0.0016 J	0.000439 J	0.00169 J	W018	0.000985	0.000828 J	0.0016 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	3	2	67	0.000000659 J	0.000000972 J	W018	0.000000816	0.000000816 J	0.000000956 J	0.000000659 J	0.00000143 U	W018	0.000000782	0.000000715 U	0.000000946 J
Aldrin	XAD Filter - particulate	µg/L	3	3	100	0.00000039 J	0.000000629 J	W018	0.000000473	0.0000004 J	0.000000606 J	0.00000039 J	0.000000629 J	W018	0.000000473	0.0000004 J	0.000000606 J
Aldrin	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000481 U	0.00049 U	W021	0.000242	0.000241 U	0.000244 U
Aldrin	XAD Column+Filter - total	µg/L	3	3	100	0.0000004 J	0.0000016 J	W018	0.00000102	0.00000105 J	0.00000155 J	0.0000004 J	0.0000016 J	W018	0.00000102	0.00000105 J	0.00000155 J
Dieldrin	XAD Column - dissolved	µg/L	3	3	100	0.000029	0.0000421	W018	0.0000339	0.0000306	0.000041	0.000029	0.0000421	W018	0.0000339	0.0000306	0.000041
Dieldrin	XAD Filter - particulate	µg/L	3	2	67	0.00000154 J	0.0000018 J	W018	0.00000167	0.00000167 J	0.00000179 J	0.00000154 J	0.00000184 UJ	W018	0.00000142	0.00000154 J	0.00000177 J
Dieldrin	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000481 U	0.00049 U	W021	0.000242	0.000241 U	0.000244 U
Dieldrin	XAD Column+Filter - total	µg/L	3	3	100	0.0000306 J	0.0000436 J	W018	0.000035	0.0000308 J	0.0000424 J	0.0000306 J	0.0000436 J	W018	0.000035	0.0000308 J	0.0000424 J
Total chlordanes	XAD Column - dissolved	µg/L	3	3	100	0.0000165 JT	0.0000266 JT	W018	0.0000207	0.000019 JT	0.0000258 J	0.0000165 JT	0.0000266 JT	W018	0.0000207	0.000019 JT	0.0000258 J
Total chlordanes	XAD Filter - particulate	µg/L	3	3	100	0.00000484 JT	0.00000707 JT	W018	0.00000572	0.00000524 JT	0.00000689 J	0.00000484 JT	0.00000707 JT	W018	0.00000572	0.00000524 JT	0.00000689 J
Total chlordanes	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000481 UT	0.00049 UT	W021	0.000242	0.000241 U	0.000244 U
Total chlordanes	XAD Column+Filter - total	µg/L	3	3	100	0.0000213 J	0.0000318 J	W018	0.0000264	0.0000261 J	0.0000313 J	0.0000213 J	0.0000318 J	W018	0.0000264	0.0000261 J	0.0000313 J
DDx	XAD Column - dissolved	µg/L	3	3	100	0.0000359 JT	0.0000727 JT	W018	0.0000535	0.0000518 JT	0.0000706 J	0.0000359 JT	0.0000727 JT	W018	0.0000535	0.0000518 JT	0.0000706 J
DDx	XAD Filter - particulate	µg/L	3	3	100	0.000025 JT	0.0000514 JT	W018	0.0000345	0.0000271 JT	0.000049 J	0.000025 JT	0.0000514 JT	W018	0.0000345	0.0000271 JT	0.000049 J
DDx	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.000481 UT	0.00049 UJT	W021	0.000242	0.000241 U	0.000244 UJ
DDx	XAD Column+Filter - total	µg/L	3	3	100	0.0000609 J	0.000103 J	W018	0.000088	0.0000998 J	0.000103 J	0.0000609 J	0.000103 J	W018	0.000088	0.0000998 J	0.000103 J

Table 5.4-9b. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	3	3	100	0.00748 JT	0.0567 JT	W018	0.0284	0.0211 JT	0.0531 J	0.00748 JT	0.0567 JT	W018	0.0284	0.0211 JT	0.0531 J
Total PAHs	XAD Filter - particulate	µg/L	3	3	100	0.001 JT	0.0348 T	W018	0.0136	0.005 T	0.0318	0.001 JT	0.0348 T	W018	0.0136	0.005 T	0.0318
Total PAHs	Peristaltic - total	µg/L	6	4	67	0.0087 JT	0.288 JT	W021	0.082	0.0154 J	0.248 J	0.0075 UT	0.288 JT	W021	0.0565	0.0088 J	0.222 J
Total PAHs	XAD Column+Filter - total	µg/L	3	3	100	0.0125 J	0.0577 J	W018	0.042	0.0559 J	0.0575 J	0.0125 J	0.0577 J	W018	0.042	0.0559 J	0.0575 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	XAD Column - dissolved	µg/L	3	1	33	0.00394 J	0.00394 J	W018	0.00394	0.00394 J	0.00394 J	0.00355 U	0.00562 U	W018	0.00284	0.00281 U	0.00383 J
Bis(2-ethylhexyl) phthalate	XAD Filter - particulate	µg/L	3	1	33	0.00593 J	0.00593 J	W018	0.00593	0.00593 J	0.00593 J	0.0057 U	0.00831 U	W018	0.00431	0.00416 U	0.00575 J
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.29 U	0.69 U	W021	0.193	0.148 U	0.316 U
Bis(2-ethylhexyl) phthalate	XAD Column+Filter - total	µg/L	3	1	33	0.00987 J	0.00987 J	W018	0.00987	0.00987 J	0.00987 J	0.0057 U	0.00987 J	W018	0.00563	0.00416 U	0.0093 J
RM 09<10																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.325	0.44	W020	0.375	0.359	0.432	0.325	0.44	W020	0.375	0.359	0.432
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.03	0.07	W020	0.0493	0.048	0.0678	0.03	0.07	W020	0.0493	0.048	0.0678
Arsenic	Peristaltic - total	µg/L	3	3	100	0.395	0.47	W020	0.424	0.407	0.464	0.395	0.47	W020	0.424	0.407	0.464
Chromium	Peristaltic - dissolved	µg/L	3	2	67	0.1 J	0.16 J	W020	0.13	0.13 J	0.157 J	0.1 J	0.22 U	W020	0.123	0.11 U	0.155 J
Chromium	Peristaltic - particulate	µg/L	3	2	67	0.04 J	0.12 J	W020	0.08	0.08 J	0.116 J	0.04 J	0.36 U	W020	0.113	0.12 J	0.174 J
Chromium	Peristaltic - total	µg/L	3	2	67	0.2	0.22	W020	0.21	0.21	0.219	0.2	0.36 U	W020	0.2	0.2	0.218
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.61	1.19 J	W020	0.897	0.89	1.16 J	0.61	1.19 J	W020	0.897	0.89	1.16 J
Copper	Peristaltic - particulate	µg/L	3	3	100	0.19	0.52 J	W020	0.367	0.39	0.507 J	0.19	0.52 J	W020	0.367	0.39	0.507 J
Copper	Peristaltic - total	µg/L	3	3	100	0.8	1.71 J	W020	1.26	1.28	1.67 J	0.8	1.71 J	W020	1.26	1.28	1.67 J
Zinc	Peristaltic - dissolved	µg/L	3	3	100	1.79	2.5	W020	2.26	2.5	2.5	1.79	2.5	W020	2.26	2.5	2.5
Zinc	Peristaltic - particulate	µg/L	3	3	100	0.4	2.77	W020	1.26	0.6	2.55	0.4	2.77	W020	1.26	0.6	2.55
Zinc	Peristaltic - total	µg/L	3	3	100	2.9	4.56	W020	3.52	3.1	4.41	2.9	4.56	W020	3.52	3.1	4.41
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W020	0.00147	0.00055 U	0.00325 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UT	0.0025 UT	W020	0.00125	0.00125 UT	0.00125 U
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 U	0.00051 U	W020	0.000248	0.000245 U	0.000254 U
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 U	0.00051 U	W020	0.000248	0.000245 U	0.000254 U
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UT	0.00051 UT	W020	0.000248	0.000245 UT	0.000254 U
DDx	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UT	0.00051 UJT	W020	0.000248	0.000245 UT	0.000254 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	2	67	0.0049 JT	0.0413 JT	W020	0.0231	0.0231 J	0.0395 J	0.0049 JT	0.0413 JT	W020	0.0166	0.0049 JT	0.0377 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.29 U	0.58 U	W020	0.193	0.145 U	0.276 U

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.

DDx - 2,4' and 4,4'-DDD, -DDE, -DDT

DL - detection limit

ND - not detected

PAH - polycyclic aromatic hydrocarbon

PCB - polychlorinated biphenyl

PCDD/F - dioxin/furan

RM - River Mile

TCDD - tetrachlorodibenzo-p-dioxin

TEQ - toxicity equivalent

XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-9c. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (Mid-Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
No data for this table.																	

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

-- data not available.

DL - detection limit

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:

A - Total value based on limited number of analytes.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-9d. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Multnomah Channel																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.299	0.41	W003	0.354	0.353	0.404	0.299	0.41	W003	0.354	0.353	0.404
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.056	0.084	W003	0.0733	0.08	0.0836	0.056	0.084	W003	0.0733	0.08	0.0836
Arsenic	Peristaltic - total	µg/L	3	3	100	0.355	0.49	W003	0.427	0.437	0.485	0.355	0.49	W003	0.427	0.437	0.485
Chromium	Peristaltic - dissolved	µg/L	3	2	67	0.13 J	0.29	W003	0.21	0.21 J	0.282 J	0.13 J	0.29	W003	0.167	0.13 J	0.274 J
Chromium	Peristaltic - particulate	µg/L	3	3	100	0.18	0.54	W003	0.307	0.2 J	0.506 J	0.18	0.54	W003	0.307	0.2 J	0.506 J
Chromium	Peristaltic - total	µg/L	3	3	100	0.33	0.54	W003	0.447	0.47	0.533	0.33	0.54	W003	0.447	0.47	0.533
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.46	0.74	W003	0.633	0.7	0.736	0.46	0.74	W003	0.633	0.7	0.736
Copper	Peristaltic - particulate	µg/L	3	3	100	0.41	0.67	W003	0.533	0.52	0.655	0.41	0.67	W003	0.533	0.52	0.655
Copper	Peristaltic - total	µg/L	3	3	100	0.87	1.41	W003	1.17	1.22	1.39	0.87	1.41	W003	1.17	1.22	1.39
Zinc	Peristaltic - dissolved	µg/L	3	3	100	0.9	1.9 J	W003	1.53	1.8	1.89 J	0.9	1.9 J	W003	1.53	1.8	1.89 J
Zinc	Peristaltic - particulate	µg/L	3	3	100	0.3	1.04 J	W003	0.747	0.9	1.03 J	0.3	1.04 J	W003	0.747	0.9	1.03 J
Zinc	Peristaltic - total	µg/L	3	3	100	1.8	2.94 J	W003	2.28	2.1	2.86 J	1.8	2.94 J	W003	2.28	2.1	2.86 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W003	0.00138	0.0003 U	0.00323 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UJT	0.0025 UJT	W003	0.00125	0.00125 UJT	0.00125 UJ
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UJ	0.000505 UJ	W003	0.000249	0.00025 U	0.000252 UJ
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UJ	0.000505 UJ	W003	0.000249	0.00025 U	0.000252 UJ
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UJT	0.000505 UJT	W003	0.000249	0.00025 UT	0.000252 UJ
DDx	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UJT	0.000505 UJT	W003	0.000249	0.00025 UT	0.000252 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	2	67	0.015 JT	0.042 JT	W003	0.0285	0.0285 J	0.0407 J	0.0074 UT	0.042 JT	W003	0.0202	0.015 JT	0.0393 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.28 U	0.32 U	W003	0.148	0.145 U	0.159 U
RM 01.9<03																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	5	5	100	0.285	0.62	W002	0.501	0.508	0.62	0.285	0.62	W002	0.501	0.508	0.62
Arsenic	Peristaltic - particulate	µg/L	5	5	100	0.02	0.09	W002	0.0572	0.062	0.085	0.02	0.09	W002	0.0572	0.062	0.085
Arsenic	Peristaltic - total	µg/L	5	5	100	0.35	0.71	W002	0.558	0.557	0.696	0.35	0.71	W002	0.558	0.557	0.696
Chromium	Peristaltic - dissolved	µg/L	5	3	60	0.13 J	0.24	W002	0.187	0.19 J	0.235 J	0.11 U	0.24	W002	0.136	0.13 J	0.23 J
Chromium	Peristaltic - particulate	µg/L	5	4	80	0.23 J	0.55	W002	0.313	0.235 J	0.504 J	0.23 J	0.55	W002	0.298	0.24 U	0.488 J
Chromium	Peristaltic - total	µg/L	5	4	80	0.36	0.55	W002	0.453	0.45	0.538	0.36	0.55	W002	0.41	0.43	0.534
Copper	Peristaltic - dissolved	µg/L	5	5	100	0.51	0.84	W002	0.694	0.67	0.836	0.51	0.84	W002	0.694	0.67	0.836
Copper	Peristaltic - particulate	µg/L	5	5	100	0.29	0.68	W002	0.454	0.41	0.66	0.29	0.68	W002	0.454	0.41	0.66
Copper	Peristaltic - total	µg/L	5	5	100	0.92	1.5	W002	1.15	0.96	1.48	0.92	1.5	W002	1.15	0.96	1.48
Zinc	Peristaltic - dissolved	µg/L	5	3	60	1.1	2.3	W002	1.53	1.2	2.19	1.1	2.3	W002	1.18	1.1	2.08
Zinc	Peristaltic - particulate[d]	µg/L	5	5	100	0	2.78 J	W002	1.39	0.9	2.72 J	0	2.78 J	W002	1.39	0.9	2.72 J
Zinc	Peristaltic - total	µg/L	5	5	100	1.8	2.78 J	W002	2.21	2	2.72 J	1.8	2.78 J	W002	2.21	2	2.72 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	5	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W002	0.00095	0.0003 U	0.0029 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0025 UJT	0.00255 UT	W002	0.00126	0.00126 UJ	0.00127 UJ
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 UJ	0.000538 UJ	W002	0.000252	0.000248 U	0.000267 UJ
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 UJ	0.000538 UJ	W002	0.000252	0.000248 U	0.000267 UJ
Total chlordanes	Peristaltic - total	µg/L	3	1	33	0.00212 JT	0.00212 JT	W002	0.00212	0.00212 JT	0.00212 JT	0.000481 UJT	0.00212 JT	W002	0.000869	0.000248 UT	0.00193 J
DDx	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 UJT	0.000538 UJT	W002	0.000252	0.000248 UT	0.000267 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	5	5	100	0.0049 JT	0.0132 JT	W002	0.00818	0.0055 JT	0.013 J	0.0049 JT	0.0132 JT	W002	0.00818	0.0055 JT	0.013 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	5	0	0	--	--	--	--	--	--	0.29 U	0.56 U	W002	0.174	0.15 UJ	0.254 U
RM 04<05																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.319	0.42	W006	0.356	0.33	0.411	0.319	0.42	W006	0.356	0.33	0.411
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.07	0.098	W006	0.0827	0.08	0.0962	0.07	0.098	W006	0.0827	0.08	0.0962
Arsenic	Peristaltic - total	µg/L	3	3	100	0.399	0.49 T	W006	0.439	0.428	0.484	0.399	0.49 T	W006	0.439	0.428	0.484
Chromium	Peristaltic - dissolved	µg/L	3	2	67	0.13 J	0.22	W006	0.175	0.175 J	0.216 J	0.13 J	0.22	W006	0.145	0.13 J	0.211 J
Chromium	Peristaltic - particulate	µg/L	3	2	67	0.24 J	0.38	W006	0.31	0.31 J	0.373 J	0.24 J	0.38 U	W006	0.27	0.24 J	0.366 J
Chromium	Peristaltic - total	µg/L	3	2	67	0.37	0.6	W006	0.485	0.485	0.589	0.37	0.6	W006	0.387	0.37	0.577
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.62	0.93	W006	0.793	0.83	0.92	0.62	0.93	W006	0.793	0.83	0.92
Copper	Peristaltic - particulate	µg/L	3	3	100	0.07	0.52 J	W006	0.37	0.52	0.52 J	0.07	0.52 J	W006	0.37	0.52	0.52 J
Copper	Peristaltic - total	µg/L	3	3	100	1	1.35 JT	W006	1.16	1.14	1.33 J	1	1.35 JT	W006	1.16	1.14	1.33 J

Table 5.4-9d. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Zinc	Peristaltic - dissolved	µg/L	3	3	100	1.8	2.8	W006	2.2	2 J	2.72 J	1.8	2.8	W006	2.2	2 J	2.72 J
Zinc	Peristaltic - particulate[d]	µg/L	3	3	100	0	1.25 J	W006	0.65	0.7	1.2 J	0	1.25 J	W006	0.65	0.7	1.2 J
Zinc	Peristaltic - total	µg/L	3	3	100	2.5	3.25 JT	W006	2.75	2.5	3.18 J	2.5	3.25 JT	W006	2.75	2.5	3.18 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	1	33	0.0011 J	0.0011 J	W006	0.0011	0.0011 J	0.0011 J	0.0006 U	0.0071 U	W006	0.00165	0.0011 J	0.00331 J
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UT	0.00256 UT	W006	0.00126	0.00126 UT	0.00128 U
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0005 U	0.000521 U	W006	0.000255	0.000255 U	0.00026 U
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0005 U	0.000521 U	W006	0.000255	0.000255 U	0.00026 U
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0005 UT	0.000521 UT	W006	0.000255	0.000255 UT	0.00026 U
DDx	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0005 UJT	0.000521 UJT	W006	0.000255	0.000255 UT	0.00026 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	3	100	0.021 JT	0.0373 JT	W006	0.0312	0.0352 JT	0.0371 J	0.021 JT	0.0373 JT	W006	0.0312	0.0352 JT	0.0371 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.29 U	0.45 U	W006	0.172	0.145 U	0.217 U
RM 05<06																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.329	0.42	W009	0.37	0.362	0.414	0.329	0.42	W009	0.37	0.362	0.414
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.045	0.08	W009	0.059	0.052	0.0772	0.045	0.08	W009	0.059	0.052	0.0772
Arsenic	Peristaltic - total	µg/L	3	3	100	0.374	0.5	W009	0.429	0.414	0.491	0.374	0.5	W009	0.429	0.414	0.491
Chromium	Peristaltic - dissolved	µg/L	3	1	33	0.16 J	0.16 J	W009	0.16	0.16 J	0.16 J	0.16 J	0.2 U	W009	0.12	0.1 U	0.154 J
Chromium	Peristaltic - particulate	µg/L	3	2	67	0.14 J	0.38	W009	0.26	0.26 J	0.368 J	0.14 J	0.48 U	W009	0.253	0.24 U	0.366
Chromium	Peristaltic - total	µg/L	3	2	67	0.3	0.38	W009	0.34	0.34	0.376	0.3	0.48 U	W009	0.307	0.3	0.372
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.5	0.73	W009	0.61	0.6	0.717	0.5	0.73	W009	0.61	0.6	0.717
Copper	Peristaltic - particulate	µg/L	3	3	100	0.3	0.7 J	W009	0.46	0.38	0.668 J	0.3	0.7 J	W009	0.46	0.38	0.668 J
Copper	Peristaltic - total	µg/L	3	3	100	0.8	1.43 J	W009	1.07	0.98	1.39 J	0.8	1.43 J	W009	1.07	0.98	1.39 J
Zinc	Peristaltic - dissolved	µg/L	3	3	100	1.6	1.8 J	W009	1.7	1.7	1.79 J	1.6	1.8 J	W009	1.7	1.7	1.79 J
Zinc	Peristaltic - particulate	µg/L	3	3	100	0.6	1.7 J	W009	1	0.7	1.6 J	0.6	1.7 J	W009	1	0.7	1.6 J
Zinc	Peristaltic - total	µg/L	3	3	100	2.3	3.5 J	W009	2.7	2.3	3.38 J	2.3	3.5 J	W009	2.7	2.3	3.38 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	1	33	0.0011 J	0.0011 J	W009	0.0011	0.0011 J	0.0011 J	0.0006 U	0.0071 U	W009	0.00165	0.0011 J	0.00331 J
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UT	0.0025 UT	W009	0.00125	0.00125 UT	0.00125 U
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000485 U	0.000532 U	W009	0.000253	0.00025 U	0.000264 U
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000485 U	0.000532 U	W009	0.000253	0.00025 U	0.000264 U
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000485 UT	0.000532 UT	W009	0.000253	0.00025 UT	0.000264 U
DDx	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000485 UT	0.000532 UJT	W009	0.000253	0.00025 UT	0.000264 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	2	67	0.0343 JT	0.0779 JT	W009	0.0561	0.0561 J	0.0757 J	0.0074 UT	0.0779 JT	W009	0.0386	0.0343 JT	0.0735 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.28 U	0.41 U	W009	0.162	0.14 U	0.199 U
RM 06<07																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	6	6	100	0.31	0.47	W012	0.389	0.376	0.465	0.31	0.47	W012	0.389	0.376	0.465
Arsenic	Peristaltic - particulate	µg/L	6	6	100	0.0425	0.09	W012	0.0616	0.0605	0.085	0.0425	0.09	W012	0.0616	0.0605	0.085
Arsenic	Peristaltic - total	µg/L	6	6	100	0.353 T	0.56	W012	0.451	0.436	0.55	0.353 T	0.56	W012	0.451	0.436	0.55
Chromium	Peristaltic - dissolved	µg/L	6	2	33	0.14 J	0.17 J	W012	0.155	0.155 J	0.169 J	0.14 J	0.19 U	W015	0.108	0.0925 U	0.163 J
Chromium	Peristaltic - particulate	µg/L	6	5	83	0.115 J	0.59	W012	0.306	0.325	0.548	0.115 J	0.59	W012	0.285	0.253	0.538
Chromium	Peristaltic - total	µg/L	6	5	83	0.26	0.59	W012	0.368	0.325 T	0.548	0.26	0.59	W012	0.337	0.305	0.538
Copper	Peristaltic - dissolved	µg/L	6	6	100	0.42	0.85 J	W012	0.652	0.69	0.848 J	0.42	0.85 J	W012	0.652	0.69	0.848 J
Copper	Peristaltic - particulate	µg/L	6	6	100	0.265	1.08 J	W012	0.458	0.355	0.913 J	0.265	1.08 J	W012	0.458	0.355	0.913 J
Copper	Peristaltic - total	µg/L	6	6	100	0.685 T	1.93 J	W012	1.11	1.01	1.76 J	0.685 T	1.93 J	W012	1.11	1.01	1.76 J
Zinc	Peristaltic - dissolved	µg/L	6	6	100	1.5	2.2	W015	1.77	1.75 J	2.1	1.5	2.2	W015	1.77	1.75 J	2.1
Zinc	Peristaltic - particulate[d]	µg/L	6	6	100	0	2.5 J	W012	1.05	0.95	2.2 J	0	2.5 J	W012	1.05	0.95	2.2 J
Zinc	Peristaltic - total	µg/L	6	6	100	2 T	4.3 J	W012	2.78	2.7 J	3.95 J	2 T	4.3 J	W012	2.78	2.7 J	3.95 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W012; W015	0.00138	0.0003 U	0.00355 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	3	3	100	0.000254 JT	0.000639 JT	W015	0.000432	0.000404 JT	0.000616 J	0.000254 JT	0.000639 JT	W015	0.000432	0.000404 JT	0.000616 J
Total PCBs	XAD Filter - particulate	µg/L	3	3	100	0.000285 JT	0.00129 T	W015	0.000658	0.000398 JT	0.0012 J	0.000285 JT	0.00129 T	W015	0.000658	0.000398 JT	0.0012 J
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UJT	0.0026 UT	W012	0.00127	0.00125 UT	0.0013 U
Total PCBs	XAD Column+Filter - total	µg/L	3	3	100	0.000539 J	0.00193 J	W015	0.00109	0.000802 J	0.00182 J	0.000539 J	0.00193 J	W015	0.00109	0.000802 J	0.00182 J

Table 5.4-9d. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	3	3	100	0.00000201 JT	0.00000402 T	W015	0.000003	0.00000296 T	0.00000391	0.00000201 JT	0.00000402 T	W015	0.000003	0.00000296 T	0.00000391
Total PCDD/Fs	XAD Filter - particulate	µg/L	3	3	100	0.0000436 T	0.000078 T	W015	0.0000563	0.0000474 T	0.0000749	0.0000436 T	0.000078 T	W015	0.0000563	0.0000474 T	0.0000749
Total PCDD/Fs	XAD Column+Filter - total	µg/L	3	3	100	0.0000456 J	0.000082	W015	0.0000593	0.0000504	0.0000789	0.0000456 J	0.000082	W015	0.0000593	0.0000504	0.0000789
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	3	3	100	0.0000000238 JT	0.0000000334 JT	W015	0.000000027	0.0000000239 JT	0.0000000325 J	0.0000000238 JT	0.0000000334 JT	W015	0.000000027	0.0000000239 JT	0.0000000325 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	3	3	100	0.000000333 JT	0.000000469 JT	W015	0.000000406	0.000000417 JT	0.000000464 J	0.000000333 JT	0.000000469 JT	W015	0.000000406	0.000000417 JT	0.000000464 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	3	3	100	0.000000357 J	0.000000502 J	W015	0.000000433	0.000000441 J	0.000000496 J	0.000000357 J	0.000000502 J	W015	0.000000433	0.000000441 J	0.000000496 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	3	3	100	0.00000115 J	0.00000327 J	W015	0.00000195	0.00000142 J	0.00000309 J	0.00000115 J	0.00000327 J	W015	0.00000195	0.00000142 J	0.00000309 J
Aldrin	XAD Filter - particulate	µg/L	3	3	100	0.000000693 J	0.000013	W015	0.00000498	0.00000126 J	0.0000118 J	0.000000693 J	0.000013	W015	0.00000498	0.00000126 J	0.0000118 J
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 U	0.00051 U	W012	0.000249	0.00025 U	0.000255 U
Aldrin	XAD Column+Filter - total	µg/L	3	3	100	0.00000211 J	0.0000163 J	W015	0.00000693	0.00000241 J	0.0000149 J	0.00000211 J	0.0000163 J	W015	0.00000693	0.00000241 J	0.0000149 J
Dieldrin	XAD Column - dissolved	µg/L	3	3	100	0.000036	0.0000468	W015	0.0000423	0.0000441	0.0000465	0.000036	0.0000468	W015	0.0000423	0.0000441	0.0000465
Dieldrin	XAD Filter - particulate	µg/L	3	3	100	0.00000387 J	0.0000157	W015	0.00000881	0.00000685 J	0.0000148 J	0.00000387 J	0.0000157	W015	0.00000881	0.00000685 J	0.0000148 J
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 U	0.00051 U	W012	0.000249	0.00025 U	0.000255 U
Dieldrin	XAD Column+Filter - total	µg/L	3	3	100	0.0000399 J	0.0000625	W015	0.0000511	0.000051 J	0.0000613 J	0.0000399 J	0.0000625	W015	0.0000511	0.000051 J	0.0000613 J
Total chlordanes	XAD Column - dissolved	µg/L	3	3	100	0.0000216 JT	0.0000555 JT	W015	0.0000341	0.0000252 JT	0.0000525 J	0.0000216 JT	0.0000555 JT	W015	0.0000341	0.0000252 JT	0.0000525 J
Total chlordanes	XAD Filter - particulate	µg/L	3	3	100	0.0000127 JT	0.000185 JT	W015	0.0000716	0.0000172 JT	0.000168 J	0.0000127 JT	0.000185 JT	W015	0.0000716	0.0000172 JT	0.000168 J
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 UT	0.00051 UT	W012	0.000249	0.00025 UT	0.000255 U
Total chlordanes	XAD Column+Filter - total	µg/L	3	3	100	0.0000343 J	0.000241 J	W015	0.000106	0.0000424 J	0.000221 J	0.0000343 J	0.000241 J	W015	0.000106	0.0000424 J	0.000221 J
DDx	XAD Column - dissolved	µg/L	3	3	100	0.00198 T	0.00346 T	W015	0.00251	0.0021 T	0.00332	0.00198 T	0.00346 T	W015	0.00251	0.0021 T	0.00332
DDx	XAD Filter - particulate	µg/L	3	3	100	0.00161 T	0.00421 T	W015	0.00298	0.00312 T	0.0041	0.00161 T	0.00421 T	W015	0.00298	0.00312 T	0.0041
DDx	Peristaltic - total	µg/L	3	1	33	0.000839 T	0.000839 T	W012	0.000839	0.000839 T	0.000839 T	0.0005 UT	0.000839 T	W012	0.000448	0.000255 UT	0.000781
DDx	XAD Column+Filter - total	µg/L	3	3	100	0.00359	0.00767	W015	0.00549	0.00522	0.00743	0.00359	0.00767	W015	0.00549	0.00522	0.00743
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	3	3	100	0.0564 JT	0.169 JT	W015	0.096	0.0625 JT	0.158 J	0.0564 JT	0.169 JT	W015	0.096	0.0625 JT	0.158 J
Total PAHs	XAD Filter - particulate	µg/L	3	3	100	0.0178 T	0.0619 T	W015	0.0393	0.0381 T	0.0595	0.0178 T	0.0619 T	W015	0.0393	0.0381 T	0.0595
Total PAHs	Peristaltic - total	µg/L	6	6	100	0.0172 JT	2.46 JT	W012	0.649	0.0353 J	2.17 J	0.0172 JT	2.46 JT	W012	0.649	0.0353 J	2.17 J
Total PAHs	XAD Column+Filter - total	µg/L	3	3	100	0.0803 J	0.231 J	W015	0.135	0.0945 J	0.217 J	0.0803 J	0.231 J	W015	0.135	0.0945 J	0.217 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	XAD Column - dissolved	µg/L	3	1	33	0.00351 J	0.00351 J	W015	0.00351	0.00351 J	0.00351 J	0.00346 U	0.00566 U	W015	0.00269	0.00283 U	0.00344 J
Bis(2-ethylhexyl) phthalate	XAD Filter - particulate	µg/L	3	2	67	0.00424 J	0.033	W015	0.0186	0.0186 J	0.0316 J	0.00424 J	0.033	W015	0.0138	0.00428 U	0.0301
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.29 U	2.1 U	W015	0.383	0.26 U	0.896 U
Bis(2-ethylhexyl) phthalate	XAD Column+Filter - total	µg/L	3	2	67	0.00775 J	0.033	W015	0.0204	0.0204 J	0.0317 J	0.00775 J	0.033	W015	0.015	0.00775 J	0.0305 J
RM 07<08																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	7	7	100	0.33	0.47	W017	0.384	0.376	0.464	0.33	0.47	W017	0.384	0.376	0.464
Arsenic	Peristaltic - particulate	µg/L	7	7	100	0.043	0.128	W017	0.0711	0.061	0.117	0.043	0.128	W017	0.0711	0.061	0.117
Arsenic	Peristaltic - total	µg/L	7	7	100	0.373	0.56	W017	0.455	0.437	0.548	0.373	0.56	W017	0.455	0.437	0.548
Chromium	Peristaltic - dissolved	µg/L	7	2	29	0.12 J	0.17 J	W017	0.145	0.145 J	0.168 J	0.12 J	0.21 U	W016-1	0.102	0.085 U	0.155 J
Chromium	Peristaltic - particulate	µg/L	7	4	57	0.15 J	0.3	W016-1	0.228	0.23 J	0.299	0.15 J	0.48 U	W016-1	0.221	0.23 U	0.297
Chromium	Peristaltic - total	µg/L	7	4	57	0.27	0.34	W017	0.3	0.295	0.334	0.27	0.48 U	W016-1	0.262	0.27	0.328
Copper	Peristaltic - dissolved	µg/L	7	7	100	0.37	1.12	W016-1	0.646	0.61	1.02 J	0.37	1.12	W016-1	0.646	0.61	1.02 J
Copper	Peristaltic - particulate	µg/L	7	7	100	0.17	1	W017	0.453	0.36	0.877 J	0.17	1	W017	0.453	0.36	0.877 J
Copper	Peristaltic - total	µg/L	7	7	100	0.69	1.77	W017	1.1	0.97	1.65 J	0.69	1.77	W017	1.1	0.97	1.65 J
Zinc	Peristaltic - dissolved	µg/L	7	5	71	1.6	2.15 J	W016-1	1.79	1.7	2.08 J	1.4 U	2.15 J	W016-1	1.49	1.7	2.05 J
Zinc	Peristaltic - particulate	µg/L	7	7	100	0.45 J	2.1	W016-1	1.21	0.9	2.07	0.45 J	2.1	W016-1	1.21	0.9	2.07
Zinc	Peristaltic - total	µg/L	7	7	100	2	3.5 J	W017	2.49	2.4	3.23 J	2	3.5 J	W017	2.49	2.4	3.23 J
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	7	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W016-1; W016-2; W017	0.00169	0.0003 U	0.00355 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	3	3	100	0.000137 JT	0.000581 JT	W016-1	0.000322	0.000247 JT	0.000548 J	0.000137 JT	0.000581 JT	W016-1	0.000322	0.000247 JT	0.000548 J
Total PCBs	XAD Filter - particulate	µg/L	3	3	100	0.000201 JT	0.000695 JT	W016-1	0.000378	0.000238 JT	0.000649 J	0.000201 JT	0.000695 JT	W016-1	0.000378	0.000238 JT	0.000649 J
Total PCBs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0025 UT	0.00256 UT	W017	0.00127	0.00127 U	0.00128 U
Total PCBs	XAD Column+Filter - total	µg/L	3	3	100	0.000375 J	0.00128 J	W016-1	0.0007	0.000448 J	0.00119 J	0.000375 J	0.00128 J	W016-1	0.0007	0.000448 J	0.00119 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	3	2	67	0.000000702 J	0.0000014 J	W016-1	0.00000105	0.00000105 J	0.00000137 J	0.000000702 J	0.00000144 U	W016-1	0.000000941	0.00000072 U	0.00000133 J
Aldrin	XAD Filter - particulate	µg/L	3	2	67	0.000000652 J	0.000000979 J	W016-1	0.000000816	0.000000816 J	0.000000963 J	0.000000504 UJ	0.000000979 J	W016-1	0.000000628	0.000000652 J	0.000000946 J
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 U	0.00051 U	W017	0.00025	0.000255 U	0.000255 U
Aldrin	XAD Column+Filter - total	µg/L	3	3	100	0.000000702 J	0.00000205 J	W016-1	0.00000124	0.000000979 J	0.00000194 J	0.000000702 J	0.00000205 J	W016-1	0.00000124	0.000000979 J	0.00000194 J
Dieldrin	XAD Column - dissolved	µg/L	3	3	100	0.000023	0.0000424	W016-1	0.0000334	0.0000349	0.0000417	0.000023	0.0000424	W016-1	0.0000334	0.0000349	0.0000417
Dieldrin	XAD Filter - particulate	µg/L	3	2	67	0.00000337 J	0.00000456 J	W016-1	0.00000397	0.00000397 J	0.0000045 J	0.00000203 UJ	0.00000456 J	W016-1	0.00000298	0.00000337 J	0.00000444 J
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 U	0.00051 U	W017	0.00025	0.000255 U	0.000255 U

Table 5.4-9d. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Dieldrin	XAD Column+Filter - total	µg/L	3	3	100	0.000023 J	0.000047 J	W016-1	0.0000361	0.0000383 J	0.0000461 J	0.000023 J	0.000047 J	W016-1	0.0000361	0.0000383 J	0.0000461 J
Total chlordanes	XAD Column - dissolved	µg/L	3	3	100	0.000014 JT	0.0000235 JT	W016-1	0.0000194	0.0000206 JT	0.0000232 J	0.000014 JT	0.0000235 JT	W016-1	0.0000194	0.0000206 JT	0.0000232 J
Total chlordanes	XAD Filter - particulate	µg/L	3	3	100	0.00000739 JT	0.0000155 JT	W016-1	0.0000108	0.00000944 JT	0.0000149 J	0.00000739 JT	0.0000155 JT	W016-1	0.0000108	0.00000944 JT	0.0000149 J
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 UT	0.00051 UT	W017	0.00025	0.000255 UT	0.000255 U
Total chlordanes	XAD Column+Filter - total	µg/L	3	3	100	0.0000214 J	0.000039 J	W016-1	0.0000301	0.00003 J	0.0000381 J	0.0000214 J	0.000039 J	W016-1	0.0000301	0.00003 J	0.0000381 J
DDx	XAD Column - dissolved	µg/L	3	3	100	0.000494 JT	0.00297 T	W016-1	0.00142	0.000781 T	0.00275	0.000494 JT	0.00297 T	W016-1	0.00142	0.000781 T	0.00275
DDx	XAD Filter - particulate	µg/L	3	3	100	0.000743 JT	0.00679 T	W016-1	0.00324	0.00219 T	0.00633	0.000743 JT	0.00679 T	W016-1	0.00324	0.00219 T	0.00633
DDx	Peristaltic - total	µg/L	3	1	33	0.000693 JT	0.000693 JT	W017	0.000693	0.000693 JT	0.000693 JT	0.00051 UT	0.000693 JT	W017	0.000401	0.000255 UT	0.000649 J
DDx	XAD Column+Filter - total	µg/L	3	3	100	0.00124 J	0.00976	W016-1	0.00466	0.00297	0.00908	0.00124 J	0.00976	W016-1	0.00466	0.00297	0.00908
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	3	3	100	0.0101 JT	0.0673 JT	W016-1	0.0296	0.0113 JT	0.0617 J	0.0101 JT	0.0673 JT	W016-1	0.0296	0.0113 JT	0.0617 J
Total PAHs	XAD Filter - particulate	µg/L	3	3	100	0.00686 T	0.0321 T	W016-1	0.0164	0.0102 JT	0.0299 J	0.00686 T	0.0321 T	W016-1	0.0164	0.0102 JT	0.0299 J
Total PAHs	Peristaltic - total	µg/L	7	3	43	0.0116 JT	0.0489 JT	W017	0.0331	0.0388 JT	0.0479 J	0.0074 UJT	0.0489 JT	W017	0.0172	0.008 UT	0.0459 J
Total PAHs	XAD Column+Filter - total	µg/L	3	3	100	0.0182 J	0.0994 J	W016-1	0.046	0.0203 J	0.0915 J	0.0182 J	0.0994 J	W016-1	0.046	0.0203 J	0.0915 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	XAD Column - dissolved	µg/L	3	1	33	0.00435 J	0.00435 J	W016-1	0.00435	0.00435 J	0.00435 J	0.00338 U	0.00435 J	W016-1	0.00272	0.00213 U	0.00413 J
Bis(2-ethylhexyl) phthalate	XAD Filter - particulate	µg/L	3	1	33	0.00457 J	0.00457 J	W016-1	0.00457	0.00457 J	0.00457 J	0.00457 J	0.00749 U	W016-1	0.00387	0.00375 U	0.00449 J
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	7	0	0	--	--	--	--	--	--	0.27 U	4.1 U	W017	0.531	0.145 U	1.66 U
Bis(2-ethylhexyl) phthalate	XAD Column+Filter - total	µg/L	3	1	33	0.00892 J	0.00892 J	W016-1	0.00892	0.00892 J	0.00892 J	0.0066 U	0.00892 J	W016-1	0.00532	0.00375 U	0.0084 J
RM 08<09																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.307	0.46	W019	0.385	0.389	0.453	0.307	0.46	W019	0.385	0.389	0.453
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.0565	0.08	W019	0.0658	0.061	0.0781	0.0565	0.08	W019	0.0658	0.061	0.0781
Arsenic	Peristaltic - total	µg/L	3	3	100	0.368	0.54	W019	0.451	0.446 T	0.531	0.368	0.54	W019	0.451	0.446 T	0.531
Chromium	Peristaltic - dissolved	µg/L	3	2	67	0.13 J	0.16 J	W019	0.145	0.145 J	0.159 J	0.13 J	0.21 U	W019	0.132	0.13 J	0.157 J
Chromium	Peristaltic - particulate	µg/L	3	3	100	0.14 J	0.51	W019	0.282	0.195 J	0.479 J	0.14 J	0.51	W019	0.282	0.195 J	0.479 J
Chromium	Peristaltic - total	µg/L	3	3	100	0.3	0.51	W019	0.378	0.325 T	0.492	0.3	0.51	W019	0.378	0.325 T	0.492
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.44	0.85 J	W019	0.637	0.62	0.827 J	0.44	0.85 J	W019	0.637	0.62	0.827 J
Copper	Peristaltic - particulate	µg/L	3	3	100	0.36	0.76 J	W019	0.503	0.39	0.723 J	0.36	0.76 J	W019	0.503	0.39	0.723 J
Copper	Peristaltic - total	µg/L	3	3	100	0.8	1.61 J	W019	1.14	1.01 T	1.55 J	0.8	1.61 J	W019	1.14	1.01 T	1.55 J
Zinc	Peristaltic - dissolved	µg/L	3	3	100	1.6	1.74	W019	1.68	1.7	1.74	1.6	1.74	W019	1.68	1.7	1.74
Zinc	Peristaltic - particulate	µg/L	3	3	100	0.6	1.98	W019	1.24	1.15	1.9	0.6	1.98	W019	1.24	1.15	1.9
Zinc	Peristaltic - total	µg/L	3	3	100	2.2	3.72	W019	2.92	2.85 T	3.63	2.2	3.72	W019	2.92	2.85 T	3.63
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W019	0.00138	0.0003 U	0.00323 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0025 UT	0.00263 UT	W019	0.00128	0.00127 UT	0.00131 U
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 U	0.0005 U	W019	0.000244	0.000243 U	0.000249 U
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 U	0.0005 U	W019	0.000244	0.000243 U	0.000249 U
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.000481 UT	0.0005 UT	W019	0.000244	0.000243 UT	0.000249 U
DDx	Peristaltic - total	µg/L	3	1	33	0.00115 T	0.00115 T	W019	0.00115	0.00115 T	0.00115 T	0.000481 UT	0.00115 T	W019	0.000544	0.000243 UJT	0.00106 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	2	67	0.0026 JT	0.0492 JT	W019	0.0259	0.0259 J	0.0469 J	0.0026 JT	0.0492 JT	W019	0.0185	0.0037 UT	0.0447 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.29 U	0.44 U	W019	0.17	0.145 U	0.213 U
RM 09<10																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	3	3	100	0.397	0.493	W022	0.447	0.45	0.489	0.397	0.493	W022	0.447	0.45	0.489
Arsenic	Peristaltic - particulate	µg/L	3	3	100	0.066	0.175	W022	0.107	0.08	0.166	0.066	0.175	W022	0.107	0.08	0.166
Arsenic	Peristaltic - total	µg/L	3	3	100	0.463	0.668	W022	0.554	0.53	0.654	0.463	0.668	W022	0.554	0.53	0.654
Chromium	Peristaltic - dissolved	µg/L	3	3	100	0.11 J	0.28	W022	0.193	0.19 J	0.271 J	0.11 J	0.28	W022	0.193	0.19 J	0.271 J
Chromium	Peristaltic - particulate[d]	µg/L	3	3	100	0	0.22 J	W022	0.133	0.18 J	0.216 J	0	0.22 J	W022	0.133	0.18 J	0.216 J
Chromium	Peristaltic - total	µg/L	3	2	67	0.33	0.37	W022	0.35	0.35	0.368	0.33	0.44 U	W022	0.307	0.33	0.366
Copper	Peristaltic - dissolved	µg/L	3	3	100	0.49	1.64 J	W022	1	0.88	1.56 J	0.49	1.64 J	W022	1	0.88	1.56 J
Copper	Peristaltic - particulate[d]	µg/L	3	3	100	0 J	0.56	W022	0.233	0.14	0.518	0 J	0.56	W022	0.233	0.14	0.518
Copper	Peristaltic - total	µg/L	3	3	100	1.02	1.27 J	W022	1.11	1.05	1.25 J	1.02	1.27 J	W022	1.11	1.05	1.25 J
Zinc	Peristaltic - dissolved	µg/L	3	3	100	2.7	41.9	W022	16.1	3.7	38.1	2.7	41.9	W022	16.1	3.7	38.1
Zinc	Peristaltic - particulate	µg/L	3	3	100	1.3	16	W022	7.12	4.07	14.8	1.3	16	W022	7.12	4.07	14.8
Zinc	Peristaltic - total	µg/L	3	3	100	5	57.9	W022	23.2	6.77	52.8	5	57.9	W022	23.2	6.77	52.8
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.0006 U	0.0071 U	W022	0.00138	0.0003 U	0.00323 U
PCBs[c]																	
Total PCBs	Peristaltic - total	µg/L	3	1	33	0.00467 JT	0.00467 JT	W022	0.00467	0.00467 JT	0.00467 JT	0.0025 UT	0.00467 JT	W022	0.00239	0.00125 UT	0.00433 J

Table 5.4-9d. Summary Statistics for Indicator Contaminants in Surface Water, Low-Flow Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Pesticides																	
Aldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 U	0.0005 U	W022	0.000247	0.000245 U	0.00025 U
Dieldrin	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 U	0.0005 U	W022	0.000247	0.000245 U	0.00025 U
Total chlordanes	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UT	0.0005 UT	W022	0.000247	0.000245 UT	0.00025 U
DDx	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.00049 UT	0.0005 UJT	W022	0.000247	0.000245 UT	0.00025 UJ
PAHs																	
Total PAHs	Peristaltic - total	µg/L	3	3	100	0.0072 JT	0.0213 JT	W022	0.0164	0.0207 JT	0.0212 J	0.0072 JT	0.0213 JT	W022	0.0164	0.0207 JT	0.0212 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	3	0	0	--	--	--	--	--	--	0.27 U	0.81 U	W022	0.225	0.135 U	0.378 U

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
RM - River Mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-10. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (Transect Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	14	0	0	--	--	--	--	--	--	0.372 U	0.586 U	W025W	0.201	0.197 U	0.234 UJ
Arsenic	Peristaltic - particulate	µg/L	14	4	29	0.439 J	0.476 J	W005	0.455	0.452 J	0.473 J	0.394 UJ	0.647 UJ	W025W	0.289	0.22 UJ	0.464 J
Arsenic	Peristaltic - total	µg/L	14	4	29	0.439 J	0.476 J	W005	0.455	0.452 J	0.473 J	0.394 UJ	0.647 UJ	W025W	0.289	0.22 UJ	0.464 J
Chromium	Peristaltic - dissolved	µg/L	14	0	0	--	--	--	--	--	--	0.14 U	0.23 U	W005	0.0846	0.08 U	0.105 U
Chromium	Peristaltic - particulate	µg/L	14	0	0	--	--	--	--	--	--	0.21 U	0.39 U	W027	0.144	0.143 U	0.192 U
Chromium	Peristaltic - total	µg/L	14	0	0	--	--	--	--	--	--	0.21 U	0.39 U	W027	0.144	0.143 U	0.192 U
Copper	Peristaltic - dissolved	µg/L	14	14	100	0.46	1.23	W023M	0.582	0.55	0.814	0.46	1.23	W023M	0.582	0.55	0.814
Copper	Peristaltic - particulate[d]	µg/L	14	14	100	0	0.62	W024	0.326	0.32	0.51	0	0.62	W024	0.326	0.32	0.51
Copper	Peristaltic - total	µg/L	14	14	100	0.65	1.1	W024	0.867	0.86	1.05	0.65	1.1	W024	0.867	0.86	1.05
Zinc	Peristaltic - dissolved	µg/L	14	1	7	5.1	5.1	W025M	5.1	5.1	5.1	1.7 U	5.1	W025M	1.67	1.35 U	3.12
Zinc	Peristaltic - particulate[d]	µg/L	14	1	7	0	0	W025M	0	0	0	0	5.4 U	W024	1.81	2 U	2.41 U
Zinc	Peristaltic - total	µg/L	14	0	0	--	--	--	--	--	--	2.6 U	5.4 U	W024	1.9	1.85 U	2.41 UJ
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	14	2	14	0.001 J	0.011 J	W024	0.006	0.006 J	0.0105 J	0.0006 UJ	0.011 J	W024	0.00111	0.0003 UJ	0.0045 J
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	14	14	100	0.0000777 JT	0.000954 JT	W025E	0.000218	0.000158 J	0.00052 J	0.0000777 JT	0.000954 JT	W025E	0.000218	0.000158 J	0.00052 J
Total PCBs	XAD Filter - particulate	µg/L	14	14	100	0.0000399 JT	0.000408 JT	W023E	0.000154	0.000124 J	0.000361 J	0.0000399 JT	0.000408 JT	W023E	0.000154	0.000124 J	0.000361 J
Total PCBs	XAD Column+Filter - total	µg/L	14	14	100	0.000121 J	0.00129 J	W025E	0.000372	0.000292 J	0.00081 J	0.000121 J	0.00129 J	W025E	0.000372	0.000292 J	0.00081 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	14	14	100	0.000000077 T	0.0000155 JT	W027	0.00000481	0.00000428	0.0000115 J	0.000000077 T	0.0000155 JT	W027	0.00000481	0.00000428	0.0000115 J
Total PCDD/Fs	XAD Filter - particulate	µg/L	14	14	100	0.00000543 JT	0.000109 T	W023E	0.0000309	0.0000252	0.0000668	0.00000543 JT	0.000109 T	W023E	0.0000309	0.0000252	0.0000668
Total PCDD/Fs	XAD Column+Filter - total	µg/L	14	14	100	0.00000551 J	0.000118	W023E	0.0000357	0.000027	0.0000754 J	0.00000551 J	0.000118	W023E	0.0000357	0.000027	0.0000754 J
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	14	14	100	0.00000000033 JT	0.0000000656 JT	W027	0.0000000158	0.00000000901 J	0.0000000558 J	0.00000000033 JT	0.0000000656 JT	W027	0.0000000158	0.00000000901 J	0.0000000558 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	14	14	100	0.0000000127 JT	0.000000245 JT	W023E	0.00000007	0.0000000593 J	0.000000149 J	0.0000000127 JT	0.000000245 JT	W023E	0.00000007	0.0000000593 J	0.000000149 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	14	14	100	0.0000000133 J	0.000000278 J	W023E	0.0000000858	0.0000000743 J	0.000000187 J	0.0000000133 J	0.000000278 J	W023E	0.0000000858	0.0000000743 J	0.000000187 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	14	7	50	0.0000011 J	0.00000366 J	W005	0.00000227	0.00000201 J	0.00000362 J	0.0000011 J	0.00000724 U	W027	0.00000191	0.00000179 J	0.00000363 J
Aldrin	XAD Filter - particulate	µg/L	14	4	29	0.00000119 J	0.00000263 J	W027	0.00000184	0.00000176 J	0.00000257 J	0.00000058 U	0.00000263 J	W027	0.000000978	0.00000082 U	0.00000237 J
Aldrin	Peristaltic - total	µg/L	1	0	0	--	--	--	--	--	--	0.00047 U	0.00047 U	W027	0.000235	0.000235 U	0.000235 U
Aldrin	XAD Column+Filter - total	µg/L	14	9	64	0.0000011 J	0.00000575 J	W027	0.00000258	0.00000204 J	0.00000491 J	0.0000011 J	0.00000575 J	W027	0.00000211	0.00000181 J	0.00000439 J
Dieldrin	XAD Column - dissolved	µg/L	14	14	100	0.0000251 J	0.0000467 J	W024	0.0000333	0.0000315 J	0.0000425 J	0.0000251 J	0.0000467 J	W024	0.0000333	0.0000315 J	0.0000425 J
Dieldrin	XAD Filter - particulate	µg/L	14	6	43	0.0000012 J	0.00000785 J	W024	0.0000046	0.00000479 J	0.00000763 J	0.0000012 J	0.00000785 J	W024	0.00000289	0.00000192 J	0.00000728 J
Dieldrin	Peristaltic - total	µg/L	1	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W027	0.0002	0.0002 U	0.0002 U
Dieldrin	XAD Column+Filter - total	µg/L	14	14	100	0.0000251 J	0.0000537 J	W024	0.0000352	0.0000331 J	0.0000501 J	0.0000251 J	0.0000537 J	W024	0.0000352	0.0000331 J	0.0000501 J
Total chlordanes	XAD Column - dissolved	µg/L	14	14	100	0.0000121 JT	0.0000316 JT	W027	0.0000213	0.0000211 J	0.0000291 J	0.0000121 JT	0.0000316 JT	W027	0.0000213	0.0000211 J	0.0000291 J
Total chlordanes	XAD Filter - particulate	µg/L	14	4	29	0.00000132 JT	0.0000098 JT	W027	0.000006	0.00000643 J	0.00000936 J	0.00000132 JT	0.0000168 UT	W025M	0.00000689	0.0000076 U	0.00000889 J
Total chlordanes	Peristaltic - total	µg/L	1	0	0	--	--	--	--	--	--	0.0015 UT	0.0015 UT	W027	0.00075	0.00075 UT	0.00075 UT
Total chlordanes	XAD Column+Filter - total	µg/L	14	14	100	0.0000134 J	0.0000376 J	W027	0.0000231	0.0000213 J	0.0000369 J	0.0000134 J	0.0000376 J	W027	0.0000231	0.0000213 J	0.0000369 J
DDx	XAD Column - dissolved	µg/L	14	14	100	0.0000332 JT	0.000141 JT	W011	0.0000756	0.0000715 J	0.000129 J	0.0000332 JT	0.000141 JT	W011	0.0000756	0.0000715 J	0.000129 J
DDx	XAD Filter - particulate	µg/L	14	13	93	0.00000786 JT	0.0000926 JT	W005	0.000054	0.0000585 JT	0.0000805 J	0.00000786 JT	0.0000926 JT	W005	0.0000504	0.0000559 J	0.0000795 J
DDx	Peristaltic - total	µg/L	1	1	100	0.0019 T	0.0019 T	W027	0.0019	0.0019 T	0.0019 T	0.0019 T	0.0019 T	W027	0.0019	0.0019 T	0.0019 T
DDx	XAD Column+Filter - total	µg/L	14	14	100	0.0000332 J	0.000201 J	W011	0.000126	0.000135 J	0.00019 J	0.0000332 J	0.000201 J	W011	0.000126	0.000135 J	0.00019 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	14	14	100	0.00111 JT	0.0269 JT	W005	0.00825	0.00591 J	0.0215 J	0.00111 JT	0.0269 JT	W005	0.00825	0.00591 J	0.0215 J
Total PAHs	XAD Filter - particulate	µg/L	14	14	100	0.00168 JT	0.0182 JT	W005	0.00801	0.00786 J	0.015 J	0.00168 JT	0.0182 JT	W005	0.00801	0.00786 J	0.015 J
Total PAHs	Peristaltic - total	µg/L	14	9	64	0.0057 JT	0.068 JT	W027	0.0185	0.012 JT	0.05 J	0.0057 JT	0.068 JT	W027	0.016	0.012 J	0.0388 J
Total PAHs	XAD Column+Filter - total	µg/L	14	14	100	0.00279 J	0.0389 J	W005	0.0163	0.0163 J	0.0325 J	0.00279 J	0.0389 J	W005	0.0163	0.0163 J	0.0325 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	14	1	7	6.8 J	6.8 J	W005	6.8	6.8 J	6.8 J	0.14 U	6.8 J	W005	0.915	0.47 UJ	3 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-11a. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	26	5	19	0.38 J	0.48 T	W038	0.415	0.404 JT	0.466	0.38 J	0.48 T	W038	0.243	0.201 U	0.41 J
Arsenic	Peristaltic - particulate[d]	µg/L	26	20	77	0 J	0.512 J	W038	0.355	0.452 J	0.483 J	0 J	0.512 J	W038	0.324	0.438 J	0.48 J
Arsenic	Peristaltic - total	µg/L	26	19	73	0.428 J	0.526 JT	W038	0.463	0.458 J	0.513 J	0.412 UJ	0.526 JT	W038	0.398	0.452 J	0.505 J
Chromium	Peristaltic - dissolved	µg/L	26	0	0	--	--	--	--	--	--	0.1 U	0.21 U	W032	0.0804	0.08 U	0.1 U
Chromium	Peristaltic - particulate	µg/L	26	0	0	--	--	--	--	--	--	0.23 U	0.42 U	W032	0.16	0.158 U	0.194 U
Chromium	Peristaltic - total	µg/L	26	0	0	--	--	--	--	--	--	0.23 U	0.42 U	W032	0.16	0.158 U	0.194 U
Copper	Peristaltic - dissolved	µg/L	26	26	100	0.5	0.78	W035	0.56	0.555	0.638	0.5	0.78	W035	0.56	0.555	0.638
Copper	Peristaltic - particulate	µg/L	26	26	100	0.26	0.56	W031	0.357	0.355	0.47	0.26	0.56	W031	0.357	0.355	0.47
Copper	Peristaltic - total	µg/L	26	26	100	0.79	1.14	W035	0.918	0.89	1.1	0.79	1.14	W035	0.918	0.89	1.1
Zinc	Peristaltic - dissolved	µg/L	26	4	15	4.8	6.6	W034	5.5	5.3	6.42	2.2 U	6.6	W034	2.08	1.43 U	5.35
Zinc	Peristaltic - particulate[d]	µg/L	26	4	15	0	0	W031; W034; W035; W036	0	0	0	0	7 U	W028	1.76	1.85 U	2.88 U
Zinc	Peristaltic - total	µg/L	26	0	0	--	--	--	--	--	--	3 U	7 U	W028	2.05	1.9 U	2.88 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	26	2	8	0.0013 J	0.0014 J	W035	0.00135	0.00135 J	0.0014 J	0.0006 UJ	0.0045 U	W034	0.000456	0.0003 U	0.00138 J
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	26	26	100	0.0000893 JT	0.00237 JT	W030	0.000328	0.000181 J	0.000695 J	0.0000893 JT	0.00237 JT	W030	0.000328	0.000181 J	0.000695 J
Total PCBs	XAD Filter - particulate	µg/L	26	26	100	0.0000231 JT	0.000457 JT	W028	0.000179	0.000157 J	0.000417 J	0.0000231 JT	0.000457 JT	W028	0.000179	0.000157 J	0.000417 J
Total PCBs	XAD Column+Filter - total	µg/L	26	26	100	0.000112 J	0.00259 J	W030	0.000507	0.000333 J	0.0011 J	0.000112 J	0.00259 J	W030	0.000507	0.000333 J	0.0011 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	8	8	100	0.00000279 T	0.00000855 T	W033	0.00000539	0.00000489 J	0.00000814	0.00000279 T	0.00000855 T	W033	0.00000539	0.00000489 J	0.00000814
Total PCDD/Fs	XAD Filter - particulate	µg/L	8	8	100	0.0000274 T	0.0000494 T	W032	0.0000404	0.0000411	0.000049	0.0000274 T	0.0000494 T	W032	0.0000404	0.0000411	0.000049
Total PCDD/Fs	XAD Column+Filter - total	µg/L	8	8	100	0.000036	0.0000552 J	W032	0.0000458	0.0000465	0.0000547 J	0.000036	0.0000552 J	W032	0.0000458	0.0000465	0.0000547 J
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	8	8	100	0.0000000051 T	0.0000000173 JT	W033	0.00000000977	0.00000000843 J	0.0000000164 J	0.0000000051 T	0.0000000173 JT	W033	0.00000000977	0.00000000843 J	0.0000000164 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	8	8	100	0.0000000726 JT	0.000000203 JT	W033	0.000000118	0.000000101 J	0.000000194 J	0.0000000726 JT	0.000000203 JT	W033	0.000000118	0.000000101 J	0.000000194 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	8	8	100	0.0000000777 J	0.000000212 J	W033	0.000000127	0.000000108 J	0.000000202 J	0.0000000777 J	0.000000212 J	W033	0.000000127	0.000000108 J	0.000000202 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	12	4	33	0.00000203 J	0.00000426 J	W033	0.00000326	0.00000337 J	0.00000417 J	0.00000187 U	0.00000426 J	W033	0.00000208	0.00000193 U	0.00000394 J
Aldrin	XAD Filter - particulate	µg/L	12	6	50	0.000000635 J	0.00000366 J	W031	0.0000019	0.00000174 J	0.0000033 J	0.000000635 J	0.0000167 U	W035	0.00000222	0.00000156 J	0.00000577 J
Aldrin	Peristaltic - total	µg/L	17	0	0	--	--	--	--	--	--	0.000057 U	0.0005 U	W026	0.000166	0.00016 U	0.000242 U
Aldrin	XAD Column+Filter - total	µg/L	12	9	75	0.000000635 J	0.00000484 J	W033	0.00000272	0.00000223 J	0.00000461 J	0.000000635 J	0.0000167 U	W035	0.00000303	0.00000215 J	0.00000642 J
Dieldrin	XAD Column - dissolved	µg/L	12	12	100	0.0000319 J	0.0000498 J	W031	0.0000391	0.0000367 J	0.0000479 J	0.0000319 J	0.0000498 J	W031	0.0000391	0.0000367 J	0.0000479 J
Dieldrin	XAD Filter - particulate	µg/L	12	6	50	0.00000237 J	0.00000415 J	W031	0.00000307	0.00000299 J	0.00000399 J	0.00000203 U	0.00000415 J	W031	0.00000222	0.00000209 J	0.00000379 J
Dieldrin	Peristaltic - total	µg/L	17	0	0	--	--	--	--	--	--	0.0004 U	0.00042 U	W029; W037	0.000201	0.0002 U	0.00021 U
Dieldrin	XAD Column+Filter - total	µg/L	12	12	100	0.0000319 J	0.0000501 J	W031	0.0000407	0.000037 J	0.0000499 J	0.0000319 J	0.0000501 J	W031	0.0000407	0.000037 J	0.0000499 J
Total chlordanes	XAD Column - dissolved	µg/L	12	12	100	0.00000672 JT	0.0000299 JT	W032	0.0000206	0.0000212 J	0.0000286 J	0.00000672 JT	0.0000299 JT	W032	0.0000206	0.0000212 J	0.0000286 J
Total chlordanes	XAD Filter - particulate	µg/L	12	11	92	0.000000597 JT	0.0000113 JT	W032	0.00000616	0.0000051 JT	0.0000106 J	0.000000597 JT	0.0000327 UT	W034	0.00000701	0.00000687 J	0.0000136 J
Total chlordanes	Peristaltic - total	µg/L	17	2	12	0.00055 NJT	0.0016 JT	W036	0.00108	0.00108 J	0.00155 J	0.00055 NJT	0.0024 UT	W030	0.00076	0.0007 UT	0.00128 J
Total chlordanes	XAD Column+Filter - total	µg/L	12	12	100	0.00000732 J	0.0000368 J	W033	0.0000263	0.0000262 J	0.0000365 J	0.00000732 J	0.0000368 J	W033	0.0000263	0.0000262 J	0.0000365 J
DDx	XAD Column - dissolved	µg/L	12	12	100	0.0000415 JT	0.000246 JT	W033	0.000126	0.000134 J	0.000224 J	0.0000415 JT	0.000246 JT	W033	0.000126	0.000134 J	0.000224 J
DDx	XAD Filter - particulate	µg/L	12	12	100	0.0000193 JT	0.000429 JT	W033	0.000154	0.000144 J	0.000349 J	0.0000193 JT	0.000429 JT	W033	0.000154	0.000144 J	0.000349 J
DDx	Peristaltic - total	µg/L	17	12	71	0.0015 T	0.0047 NJT	W037	0.00258	0.00255 J	0.00393 J	0.001 UT	0.0047 NJT	W037	0.00201	0.002 NJT	0.00358 J
DDx	XAD Column+Filter - total	µg/L	12	12	100	0.0000767 J	0.000675 J	W033	0.00028	0.000282 J	0.000543 J	0.0000767 J	0.000675 J	W033	0.00028	0.000282 J	0.000543 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	8	8	100	0.00108 JT	0.0298 JT	W035	0.0138	0.0158 J	0.027 J	0.00108 JT	0.0298 JT	W035	0.0138	0.0158 J	0.027 J
Total PAHs	XAD Filter - particulate	µg/L	8	8	100	0.00237 JT	0.0306 JT	W033	0.0126	0.0101 J	0.0294 J	0.00237 JT	0.0306 JT	W033	0.0126	0.0101 J	0.0294 J
Total PAHs	Peristaltic - total	µg/L	26	12	46	0.005 JT	0.12 JT	W033	0.0349	0.032 J	0.087 J	0.005 JT	0.12 JT	W033	0.0197	0.0065 U	0.0538 J
Total PAHs	XAD Column+Filter - total	µg/L	8	8	100	0.00586 J	0.0507 J	W033	0.0264	0.0287 J	0.0486 J	0.00586 J	0.0507 J	W033	0.0264	0.0287 J	0.0486 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	26	0	0	--	--	--	--	--	--	0.21 UJ	2.6 UJ	W032	0.353	0.26 UJ	1.03 UJ

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-11b. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
RM 01.9<03																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.422 U	0.425 U	W026	0.212	0.212 U	0.212 U
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.458 J	0.481 J	W026	0.47	0.47 J	0.48 J	0.458 J	0.481 J	W026	0.47	0.47 J	0.48 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.458 J	0.481 J	W026	0.47	0.47 J	0.48 J	0.458 J	0.481 J	W026	0.47	0.47 J	0.48 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.13 U	0.15 U	W026	0.07	0.07 U	0.0745 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.34 U	0.38 U	W026	0.18	0.18 U	0.189 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.34 U	0.38 U	W026	0.18	0.18 U	0.189 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.54	0.63	W026	0.585	0.585	0.626	0.54	0.63	W026	0.585	0.585	0.626
Copper	Peristaltic - particulate	µg/L	2	2	100	0.34	0.44	W026	0.39	0.39	0.435	0.34	0.44	W026	0.39	0.39	0.435
Copper	Peristaltic - total	µg/L	2	2	100	0.88	1.07	W026	0.975	0.975	1.06	0.88	1.07	W026	0.975	0.975	1.06
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	2.4 U	4.4 U	W026	1.7	1.7 U	2.15 U
Zinc	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	4.4 U	4.9 U	W026	2.33	2.33 U	2.44 U
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	4.3 U	4.9 U	W026	2.3	2.3 U	2.44 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W026	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000634 JT	0.00069 JT	W026	0.000662	0.000662 J	0.000687 J	0.000634 JT	0.00069 JT	W026	0.000662	0.000662 J	0.000687 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000239 JT	0.000263 JT	W026	0.000251	0.000251 J	0.000262 J	0.000239 JT	0.000263 JT	W026	0.000251	0.000251 J	0.000262 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000897 J	0.000929 J	W026	0.000913	0.000913 J	0.000927 J	0.000897 J	0.000929 J	W026	0.000913	0.000913 J	0.000927 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00048 U	0.0005 U	W026	0.000245	0.000245 U	0.00025 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W026	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0015 UT	0.0018 UT	W026	0.000825	0.000825 U	0.000893 U
DDx	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.001 UT	0.0011 UT	W026	0.000525	0.000525 U	0.000548 U
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	1	50	0.011 JT	0.011 JT	W026	0.011	0.011 JT	0.011 JT	0.011 JT	0.013 UT	W026	0.00875	0.00875 J	0.0108 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.52 UJ	0.79 UJ	W026	0.328	0.328 UJ	0.388 UJ
RM 03<04																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.384 UJ	0.395 UJ	W028	0.195	0.195 UJ	0.197 UJ
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.442 J	0.478 J	W028	0.46	0.46 J	0.476 J	0.442 J	0.478 J	W028	0.46	0.46 J	0.476 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.442 J	0.478 J	W028	0.46	0.46 J	0.476 J	0.442 J	0.478 J	W028	0.46	0.46 J	0.476 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.18 U	0.2 U	W028	0.095	0.095 U	0.0995 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.31 U	0.34 U	W028	0.163	0.163 U	0.169 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.31 U	0.34 U	W028	0.163	0.163 U	0.169 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.56	0.64	W028	0.6	0.6	0.636	0.56	0.64	W028	0.6	0.6	0.636
Copper	Peristaltic - particulate	µg/L	2	2	100	0.3	0.36	W028	0.33	0.33	0.357	0.3	0.36	W028	0.33	0.33	0.357
Copper	Peristaltic - total	µg/L	2	2	100	0.92	0.94	W028	0.93	0.93	0.939	0.92	0.94	W028	0.93	0.93	0.939
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	2.2 U	3.7 U	W028	1.48	1.48 U	1.81 U
Zinc	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	5 U	7 U	W028	3	3 U	3.45 U
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	5 U	7 U	W028	3	3 U	3.45 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W028	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000353 JT	0.000696 JT	W028	0.000525	0.000525 J	0.000679 J	0.000353 JT	0.000696 JT	W028	0.000525	0.000525 J	0.000679 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000769 JT	0.000457 JT	W028	0.000267	0.000267 J	0.000438 J	0.0000769 JT	0.000457 JT	W028	0.000267	0.000267 J	0.000438 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.00043 J	0.00115 J	W028	0.000791	0.000791 J	0.00112 J	0.00043 J	0.00115 J	W028	0.000791	0.000791 J	0.00112 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0002 U	0.00023 U	W028	0.000108	0.000108 U	0.000114 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W028	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0013 UT	0.002 UT	W028	0.000825	0.000825 U	0.000983 U
DDx	Peristaltic - total	µg/L	2	1	50	0.0019 T	0.0019 T	W028	0.0019	0.0019 T	0.0019 T	0.0015 UT	0.0019 T	W028	0.00133	0.00133	0.00184
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W028	0.0065	0.0065 U	0.0065 U
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.52 UJ	2.1 UJ	W028	0.655	0.655 UJ	1.01 UJ
RM 05<06																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.395 U	0.405 UJ	W030	0.2	0.2 UJ	0.202 UJ
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.428 J	0.453 J	W030	0.441	0.441 J	0.452 J	0.428 J	0.453 J	W030	0.441	0.441 J	0.452 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.428 J	0.453 J	W030	0.441	0.441 J	0.452 J	0.428 J	0.453 J	W030	0.441	0.441 J	0.452 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.14 U	0.18 U	W030	0.08	0.08 U	0.089 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.29 U	0.3 U	W030	0.148	0.148 U	0.15 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.29 U	0.3 U	W030	0.148	0.148 U	0.15 U

Table 5.4-11b. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.58	0.6	W030	0.59	0.59	0.599	0.58	0.6	W030	0.59	0.59	0.599
Copper	Peristaltic - particulate	µg/L	2	2	100	0.33	0.37	W030	0.35	0.35	0.368	0.33	0.37	W030	0.35	0.35	0.368
Copper	Peristaltic - total	µg/L	2	2	100	0.93	0.95	W030	0.94	0.94	0.949	0.93	0.95	W030	0.94	0.94	0.949
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	2.6 U	2.7 U	W030	1.33	1.33 U	1.35 U
Zinc	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	3.4 U	3.7 U	W030	1.78	1.78 U	1.84 U
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	3.4 U	3.7 U	W030	1.78	1.78 U	1.84 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W030	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000215 JT	0.00237 JT	W030	0.00129	0.00129 J	0.00226 J	0.000215 JT	0.00237 JT	W030	0.00129	0.00129 J	0.00226 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000162 JT	0.000216 JT	W030	0.000189	0.000189 J	0.000213 J	0.000162 JT	0.000216 JT	W030	0.000189	0.000189 J	0.000213 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000377 J	0.00259 J	W030	0.00148	0.00148 J	0.00248 J	0.000377 J	0.00259 J	W030	0.00148	0.00148 J	0.00248 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00023 U	0.00029 U	W030	0.00013	0.00013 U	0.000144 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W030	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0014 UT	0.0024 UT	W030	0.00095	0.00095 U	0.00118 U
DDx	Peristaltic - total	µg/L	2	2	100	0.002 JT	0.0033 NJT	W030	0.00265	0.00265 J	0.00324 J	0.002 JT	0.0033 NJT	W030	0.00265	0.00265 J	0.00324 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W030	0.0065	0.0065 U	0.0065 U
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.29 UJ	0.76 UJ	W030	0.263	0.263 UJ	0.368 UJ
RM 06<07																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	2	100	0.38 J	0.404 JT	W032	0.392	0.392 J	0.403 J	0.38 J	0.404 JT	W032	0.392	0.392 J	0.403 J
Arsenic	Peristaltic - particulate[d]	µg/L	2	2	100	0 J	0.054 J	W032	0.027	0.027 J	0.0513 J	0 J	0.054 J	W032	0.027	0.027 J	0.0513 J
Arsenic	Peristaltic - total	µg/L	2	1	50	0.458 J	0.458 J	W032	0.458	0.458 J	0.458 J	0.456 UJ	0.458 J	W032	0.343	0.343 J	0.447 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.17 U	0.21 U	W032	0.095	0.095 U	0.104 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.33 U	0.42 U	W032	0.188	0.188 U	0.208 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.33 U	0.42 U	W032	0.188	0.188 U	0.208 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.58	0.59	W032	0.585	0.585	0.59	0.58	0.59	W032	0.585	0.585	0.59
Copper	Peristaltic - particulate	µg/L	2	2	100	0.29	0.35	W032	0.32	0.32	0.347	0.29	0.35	W032	0.32	0.32	0.347
Copper	Peristaltic - total	µg/L	2	2	100	0.88	0.93	W032	0.905	0.905	0.928	0.88	0.93	W032	0.905	0.905	0.928
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	3.1 U	3.9 U	W032	1.75	1.75 U	1.93 U
Zinc	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	3.9 U	3.9 U	W032	1.95	1.95 U	1.95 U
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	3.3 U	3.9 U	W032	1.8	1.8 U	1.94 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W032	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000229 JT	0.000335 JT	W032	0.000282	0.000282 J	0.00033 J	0.000229 JT	0.000335 JT	W032	0.000282	0.000282 J	0.00033 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.00027 JT	0.000321 JT	W032	0.000296	0.000296 J	0.000318 J	0.00027 JT	0.000321 JT	W032	0.000296	0.000296 J	0.000318 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000499 J	0.000656 J	W032	0.000578	0.000578 J	0.000648 J	0.000499 J	0.000656 J	W032	0.000578	0.000578 J	0.000648 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	2	2	100	0.00000402 T	0.00000576 JT	W032	0.00000489	0.00000489 J	0.00000567 J	0.00000402 T	0.00000576 JT	W032	0.00000489	0.00000489 J	0.00000567 J
Total PCDD/Fs	XAD Filter - particulate	µg/L	2	2	100	0.0000343 T	0.0000494 T	W032	0.0000419	0.0000419	0.0000486	0.0000343 T	0.0000494 T	W032	0.0000419	0.0000419	0.0000486
Total PCDD/Fs	XAD Column+Filter - total	µg/L	2	2	100	0.0000383	0.0000552 J	W032	0.0000467	0.0000467 J	0.0000543 J	0.0000383	0.0000552 J	W032	0.0000467	0.0000467 J	0.0000543 J
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	2	2	100	0.0000000051 T	0.00000000779 JT	W032	0.00000000645	0.00000000645 J	0.00000000766 J	0.0000000051 T	0.00000000779 JT	W032	0.00000000645	0.00000000645 J	0.00000000766 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	2	2	100	0.0000000726 JT	0.0000000931 JT	W032	0.0000000829	0.0000000829 J	0.0000000921 J	0.0000000726 JT	0.0000000931 JT	W032	0.0000000829	0.0000000829 J	0.0000000921 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	2	2	100	0.0000000777 J	0.000000101 J	W032	0.0000000893	0.0000000893 J	0.0000000997 J	0.0000000777 J	0.000000101 J	W032	0.0000000893	0.0000000893 J	0.0000000997 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	2	1	50	0.00000203 J	0.00000203 J	W032	0.00000203	0.00000203 J	0.00000203 J	0.00000195 U	0.00000203 J	W032	0.0000015	0.0000015 J	0.00000198 J
Aldrin	XAD Filter - particulate	µg/L	2	1	50	0.00000223 J	0.00000223 J	W032	0.00000223	0.00000223 J	0.00000223 J	0.00000155 U	0.00000223 J	W032	0.0000015	0.0000015 J	0.00000216 J
Aldrin	XAD Column+Filter - total	µg/L	2	2	100	0.00000203 J	0.00000223 J	W032	0.00000213	0.00000213 J	0.00000222 J	0.00000203 J	0.00000223 J	W032	0.00000213	0.00000213 J	0.00000222 J
Dieldrin	XAD Column - dissolved	µg/L	2	2	100	0.0000433 J	0.0000463 J	W032	0.0000448	0.0000448 J	0.0000462 J	0.0000433 J	0.0000463 J	W032	0.0000448	0.0000448 J	0.0000462 J
Dieldrin	XAD Filter - particulate	µg/L	2	2	100	0.00000293 J	0.00000304 J	W032	0.00000299	0.00000299 J	0.00000303 J	0.00000293 J	0.00000304 J	W032	0.00000299	0.00000299 J	0.00000303 J
Dieldrin	XAD Column+Filter - total	µg/L	2	2	100	0.0000462 J	0.0000493 J	W032	0.0000478	0.0000478 J	0.0000492 J	0.0000462 J	0.0000493 J	W032	0.0000478	0.0000478 J	0.0000492 J
Total chlordanes	XAD Column - dissolved	µg/L	2	2	100	0.0000212 JT	0.0000299 JT	W032	0.0000256	0.0000256 J	0.0000295 J	0.0000212 JT	0.0000299 JT	W032	0.0000256	0.0000256 J	0.0000295 J
Total chlordanes	XAD Filter - particulate	µg/L	2	2	100	0.0000051 JT	0.0000113 JT	W032	0.0000082	0.0000082 J	0.000011 J	0.0000051 JT	0.0000113 JT	W032	0.0000082	0.0000082 J	0.000011 J
Total chlordanes	XAD Column+Filter - total	µg/L	2	2	100	0.0000325 J	0.000035 J	W032	0.0000338	0.0000338 J	0.0000349 J	0.0000325 J	0.000035 J	W032	0.0000338	0.0000338 J	0.0000349 J
DDx	XAD Column - dissolved	µg/L	2	2	100	0.0000461 JT	0.0000479 JT	W032	0.000047	0.000047 J	0.0000478 J	0.0000461 JT	0.0000479 JT	W032	0.000047	0.000047 J	0.0000478 J
DDx	XAD Filter - particulate	µg/L	2	2	100	0.0000453 JT	0.0000535 JT	W032	0.0000494	0.0000494 J	0.0000531 J	0.0000453 JT	0.0000535 JT	W032	0.0000494	0.0000494 J	0.0000531 J
DDx	XAD Column+Filter - total	µg/L	2	2	100	0.0000914 J	0.000101 J	W032	0.0000964	0.0000964 J	0.000101 J	0.0000914 J	0.000101 J	W032	0.0000964	0.0000964 J	0.000101 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	2	2	100	0.00236 JT	0.00368 JT	W032	0.00302	0.00302 J	0.00361 J	0.00236 JT	0.00368 JT	W032	0.00302	0.00302 J	0.00361 J
Total PAHs	XAD Filter - particulate	µg/L	2	2	100	0.00237 JT	0.0035 JT	W032	0.00294	0.00294 J	0.00344 J	0.00237 JT	0.0035 JT	W032	0.00294	0.00294 J	0.00344 J
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W032	0.0065	0.0065 U	0.0065 U

Table 5.4-11b. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Total PAHs	XAD Column+Filter - total	µg/L	2	2	100	0.00586 J	0.00605 J	W032	0.00596	0.00596 J	0.00604 J	0.00586 J	0.00605 J	W032	0.00596	0.00596 J	0.00604 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.83 UJ	2.6 UJ	W032	0.858	0.858 UJ	1.26 UJ
RM 08<09																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.402 U	0.404 U	W035	0.202	0.202 U	0.202 U
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.457 J	0.464 J	W035	0.461	0.461 J	0.464 J	0.457 J	0.464 J	W035	0.461	0.461 J	0.464 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.457 J	0.464 J	W035	0.461	0.461 J	0.464 J	0.457 J	0.464 J	W035	0.461	0.461 J	0.464 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.13 U	0.16 U	W035	0.0725	0.0725 U	0.0793 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.34 U	0.39 U	W035	0.183	0.183 U	0.194 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.34 U	0.39 U	W035	0.183	0.183 U	0.194 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.53	0.78	W035	0.655	0.655	0.768	0.53	0.78	W035	0.655	0.655	0.768
Copper	Peristaltic - particulate	µg/L	2	2	100	0.36	0.48	W035	0.42	0.42	0.474	0.36	0.48	W035	0.42	0.42	0.474
Copper	Peristaltic - total	µg/L	2	2	100	1.01	1.14	W035	1.08	1.08	1.13	1.01	1.14	W035	1.08	1.08	1.13
Zinc	Peristaltic - dissolved	µg/L	2	1	50	5.2	5.2	W035	5.2	5.2	5.2	2.4 U	5.2	W035	3.2	3.2	5
Zinc	Peristaltic - particulate[d]	µg/L	2	1	50	0	0	W035	0	0	0	0	6 U	W035	1.5	1.5	2.85
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	4.8 U	6 U	W035	2.7	2.7 U	2.97 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	1	50	0.0014 J	0.0014 J	W035	0.0014	0.0014 J	0.0014 J	0.0006 U	0.0014 J	W035	0.00085	0.00085 J	0.00135 J
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000231 JT	0.000294 JT	W035	0.000263	0.000263 J	0.000291 J	0.000231 JT	0.000294 JT	W035	0.000263	0.000263 J	0.000291 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000295 JT	0.000449 JT	W035	0.000372	0.000372 J	0.000441 J	0.000295 JT	0.000449 JT	W035	0.000372	0.000372 J	0.000441 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000589 J	0.00068 J	W035	0.000635	0.000635 J	0.000675 J	0.000589 J	0.00068 J	W035	0.000635	0.000635 J	0.000675 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	2	2	100	0.00000342 T	0.0000073 T	W035	0.00000536	0.00000536	0.00000711	0.00000342 T	0.0000073 T	W035	0.00000536	0.00000536	0.00000711
Total PCDD/Fs	XAD Filter - particulate	µg/L	2	2	100	0.0000453 T	0.0000465 T	W035	0.0000459	0.0000459	0.0000464	0.0000453 T	0.0000465 T	W035	0.0000459	0.0000459	0.0000464
Total PCDD/Fs	XAD Column+Filter - total	µg/L	2	2	100	0.0000487	0.0000538	W035	0.0000513	0.0000513	0.0000535	0.0000487	0.0000538	W035	0.0000513	0.0000513	0.0000535
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	2	2	100	0.0000000069 JT	0.0000000119 JT	W035	0.0000000094	0.0000000094 J	0.0000000117 J	0.0000000069 JT	0.0000000119 JT	W035	0.0000000094	0.0000000094 J	0.0000000117 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	2	2	100	0.000000108 JT	0.000000124 JT	W035	0.000000116	0.000000116 J	0.000000123 J	0.000000108 JT	0.000000124 JT	W035	0.000000116	0.000000116 J	0.000000123 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	2	2	100	0.000000115 J	0.000000136 J	W035	0.000000125	0.000000125 J	0.000000135 J	0.000000115 J	0.000000136 J	W035	0.000000125	0.000000125 J	0.000000135 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.00000187 U	0.00000258 U	W035	0.00000111	0.00000111 U	0.00000127 U
Aldrin	XAD Filter - particulate	µg/L	2	1	50	0.00000141 J	0.00000141 J	W035	0.00000141	0.00000141 J	0.00000141 J	0.00000141 J	0.0000167 U	W035	0.00000488	0.00000488 J	0.000008 J
Aldrin	XAD Column+Filter - total	µg/L	2	1	50	0.00000141 J	0.00000141 J	W035	0.00000141	0.00000141 J	0.00000141 J	0.00000141 J	0.0000167 U	W035	0.00000488	0.00000488 J	0.000008 J
Dieldrin	XAD Column - dissolved	µg/L	2	2	100	0.0000326 J	0.0000444 J	W035	0.0000385	0.0000385 J	0.0000438 J	0.0000326 J	0.0000444 J	W035	0.0000385	0.0000385 J	0.0000438 J
Dieldrin	XAD Filter - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.00000281 U	0.0000036 U	W035	0.0000016	0.0000016 U	0.00000178 U
Dieldrin	XAD Column+Filter - total	µg/L	2	2	100	0.0000326 J	0.0000444 J	W035	0.0000385	0.0000385 J	0.0000438 J	0.0000326 J	0.0000444 J	W035	0.0000385	0.0000385 J	0.0000438 J
Total chlordanes	XAD Column - dissolved	µg/L	2	2	100	0.0000162 JT	0.0000206 JT	W035	0.0000184	0.0000184 J	0.0000204 J	0.0000162 JT	0.0000206 JT	W035	0.0000184	0.0000184 J	0.0000204 J
Total chlordanes	XAD Filter - particulate	µg/L	2	2	100	0.00000905 JT	0.00000998 JT	W035	0.00000952	0.00000952 J	0.00000993 J	0.00000905 JT	0.00000998 JT	W035	0.00000952	0.00000952 J	0.00000993 J
Total chlordanes	XAD Column+Filter - total	µg/L	2	2	100	0.0000253 J	0.0000306 J	W035	0.0000279	0.0000279 J	0.0000303 J	0.0000253 J	0.0000306 J	W035	0.0000279	0.0000279 J	0.0000303 J
DDx	XAD Column - dissolved	µg/L	2	2	100	0.0000415 JT	0.0000469 JT	W035	0.0000442	0.0000442 J	0.0000466 J	0.0000415 JT	0.0000469 JT	W035	0.0000442	0.0000442 J	0.0000466 J
DDx	XAD Filter - particulate	µg/L	2	2	100	0.0000352 JT	0.0000597 JT	W035	0.0000475	0.0000475 J	0.0000585 J	0.0000352 JT	0.0000597 JT	W035	0.0000475	0.0000475 J	0.0000585 J
DDx	XAD Column+Filter - total	µg/L	2	2	100	0.0000767 J	0.000107 J	W035	0.0000916	0.0000916 J	0.000105 J	0.0000767 J	0.000107 J	W035	0.0000916	0.0000916 J	0.000105 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	2	2	100	0.00108 JT	0.0298 JT	W035	0.0154	0.0154 J	0.0284 J	0.00108 JT	0.0298 JT	W035	0.0154	0.0154 J	0.0284 J
Total PAHs	XAD Filter - particulate	µg/L	2	2	100	0.00562 JT	0.00955 JT	W035	0.00759	0.00759 J	0.00935 J	0.00562 JT	0.00955 JT	W035	0.00759	0.00759 J	0.00935 J
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W035	0.0065	0.0065 U	0.0065 U
Total PAHs	XAD Column+Filter - total	µg/L	2	2	100	0.0067 J	0.0394 J	W035	0.023	0.023 J	0.0377 J	0.0067 J	0.0394 J	W035	0.023	0.023 J	0.0377 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.82 UJ	1.9 UJ	W035	0.68	0.68 UJ	0.923 UJ
RM 09<10																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	1	50	0.48 T	0.48 T	W038	0.48	0.48 T	0.48 T	0.468 UJT	0.48 T	W038	0.357	0.357 J	0.468 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.046 J	0.512 J	W038	0.279	0.279 J	0.489 J	0.046 J	0.512 J	W038	0.279	0.279 J	0.489 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.512 JT	0.526 JT	W038	0.519	0.519 J	0.525 J	0.512 JT	0.526 JT	W038	0.519	0.519 J	0.525 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.15 UT	0.16 UT	W038	0.0775	0.0775 U	0.0798 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.32 U	0.36 U	W038	0.17	0.17 U	0.179 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.32 UT	0.36 UT	W038	0.17	0.17 U	0.179 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.5 T	0.5 T	W038	0.5	0.5	0.5	0.5 T	0.5 T	W038	0.5	0.5	0.5
Copper	Peristaltic - particulate	µg/L	2	2	100	0.35	0.36	W038	0.355	0.355	0.36	0.35	0.36	W038	0.355	0.355	0.36
Copper	Peristaltic - total	µg/L	2	2	100	0.85 T	0.86 T	W038	0.855	0.855	0.86	0.85 T	0.86 T	W038	0.855	0.855	0.86
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	3.1 UT	3.6 UT	W038	1.68	1.68 U	1.79 U
Zinc	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	3.1 U	4.6 U	W038	1.93	1.93 U	2.26 U
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	3 UT	4.6 UT	W038	1.9	1.9 U	2.26 U

Table 5.4-11b. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (East Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W038	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.0000893 JT	0.0000946 JT	W038	0.000092	0.000092 J	0.0000943 J	0.0000893 JT	0.0000946 JT	W038	0.000092	0.000092 J	0.0000943 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000231 JT	0.0000874 JT	W038	0.0000553	0.0000553 J	0.0000842 J	0.0000231 JT	0.0000874 JT	W038	0.0000553	0.0000553 J	0.0000842 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000112 J	0.000182 J	W038	0.000147	0.000147 J	0.000179 J	0.000112 J	0.000182 J	W038	0.000147	0.000147 J	0.000179 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00021 U	0.00034 U	W038	0.000138	0.000138 U	0.000167 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W038	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	2	1	50	0.00055 NJT	0.00055 NJT	W038	0.00055	0.00055 NJT	0.00055 NJT	0.00055 NJT	0.0014 UT	W038	0.000625	0.000625 J	0.000693 J
DDx	Peristaltic - total	µg/L	2	2	100	0.0015 T	0.0026 NJT	W038	0.00205	0.00205 J	0.00255 J	0.0015 T	0.0026 NJT	W038	0.00205	0.00205 J	0.00255 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.013 UT	0.013 UT	W038	0.0065	0.0065 U	0.0065 U
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.73 UJ	0.75 UJ	W038	0.37	0.37 UJ	0.375 UJ

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
RM - River Mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-11c. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (Mid-Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Method**	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
No data for this table.																	

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

-- data not available.
DL - detection limit

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-11d. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
RM 04<05																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.39 U	0.418 U	W029	0.202	0.202 U	0.208 U
Arsenic	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.457 UJ	0.457 UJ	W029	0.229	0.229 UJ	0.229 UJ
Arsenic	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.457 UJ	0.457 UJ	W029	0.229	0.229 UJ	0.229 UJ
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.1 U	0.16 U	W029	0.065	0.065 U	0.0785 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.24 U	0.26 U	W029	0.125	0.125 U	0.13 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.24 U	0.26 U	W029	0.125	0.125 U	0.13 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.5	0.54	W029	0.52	0.52	0.538	0.5	0.54	W029	0.52	0.52	0.538
Copper	Peristaltic - particulate	µg/L	2	2	100	0.3	0.38	W029	0.34	0.34	0.376	0.3	0.38	W029	0.34	0.34	0.376
Copper	Peristaltic - total	µg/L	2	2	100	0.84	0.88	W029	0.86	0.86	0.878	0.84	0.88	W029	0.86	0.86	0.878
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	2.2 U	2.8 U	W029	1.25	1.25 U	1.39 U
Zinc	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	3.2 U	3.7 U	W029	1.73	1.73 U	1.84 U
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	3.2 U	3.7 U	W029	1.73	1.73 U	1.84 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 UJ	0.0006 UJ	W029	0.0003	0.0003 UJ	0.0003 UJ
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000165 JT	0.000179 JT	W029	0.000172	0.000172 J	0.000178 J	0.000165 JT	0.000179 JT	W029	0.000172	0.000172 J	0.000178 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000085 JT	0.0000946 JT	W029	0.0000898	0.0000898 J	0.0000941 J	0.000085 JT	0.0000946 JT	W029	0.0000898	0.0000898 J	0.0000941 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.00025 J	0.000274 J	W029	0.000262	0.000262 J	0.000272 J	0.00025 J	0.000274 J	W029	0.000262	0.000262 J	0.000272 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00046 U	0.00048 U	W029	0.000235	0.000235 U	0.00024 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.00042 U	W029	0.000205	0.000205 U	0.00021 U
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0013 UT	0.0016 UT	W029	0.000725	0.000725 U	0.000793 U
DDx	Peristaltic - total	µg/L	2	2	100	0.002 NJT	0.0025 NJT	W029	0.00225	0.00225 J	0.00248 J	0.002 NJT	0.0025 NJT	W029	0.00225	0.00225 J	0.00248 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	2	100	0.024 JT	0.032 JT	W029	0.028	0.028 J	0.0316 J	0.024 JT	0.032 JT	W029	0.028	0.028 J	0.0316 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.28 UJ	0.79 UJ	W029	0.268	0.268 UJ	0.382 UJ
RM 06<07																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.393 UJ	0.399 UJ	W031	0.198	0.198 UJ	0.199 UJ
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.451 J	0.458 J	W031	0.455	0.455 J	0.458 J	0.451 J	0.458 J	W031	0.455	0.455 J	0.458 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.451 J	0.458 J	W031	0.455	0.455 J	0.458 J	0.451 J	0.458 J	W031	0.455	0.455 J	0.458 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.13 U	0.17 U	W031	0.075	0.075 U	0.084 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.29 U	0.36 U	W031	0.163	0.163 U	0.178 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.29 U	0.36 U	W031	0.163	0.163 U	0.178 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.55	0.58	W031	0.565	0.565	0.579	0.55	0.58	W031	0.565	0.565	0.579
Copper	Peristaltic - particulate	µg/L	2	2	100	0.37	0.56	W031	0.465	0.465	0.551	0.37	0.56	W031	0.465	0.465	0.551
Copper	Peristaltic - total	µg/L	2	2	100	0.95	1.11	W031	1.03	1.03	1.1	0.95	1.11	W031	1.03	1.03	1.1
Zinc	Peristaltic - dissolved	µg/L	2	1	50	5.4	5.4	W031	5.4	5.4	5.4	2.6 U	5.4	W031	3.35	3.35	5.2
Zinc	Peristaltic - particulate[d]	µg/L	2	1	50	0	0	W031	0	0	0	0	3.4 U	W031	0.85	0.85	1.62
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	3.4 U	3.5 U	W031	1.73	1.73 U	1.75 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W031	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000155 JT	0.000173 JT	W031	0.000164	0.000164 J	0.000172 J	0.000155 JT	0.000173 JT	W031	0.000164	0.000164 J	0.000172 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.00011 JT	0.000125 JT	W031	0.000118	0.000118 J	0.000124 J	0.00011 JT	0.000125 JT	W031	0.000118	0.000118 J	0.000124 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000265 J	0.000298 J	W031	0.000282	0.000282 J	0.000296 J	0.000265 J	0.000298 J	W031	0.000282	0.000282 J	0.000296 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.0000038 U	0.00000391 U	W031	0.00000193	0.00000193 U	0.00000195 U
Aldrin	XAD Filter - particulate	µg/L	2	2	100	0.000000635 J	0.00000366 J	W031	0.00000215	0.00000215 J	0.00000351 J	0.000000635 J	0.00000366 J	W031	0.00000215	0.00000215 J	0.00000351 J
Aldrin	Peristaltic - total	µg/L	1	0	0	--	--	--	--	--	--	0.00027 U	0.00027 U	W031	0.000135	0.000135 U	0.000135 U
Aldrin	XAD Column+Filter - total	µg/L	2	2	100	0.000000635 J	0.00000366 J	W031	0.00000215	0.00000215 J	0.00000351 J	0.000000635 J	0.00000366 J	W031	0.00000215	0.00000215 J	0.00000351 J
Dieldrin	XAD Column - dissolved	µg/L	2	2	100	0.0000459 J	0.0000498 J	W031	0.0000479	0.0000479 J	0.0000496 J	0.0000459 J	0.0000498 J	W031	0.0000479	0.0000479 J	0.0000496 J
Dieldrin	XAD Filter - particulate	µg/L	2	1	50	0.00000415 J	0.00000415 J	W031	0.00000415	0.00000415 J	0.00000415 J	0.00000203 U	0.00000415 J	W031	0.00000258	0.00000258 J	0.00000399 J
Dieldrin	Peristaltic - total	µg/L	1	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W031	0.0002	0.0002 U	0.0002 U
Dieldrin	XAD Column+Filter - total	µg/L	2	2	100	0.0000498 J	0.0000501 J	W031	0.0000499	0.0000499 J	0.00005 J	0.0000498 J	0.0000501 J	W031	0.0000499	0.0000499 J	0.00005 J
Total chlordanes	XAD Column - dissolved	µg/L	2	2	100	0.00000672 JT	0.0000208 JT	W031	0.0000138	0.0000138 J	0.0000201 J	0.00000672 JT	0.0000208 JT	W031	0.0000138	0.0000138 J	0.0000201 J
Total chlordanes	XAD Filter - particulate	µg/L	2	2	100	0.000000597 JT	0.00000365 JT	W031	0.00000212	0.00000212 J	0.0000035 J	0.000000597 JT	0.00000365 JT	W031	0.00000212	0.00000212 J	0.0000035 J
Total chlordanes	Peristaltic - total	µg/L	1	0	0	--	--	--	--	--	--	0.0013 UT	0.0013 UT	W031	0.00065	0.00065 UT	0.00065 UT
Total chlordanes	XAD Column+Filter - total	µg/L	2	2	100	0.00000732 J	0.0000245 J	W031	0.0000159	0.0000159 J	0.0000236 J	0.00000732 J	0.0000245 J	W031	0.0000159	0.0000159 J	0.0000236 J
DDx	XAD Column - dissolved	µg/L	2	2	100	0.000167 JT	0.000177 JT	W031	0.000172	0.000172 J	0.000176 J	0.000167 JT	0.000177 JT	W031	0.000172	0.000172 J	0.000176 J
DDx	XAD Filter - particulate	µg/L	2	2	100	0.0000193 JT	0.000145 JT	W031	0.000082	0.000082 J	0.000138 J	0.0000193 JT	0.000145 JT	W031	0.000082	0.000082 J	0.000138 J
DDx	Peristaltic - total	µg/L	1	1	100	0.0029 JT	0.0029 JT	W031	0.0029	0.0029 JT	0.0029 JT	0.0029 JT	0.0029 JT	W031	0.0029	0.0029 JT	0.0029 JT
DDx	XAD Column+Filter - total	µg/L	2	2	100	0.000196 J	0.000311 J	W031	0.000254	0.000254 J	0.000305 J	0.000196 J	0.000311 J	W031	0.000254	0.000254 J	0.000305 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	2	100	0.027 JT	0.032 JT	W031	0.0295	0.0295 J	0.0318 J	0.027 JT	0.032 JT	W031	0.0295	0.0295 J	0.0318 J

Table 5.4-11d. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.32 UJ	0.48 UJ	W031	0.2	0.2 UJ	0.236 UJ
RM 07<08																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	6	1	17	0.412	0.412	W034	0.412	0.412	0.412	0.381 U	0.412	W034	0.231	0.195 U	0.359
Arsenic	Peristaltic - particulate	µg/L	6	2	33	0.03 J	0.439 J	W034	0.235	0.235 J	0.419 J	0.03 J	0.441 UJ	W033	0.223	0.22 UJ	0.384 J
Arsenic	Peristaltic - total	µg/L	6	2	33	0.439 J	0.442 J	W034	0.441	0.441 J	0.442 J	0.412 UJ	0.442 J	W034	0.291	0.22 UJ	0.441 J
Chromium	Peristaltic - dissolved	µg/L	6	0	0	--	--	--	--	--	--	0.13 U	0.2 U	W033	0.0817	0.08 U	0.0988 U
Chromium	Peristaltic - particulate	µg/L	6	0	0	--	--	--	--	--	--	0.23 U	0.34 U	W034	0.146	0.15 U	0.168 U
Chromium	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.23 U	0.34 U	W034	0.146	0.15 U	0.168 U
Copper	Peristaltic - dissolved	µg/L	6	6	100	0.5	0.56	W033	0.518	0.51	0.55	0.5	0.56	W033	0.518	0.51	0.55
Copper	Peristaltic - particulate	µg/L	6	6	100	0.26	0.38	W034	0.332	0.35	0.378	0.26	0.38	W034	0.332	0.35	0.378
Copper	Peristaltic - total	µg/L	6	6	100	0.79	0.89	W033; W034	0.85	0.855	0.89	0.79	0.89	W033; W034	0.85	0.855	0.89
Zinc	Peristaltic - dissolved	µg/L	6	1	17	6.6	6.6	W034	6.6	6.6	6.6	2.3 U	6.6	W034	2.33	1.58 U	5.39
Zinc	Peristaltic - particulate[d]	µg/L	6	1	17	0	0	W034	0	0	0	0	4.6 U	W033	1.67	1.9 U	2.28 U
Zinc	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	3 U	4.6 U	W033	1.92	1.9 U	2.28 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	6	1	17	0.0013 J	0.0013 J	W033	0.0013	0.0013 J	0.0013 J	0.0006 UJ	0.0045 U	W034	0.000792	0.0003 UJ	0.00201 J
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	6	6	100	0.000135 JT	0.000199 JT	W033	0.000169	0.000175 J	0.000197 J	0.000135 JT	0.000199 JT	W033	0.000169	0.000175 J	0.000197 J
Total PCBs	XAD Filter - particulate	µg/L	6	6	100	0.00011 JT	0.000179 JT	W033	0.000145	0.000149 J	0.000175 J	0.00011 JT	0.000179 JT	W033	0.000145	0.000149 J	0.000175 J
Total PCBs	XAD Column+Filter - total	µg/L	6	6	100	0.000245 J	0.000368 J	W033	0.000314	0.000333 J	0.000361 J	0.000245 J	0.000368 J	W033	0.000314	0.000333 J	0.000361 J
PCDD/Fs Homologs																	
Total PCDD/Fs	XAD Column - dissolved	µg/L	4	4	100	0.00000279 T	0.00000855 T	W033	0.00000566	0.00000566	0.00000837	0.00000279 T	0.00000855 T	W033	0.00000566	0.00000566	0.00000837
Total PCDD/Fs	XAD Filter - particulate	µg/L	4	4	100	0.0000274 T	0.0000483 T	W033	0.0000369	0.000036	0.0000466	0.0000274 T	0.0000483 T	W033	0.0000369	0.000036	0.0000466
Total PCDD/Fs	XAD Column+Filter - total	µg/L	4	4	100	0.000036	0.0000511	W033	0.0000426	0.0000417	0.0000501	0.000036	0.0000511	W033	0.0000426	0.0000417	0.0000501
PCDD/Fs																	
TCDD TEQ (ND=0)	XAD Column - dissolved	µg/L	4	4	100	0.00000000547 JT	0.0000000173 JT	W033	0.0000000116	0.0000000118 J	0.0000000169 J	0.00000000547 JT	0.0000000173 JT	W033	0.0000000116	0.0000000118 J	0.0000000169 J
TCDD TEQ (ND=0)	XAD Filter - particulate	µg/L	4	4	100	0.0000000795 JT	0.000000203 JT	W033	0.000000136	0.000000131 J	0.000000199 J	0.0000000795 JT	0.000000203 JT	W033	0.000000136	0.000000131 J	0.000000199 J
TCDD TEQ (ND=0)	XAD Column+Filter - total	µg/L	4	4	100	0.0000000968 J	0.000000212 J	W033	0.000000148	0.000000141 J	0.000000208 J	0.0000000968 J	0.000000212 J	W033	0.000000148	0.000000141 J	0.000000208 J
Pesticides																	
Aldrin	XAD Column - dissolved	µg/L	6	3	50	0.00000306 J	0.00000426 J	W033	0.00000366	0.00000367 J	0.0000042 J	0.00000262 U	0.00000426 J	W033	0.00000265	0.00000256 J	0.00000411 J
Aldrin	XAD Filter - particulate	µg/L	6	2	33	0.0000017 J	0.00000178 J	W033	0.00000174	0.00000174 J	0.00000178 J	0.00000128 U	0.00000637 U	W033	0.00000161	0.00000144 J	0.00000283 J
Aldrin	XAD Column+Filter - total	µg/L	6	4	67	0.0000017 J	0.00000484 J	W033	0.00000362	0.00000397 J	0.00000475 J	0.0000017 J	0.00000484 J	W033	0.00000302	0.00000287 J	0.0000047 J
Dieldrin	XAD Column - dissolved	µg/L	6	6	100	0.0000319 J	0.0000368 J	W034	0.0000345	0.0000342 J	0.0000368 J	0.0000319 J	0.0000368 J	W034	0.0000345	0.0000342 J	0.0000368 J
Dieldrin	XAD Filter - particulate	µg/L	6	3	50	0.00000237 J	0.00000349 J	W033	0.00000276	0.00000242 J	0.00000338 J	0.00000237 J	0.00000349 J	W033	0.00000205	0.00000189 J	0.00000322 J
Dieldrin	XAD Column+Filter - total	µg/L	6	6	100	0.0000319 J	0.000037 J	W033	0.0000359	0.0000367 J	0.000037 J	0.0000319 J	0.000037 J	W033	0.0000359	0.0000367 J	0.000037 J
Total chlordanes	XAD Column - dissolved	µg/L	6	6	100	0.0000106 JT	0.0000275 JT	W033	0.0000221	0.000023 J	0.0000274 J	0.0000106 JT	0.0000275 JT	W033	0.0000221	0.000023 J	0.0000274 J
Total chlordanes	XAD Filter - particulate	µg/L	6	5	83	0.00000201 JT	0.00000964 JT	W033	0.00000561	0.00000447 JT	0.00000944 J	0.00000201 JT	0.0000327 UT	W034	0.0000074	0.00000656 J	0.0000147 J
Total chlordanes	XAD Column+Filter - total	µg/L	6	6	100	0.0000106 J	0.0000368 J	W033	0.0000267	0.0000262 J	0.0000367 J	0.0000106 J	0.0000368 J	W033	0.0000267	0.0000262 J	0.0000367 J
DDx	XAD Column - dissolved	µg/L	6	6	100	0.000111 JT	0.000246 JT	W033	0.000164	0.000147 J	0.000236 J	0.000111 JT	0.000246 JT	W033	0.000164	0.000147 J	0.000236 J
DDx	XAD Filter - particulate	µg/L	6	6	100	0.000142 JT	0.000429 JT	W033	0.000248	0.000222 J	0.000392 J	0.000142 JT	0.000429 JT	W033	0.000248	0.000222 J	0.000392 J
DDx	XAD Column+Filter - total	µg/L	6	6	100	0.000253 J	0.000675 J	W033	0.000412	0.000396 J	0.000615 J	0.000253 J	0.000675 J	W033	0.000412	0.000396 J	0.000615 J
PAHs																	
Total PAHs	XAD Column - dissolved	µg/L	4	4	100	0.014 JT	0.0218 JT	W033	0.0184	0.0188 J	0.0215 J	0.014 JT	0.0218 JT	W033	0.0184	0.0188 J	0.0215 J
Total PAHs	XAD Filter - particulate	µg/L	4	4	100	0.0107 JT	0.0306 JT	W033	0.0199	0.0191 J	0.0301 J	0.0107 JT	0.0306 JT	W033	0.0199	0.0191 J	0.0301 J
Total PAHs	Peristaltic - total	µg/L	6	5	83	0.0062 JT	0.12 JT	W033	0.0506	0.035 JT	0.108 J	0.0062 JT	0.12 JT	W033	0.0438	0.0335 J	0.105 J
Total PAHs	XAD Column+Filter - total	µg/L	4	4	100	0.0249 J	0.0507 J	W033	0.0382	0.0387 J	0.0498 J	0.0249 J	0.0507 J	W033	0.0382	0.0387 J	0.0498 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	6	0	0	--	--	--	--	--	--	0.21 UJ	0.47 UJ	W034	0.143	0.133 UJ	0.213 UJ
RM 08<09																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.387 U	0.4 U	W036	0.197	0.197 U	0.2 U
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.436 J	0.46 J	W036	0.448	0.448 J	0.459 J	0.436 J	0.46 J	W036	0.448	0.448 J	0.459 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.436 J	0.46 J	W036	0.448	0.448 J	0.459 J	0.436 J	0.46 J	W036	0.448	0.448 J	0.459 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.16 U	0.2 U	W036	0.09	0.09 U	0.099 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.29 U	0.37 U	W036	0.165	0.165 U	0.183 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.29 U	0.37 U	W036	0.165	0.165 U	0.183 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.54	0.58	W036	0.56	0.56	0.578	0.54	0.58	W036	0.56	0.56	0.578
Copper	Peristaltic - particulate	µg/L	2	2	100	0.32	0.42	W036	0.37	0.37	0.415	0.32	0.42	W036	0.37	0.37	0.415
Copper	Peristaltic - total	µg/L	2	2	100	0.9	0.96	W036	0.93	0.93	0.957	0.9	0.96	W036	0.93	0.93	0.957
Zinc	Peristaltic - dissolved	µg/L	2	1	50	4.8	4.8	W036	4.8	4.8	4.8	2.5 U	4.8	W036	3.03	3.03	4.62
Zinc	Peristaltic - particulate[d]	µg/L	2	1	50	0	0	W036	0	0	0	0	3.7 U	W036	0.925	0.925	1.76
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	3.7 U	4.5 U	W036	2.05	2.05 U	2.23 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 UJ	0.0006 UJ	W036	0.0003	0.0003 UJ	0.0003 UJ

Table 5.4-11d. Summary Statistics for Indicator Contaminants in Surface Water, Stormwater-Influenced Events (West Channel Single-Point Locations).

						Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	Method	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Maximum Location(s)	Mean	Median[b]	95th Percentile[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Maximum Location(s)	Mean (half DL)	Median (half DL)[b]	95th Percentile (half DL)[b]
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000135 JT	0.000181 JT	W036	0.000158	0.000158 J	0.000179 J	0.000135 JT	0.000181 JT	W036	0.000158	0.000158 J	0.000179 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.000118 JT	0.000156 JT	W036	0.000137	0.000137 J	0.000154 J	0.000118 JT	0.000156 JT	W036	0.000137	0.000137 J	0.000154 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000291 J	0.000299 J	W036	0.000295	0.000295 J	0.000299 J	0.000291 J	0.000299 J	W036	0.000295	0.000295 J	0.000299 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.00032 U	0.00048 U	W036	0.000201	0.000203 U	0.00024 U
Dieldrin	Peristaltic - total	µg/L	4	0	0	--	--	--	--	--	--	0.0004 U	0.0004 U	W036	0.0002	0.0002 U	0.0002 U
Total chlordanes	Peristaltic - total	µg/L	4	1	25	0.0016 JT	0.0016 JT	W036	0.0016	0.0016 JT	0.0016 JT	0.00073 UT	0.0018 UT	W036	0.000823	0.000663 U	0.0015 J
DDx	Peristaltic - total	µg/L	4	3	75	0.0021 T	0.0029 JT	W036	0.00253	0.0026 T	0.00287 J	0.0016 UT	0.0029 JT	W036	0.0021	0.00235	0.00286 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	1	50	0.005 JT	0.005 JT	W036	0.005	0.005 JT	0.005 JT	0.005 JT	0.013 UT	W036	0.00575	0.00575 J	0.00643 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.35 UJ	0.78 UJ	W036	0.283	0.283 UJ	0.379 UJ
RM 09<10																	
Metals																	
Arsenic	Peristaltic - dissolved	µg/L	2	1	50	0.401 J	0.401 J	W037	0.401	0.401 J	0.401 J	0.401 J	0.425 UJT	W037	0.307	0.307 J	0.392 J
Arsenic	Peristaltic - particulate	µg/L	2	2	100	0.083 J	0.467 J	W037	0.275	0.275 J	0.448 J	0.083 J	0.467 J	W037	0.275	0.275 J	0.448 J
Arsenic	Peristaltic - total	µg/L	2	2	100	0.467 JT	0.484 J	W037	0.476	0.476 J	0.483 J	0.467 JT	0.484 J	W037	0.476	0.476 J	0.483 J
Chromium	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	0.14 UT	0.18 U	W037	0.08	0.08 U	0.089 U
Chromium	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	0.31 U	0.31 U	W037	0.155	0.155 U	0.155 U
Chromium	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.31 U	0.31 U	W037	0.155	0.155 U	0.155 U
Copper	Peristaltic - dissolved	µg/L	2	2	100	0.56 T	0.58	W037	0.57	0.57	0.579	0.56 T	0.58	W037	0.57	0.57	0.579
Copper	Peristaltic - particulate	µg/L	2	2	100	0.31	0.31	W037	0.31	0.31	0.31	0.31	0.31	W037	0.31	0.31	0.31
Copper	Peristaltic - total	µg/L	2	2	100	0.87 T	0.89	W037	0.88	0.88	0.889	0.87 T	0.89	W037	0.88	0.88	0.889
Zinc	Peristaltic - dissolved	µg/L	2	0	0	--	--	--	--	--	--	2.6 UT	2.8 U	W037	1.35	1.35 U	1.4 U
Zinc	Peristaltic - particulate	µg/L	2	0	0	--	--	--	--	--	--	3.1 U	4.7 U	W037	1.95	1.95 U	2.31 U
Zinc	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	3.1 UT	4.7 U	W037	1.95	1.95 U	2.31 U
Butyltins																	
Tributyltin ion	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0006 U	0.0006 U	W037	0.0003	0.0003 U	0.0003 U
PCBs[c]																	
Total PCBs	XAD Column - dissolved	µg/L	2	2	100	0.000143 JT	0.000154 JT	W037	0.000149	0.000149 J	0.000153 J	0.000143 JT	0.000154 JT	W037	0.000149	0.000149 J	0.000153 J
Total PCBs	XAD Filter - particulate	µg/L	2	2	100	0.0000534 JT	0.000172 JT	W037	0.000113	0.000113 J	0.000166 J	0.0000534 JT	0.000172 JT	W037	0.000113	0.000113 J	0.000166 J
Total PCBs	XAD Column+Filter - total	µg/L	2	2	100	0.000196 J	0.000326 J	W037	0.000261	0.000261 J	0.00032 J	0.000196 J	0.000326 J	W037	0.000261	0.000261 J	0.00032 J
Pesticides																	
Aldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.000057 U	0.00028 U	W037	0.0000843	0.0000843 U	0.000134 U
Dieldrin	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.0004 U	0.00042 U	W037	0.000205	0.000205 U	0.00021 U
Total chlordanes	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.00077 UT	0.0014 UT	W037	0.000543	0.000543 U	0.000684 U
DDx	Peristaltic - total	µg/L	2	1	50	0.0047 NJT	0.0047 NJT	W037	0.0047	0.0047 NJT	0.0047 NJT	0.0013 UT	0.0047 NJT	W037	0.00268	0.00268 J	0.0045 J
PAHs																	
Total PAHs	Peristaltic - total	µg/L	2	1	50	0.034 JT	0.034 JT	W037	0.034	0.034 JT	0.034 JT	0.013 UT	0.034 JT	W037	0.0203	0.0203 J	0.0326 J
Phthalates																	
Bis(2-ethylhexyl) phthalate	Peristaltic - total	µg/L	2	0	0	--	--	--	--	--	--	0.4 UJ	0.62 UJ	W037	0.255	0.255 UJ	0.305 UJ

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

[d] Particulate values were calculated as the difference between total and dissolved concentrations. If the measured dissolved concentration was greater than or equal to the measured total concentration, the calculated particulate concentration was assigned a value of zero.

-- data not available.
DDx - 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/Fs - dioxins/furans
RM - River Mile
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalent
XAD - hydrophobic crosslinked polystyrene copolymer resin

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-12. Total PCB Data Presented by Station and Sampling Event.

AWQC-HH	0.0000064	µg/L
AWQC-Eco	0.014	µg/L
MCL	0.5	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	***0.0025***	UJT	µg/L	***0.0025***	UT	µg/L	**0.0063**	JT	µg/L												
W002	2.2W	SP	NB-1	Peristaltic				***0.00255***	UT	µg/L	***0.0025***	UJT	µg/L												
W003	3.0W	SP	NB	Peristaltic	***0.0025***	UJT	µg/L	***0.0025***	UT	µg/L	***0.0025***	UJT	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**0.00589**	JT	µg/L				***0.0025***	UJT	µg/L												
			NB-1	Peristaltic				**0.0136**	JT	µg/L															
			NB-2	Peristaltic				**0.0109**	T	µg/L															
W005	3.9 M	T	EDI-NB	XAD - C													0.000469	JT	µg/L	0.000218	JT	µg/L	0.0000779	JT	µg/L
				XAD - C+F													**0.00095**	J	µg/L	**0.00044**	J	µg/L	**0.0003909**	J	µg/L
				XAD - F													0.000481	JT	µg/L	0.000222	JT	µg/L	0.000313	JT	µg/L
			EDI-NS	XAD - C													0.000472	JT	µg/L	0.000248	JT	µg/L	0.0000698	JT	µg/L
				XAD - C+F													**0.000661**	J	µg/L	**0.000458**	J	µg/L	**0.0001397**	J	µg/L
				XAD - F													0.000189	JT	µg/L	0.00021	JT	µg/L	0.0000699	JT	µg/L
			EDI-VI	Peristaltic	***0.0026***	UT	µg/L																		
				XAD - C	0.000135	JT	µg/L	0.000235	JT	µg/L	0.000294	JT	µg/L												
				XAD - C+F	**0.000228**	J	µg/L	**0.000401**	J	µg/L	**0.000507**	J	µg/L												
				XAD - F	0.000093	JT	µg/L	0.000166	JT	µg/L	0.000213	JT	µg/L												
			M	XAD - C										0.000073	JT	µg/L									
				XAD - C+F										**0.000209**	J	µg/L									
				XAD - F										0.000136	JT	µg/L									
W006	4.0W	SP	NB	Peristaltic	***0.00256***	UT	µg/L	***0.00252***	UT	µg/L	***0.0025***	UT	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	***0.0026***	UT	µg/L	***0.00261***	UT	µg/L	***0.0025***	UT	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	***0.0025***	UT	µg/L	***0.0025***	UT	µg/L	***0.0025***	UT	µg/L												
W009	5.6W	SP	NB	Peristaltic	***0.0025***	UT	µg/L	***0.0025***	UT	µg/L	***0.0025***	UT	µg/L												
W010	5.7E	SP	NB	Peristaltic	***0.00267***	UT	µg/L																		
			VI	Peristaltic				***0.0025***	UT	µg/L	***0.0025***	UT	µg/L												
W011	6.3E	T	EDI-NB	XAD - C																0.000144	JT	µg/L	0.000061	JT	µg/L
				XAD - C+F																**0.000279**	J	µg/L	**0.000137**	J	µg/L
				XAD - F																0.000135	JT	µg/L	0.000076	JT	µg/L
			EDI-NB-1	XAD - C													0.000433	JT	µg/L						
				XAD - C+F													**0.000946**	J	µg/L						
				XAD - F													0.000513	JT	µg/L						
			EDI-NS	XAD - C																0.000154	JT	µg/L	0.0000599	JT	µg/L
				XAD - C+F																**0.000239**	J	µg/L	**0.0001319**	J	µg/L
				XAD - F																0.000085	JT	µg/L	0.000072	JT	µg/L
			EDI-NS-1	XAD - C													0.000428	JT	µg/L						
				XAD - C+F													**0.000673**	J	µg/L						
				XAD - F													0.000245	JT	µg/L						
			EDI-VI	Peristaltic	***0.0025***	UT	µg/L																		
				XAD - C	0.000217	JT	µg/L	0.000236	JT	µg/L	0.00028	JT	µg/L												
				XAD - C+F	**0.000388**	J	µg/L	**0.000495**	J	µg/L	**0.000479**	J	µg/L												
				XAD - F	0.000171	JT	µg/L	0.000259	JT	µg/L	0.000199	JT	µg/L												
W012	6.3W	SP	NB	Peristaltic	***0.0025***	UJT	µg/L	***0.0026***	UT	µg/L	***0.0025***	UT	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	***0.0025***	UT	µg/L																		
				XAD - C	0.000719	JT	µg/L	0.00242	JT	µg/L	0.00206	T	µg/L												
				XAD - C+F	**0.003339**	J	µg/L	**0.01198**	J	µg/L	**0.00798**	J	µg/L												
				XAD - F	0.00262	T	µg/L	0.00956	JT	µg/L	0.00592	JT	µg/L												
			NB-2	Peristaltic	***0.0025***	UT	µg/L																		
				XAD - C	0.000624	JT	µg/L	0.000681	JT	µg/L	0.00216	T	µg/L												
				XAD - C+F	**0.002514**	J	µg/L	**0.002061**	J	µg/L	**0.00216**		µg/L												
				XAD - F	0.00189	T	µg/L	0.00138	JT	µg/L															
W014	6.7E	SP	VI	Peristaltic	**0.0154**	T	µg/L	***0.0026***	UT	µg/L	***0.0025***	UT	µg/L												
W015	6.9W	SP	NB	XAD - C	0.000639	JT	µg/L	0.000254	JT	µg/L	0.000404	JT	µg/L												
				XAD - C+F	**0.001929**	J	µg/L	**0.000539**	J	µg/L	**0.000802**	J	µg/L												
				XAD - F	0.00129	T	µg/L	0.000285	JT	µg/L	0.000398	JT	µg/L												
W016	7.2W			XAD - C	0.000137	JT	µg/L	0.000247	JT	µg/L	0.000581	JT	µg/L												
				XAD - C+F	**0.000375**	J	µg/L	**0.000448**	J	µg/L	**0.001276**	J	µg/L												
				XAD - F	0.000238	JT	µg/L	0.000201	JT	µg/L	0.000695	JT	µg/L												
W017	7.5W	SP	NB	Peristaltic				***0.00256***	UT	µg/L	***0.0025***	UT	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.0025***	UT	µg/L																		
				XAD - C	0.000162	JT	µg/L	0.000567	JT	µg/L	0.000487	JT	µg/L												
				XAD - C+F	**0.000439**	J	µg/L	**0.001687**	J	µg/L	**0.000828**	J	µg/L												
				XAD - F	0.000277	JT	µg/L	0.00112	JT	µg/L	0.000341	JT	µg/L												

Table 5.4-12. Total PCB Data Presented by Station and Sampling Event.

AWQC-HH	0.0000064	µg/L
AWQC-Eco	0.014	µg/L
MCL	0.5	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W019	8.6W	SP	NB	Peristaltic	***0.00253***	UT	µg/L	***0.00263***	UT	µg/L	***0.0025***	UT	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	***0.0025***	UT	µg/L	***0.0025***	UT	µg/L	***0.0025***	UT	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.0025***	UT	µg/L	***0.0026***	UT	µg/L	***0.0025***	UT	µg/L												
W022	9.7W	SP	NB	Peristaltic	***0.0025***	UT	µg/L	***0.0025***	UT	µg/L	**0.00467**	JT	µg/L												
W023	10.9M	T	VI-M	XAD - C													0.000172	JT	µg/L	0.0000777	JT	µg/L	0.0000387	JT	µg/L
				XAD - C+F													**0.000278**	J	µg/L	**0.0001214**	J	µg/L	**0.000109**	J	µg/L
				XAD - F													0.000106	JT	µg/L	0.0000437	JT	µg/L	0.0000703	JT	µg/L
	11E	T	VI-E	XAD - C													0.000287	JT	µg/L	0.000144	JT	µg/L	0.0000693	JT	µg/L
				XAD - C+F													**0.00095**	J	µg/L	**0.000552**	J	µg/L	**0.000169**	J	µg/L
				XAD - F													0.000663	JT	µg/L	0.000408	JT	µg/L	0.0000997	JT	µg/L
	11M	T	EDI-VI	Peristaltic	***0.0025***	UT	µg/L																		
				XAD - C	0.0000424	JT	µg/L	0.000104	JT	µg/L	0.000204	JT	µg/L												
				XAD - C+F	**0.0006084**	J	µg/L	**0.0001714**	J	µg/L	**0.000322**	J	µg/L												
				XAD - F	0.000566	JT	µg/L	0.0000674	JT	µg/L	0.000118	JT	µg/L												
			M	XAD - C										0.0000674	JT	µg/L									
				XAD - C+F										**0.0001944**	J	µg/L									
				XAD - F										0.000127	JT	µg/L									
	11W	T	VI-W	XAD - C													0.00021	T	µg/L	0.000104	JT	µg/L	0.0000601	JT	µg/L
				XAD - C+F													**0.0002746**	J	µg/L	**0.000221**	J	µg/L	**0.0001361**	J	µg/L
				XAD - F													0.0000646	JT	µg/L	0.000117	JT	µg/L	0.000076	JT	µg/L
W024	15.9M	T	EDI-NB	XAD - C													0.000131	JT	µg/L	0.000087	JT	µg/L	0.0000476	JT	µg/L
				XAD - C+F													**0.0001736**	J	µg/L	**0.000205**	J	µg/L	**0.0000705**	J	µg/L
				XAD - F													0.0000426	JT	µg/L	0.000118	JT	µg/L	0.0000229	JT	µg/L
			EDI-NS	XAD - C													0.000132	JT	µg/L	0.000109	JT	µg/L	0.0000574	JT	µg/L
				XAD - C+F													**0.0001587**	J	µg/L	**0.0001489**	J	µg/L	**0.0000783**	J	µg/L
				XAD - F													0.0000267	JT	µg/L	0.0000399	JT	µg/L	0.0000209	JT	µg/L
			M	XAD - C										0.0000514	JT	µg/L									
				XAD - C+F										**0.0001293**	J	µg/L									
				XAD - F										0.0000779	JT	µg/L									
W025	2E	T	VI-E	XAD - C													0.000417	JT	µg/L	0.000954	JT	µg/L	0.0000768	JT	µg/L
				XAD - C+F													**0.0004324**	J	µg/L	**0.00129**	J	µg/L	**0.000165**	J	µg/L
				XAD - F													0.0000154	JT	µg/L	0.000336	JT	µg/L	0.0000882	JT	µg/L
	2M	T	VI-M	XAD - C													0.000359	JT	µg/L	0.000286	JT	µg/L	0.0000834	JT	µg/L
				XAD - C+F													**0.0003768**	J	µg/L	**0.000389**	J	µg/L	**0.0001508**	J	µg/L
				XAD - F													0.0000178	JT	µg/L	0.000103	JT	µg/L	0.0000674	JT	µg/L
	2W	T	VI-W	XAD - C													0.000415	JT	µg/L	0.00017	JT	µg/L	0.0000701	JT	µg/L
				XAD - C+F													**0.0004285**	J	µg/L	**0.0002345**	J	µg/L	**0.0001103**	J	µg/L
				XAD - F													0.0000135	JT	µg/L	0.0000645	JT	µg/L	0.0000402	JT	µg/L
W026	2.1E	SP	NB	XAD - C																0.000634	JT	µg/L	0.000154	JT	µg/L
				XAD - C+F																**0.000897**	J	µg/L	**0.000268**	J	µg/L
				XAD - F																0.000263	JT	µg/L	0.000114	JT	µg/L
			NS	XAD - C																0.00069	JT	µg/L	0.000127	JT	µg/L
				XAD - C+F																**0.000929**	J	µg/L	**0.000223**	J	µg/L
				XAD - F																0.000239	JT	µg/L	0.000096	JT	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	XAD - C																0.000162	JT	µg/L	0.0000995	JT	µg/L
				XAD - C+F																**0.000305**	J	µg/L	**0.0002755**	J	µg/L
				XAD - F																0.000143	JT	µg/L	0.000176	JT	µg/L
			EDI-NB-1	XAD - C													0.000419	JT	µg/L						
				XAD - C+F													**0.000656**	J	µg/L						
				XAD - F													0.000237	JT	µg/L						
			EDI-NS	XAD - C																0.000197	JT	µg/L	0.0000996	JT	µg/L
				XAD - C+F																**0.000327**	J	µg/L	**0.0002496**	J	µg/L
				XAD - F																0.00013	JT	µg/L	0.00015	JT	µg/L
			EDI-NS-1	XAD - C													0.000416	JT	µg/L						
				XAD - C+F													**0.000664**	J	µg/L						
				XAD - F													0.000248	JT	µg/L						
W028	3.6E	SP	NB	XAD - C																0.000353	JT	µg/L	0.000102	JT	µg/L
				XAD - C+F																**0.0004299**	J	µg/L	**0.0001561**	J	µg/L
				XAD - F																0.0000769	JT	µg/L	0.0000541	JT	µg/L
		SP	NS	XAD - C																0.000696	JT	µg/L	0.000285	JT	µg/L
				XAD - C+F																**0.001153**	J	µg/L	**0.00046**	J	µg/L
				XAD - F																0.000457	JT	µg/L	0.000175	JT	µg/L

Table 5.4-12. Total PCB Data Presented by Station and Sampling Event.

AWQC-HH	0.0000064	µg/L
AWQC-Eco	0.014	µg/L
MCL	0.5	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W029	4.4W	SP	NB	XAD - C																0.000165	JT	µg/L	0.0000839	JT	µg/L
				XAD - C+F																**0.00025**	J	µg/L	**0.0001773**	J	µg/L
				XAD - F																0.000085	JT	µg/L	0.0000934	JT	µg/L
		SP	NS	XAD - C																0.000179	JT	µg/L	0.0000844	JT	µg/L
				XAD - C+F																**0.0002736**	J	µg/L	**0.0001727**	J	µg/L
				XAD - F																0.0000946	JT	µg/L	0.0000883	JT	µg/L
W030	5.5E	SP	NB	XAD - C																0.000215	JT	µg/L	0.000076	JT	µg/L
				XAD - C+F																**0.000377**	J	µg/L	**0.0001489**	J	µg/L
				XAD - F																0.000162	JT	µg/L	0.0000729	JT	µg/L
		SP	NS	XAD - C																0.00237	JT	µg/L	0.0000768	JT	µg/L
				XAD - C+F																**0.002586**	J	µg/L	**0.0001105**	J	µg/L
				XAD - F																0.000216	JT	µg/L	0.0000337	JT	µg/L
W031	6.1W	SP	NB	XAD - C																0.000155	JT	µg/L	0.000111	JT	µg/L
				XAD - C+F																**0.000265**	J	µg/L	**0.000459**	J	µg/L
				XAD - F																0.00011	JT	µg/L	0.000348	JT	µg/L
		SP	NS	XAD - C																0.000173	JT	µg/L	0.0000982	JT	µg/L
				XAD - C+F																**0.000298**	J	µg/L	**0.000188**	J	µg/L
				XAD - F																0.000125	JT	µg/L	0.0000898	JT	µg/L
W032	6.7E	SP	NB	XAD - C																0.000229	JT	µg/L	0.000125	JT	µg/L
				XAD - C+F																**0.000499**	J	µg/L	**0.00032**	J	µg/L
				XAD - F																0.00027	JT	µg/L	0.000195	JT	µg/L
		SP	NS	XAD - C																0.000335	JT	µg/L	0.00014	JT	µg/L
				XAD - C+F																**0.000656**	J	µg/L	**0.000261**	J	µg/L
				XAD - F																0.000321	JT	µg/L	0.000121	JT	µg/L
W033	7.0W	SP	NB	XAD - C																0.000169	JT	µg/L	0.0000815	JT	µg/L
				XAD - C+F																**0.000326**	J	µg/L	**0.0002035**	J	µg/L
				XAD - F																0.000157	JT	µg/L	0.000122	JT	µg/L
		SP	NB-2	XAD - C																0.000189	JT	µg/L			
				XAD - C+F																**0.000368**	J	µg/L			
				XAD - F																0.000179	JT	µg/L			
		SP	NS	XAD - C																0.00018	JT	µg/L	0.0000785	JT	µg/L
				XAD - C+F																**0.000341**	J	µg/L	**0.0001721**	J	µg/L
				XAD - F																0.000161	JT	µg/L	0.0000936	JT	µg/L
		SP	NS-2	XAD - C																0.000199	JT	µg/L			
				XAD - C+F																**0.00034**	J	µg/L			
				XAD - F																0.000141	JT	µg/L			
W034	7.5W	SP	NB	XAD - C																0.000142	JT	µg/L	0.000089	JT	µg/L
				XAD - C+F																**0.000265**	J	µg/L	**0.000191**	J	µg/L
				XAD - F																0.000123	JT	µg/L	0.000102	JT	µg/L
		SP	NS	XAD - C																0.000135	JT	µg/L	0.000109	JT	µg/L
				XAD - C+F																**0.000245**	J	µg/L	**0.0001996**	J	µg/L
				XAD - F																0.00011	JT	µg/L	0.0000906	JT	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	XAD - C																0.000231	JT	µg/L	0.000223	JT	µg/L
				XAD - C+F																**0.00068**	J	µg/L	**0.000703**	J	µg/L
				XAD - F																0.000449	JT	µg/L	0.00048	JT	µg/L
		SP	NS	XAD - C																0.000294	JT	µg/L	0.000253	JT	µg/L
				XAD - C+F																**0.000589**	J	µg/L	**0.000749**	J	µg/L
				XAD - F																0.000295	JT	µg/L	0.000496	JT	µg/L
W036	8.6W	SP	NB	XAD - C																0.000135	JT	µg/L	0.000116	JT	µg/L
				XAD - C+F																**0.000291**	J	µg/L	**0.000339**	J	µg/L
				XAD - F																0.000156	JT	µg/L	0.000223	JT	µg/L
		SP	NS	XAD - C																0.000181	JT	µg/L	0.000137	JT	µg/L
				XAD - C+F																**0.000299**	J	µg/L	**0.000302**	J	µg/L
				XAD - F																0.000118	JT	µg/L	0.000165	JT	µg/L
W037	9.6W	SP	NB	XAD - C																0.000154	JT	µg/L	0.000146	JT	µg/L
				XAD - C+F																**0.000326**	J	µg/L	**0.000371**	J	µg/L
				XAD - F																0.000172	JT	µg/L	0.000225	JT	µg/L
		SP	NS	XAD - C																0.000143	JT	µg/L	0.000154	JT	µg/L
				XAD - C+F																**0.0001964**	J	µg/L	**0.00034**	J	µg/L
				XAD - F																0.0000534	JT	µg/L	0.000186	JT	µg/L

Table 5.4-12. Total PCB Data Presented by Station and Sampling Event.

AWQC-HH	0.0000064	µg/L
AWQC-Eco	0.014	µg/L
MCL	0.5	µg/L

					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow	
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W038	9.9E	SP	NB	XAD - C																0.0000893	JT	µg/L	0.000065	JT	µg/L
				XAD - C+F																**0.0001124**	J	µg/L	**0.000168**	J	µg/L
				XAD - F																0.0000231	JT	µg/L	0.000103	JT	µg/L
			NS	XAD - C																0.0000946	JT	µg/L	0.0000602	JT	µg/L
				XAD - C+F																**0.000182**	J	µg/L	**0.000115**	J	µg/L
				XAD - F																0.0000874	JT	µg/L	0.0000548	JT	µg/L

Notes:

AWQC-Eco - ambient water quality criteria (ecological, Oregon)
AWQC-HH - ambient water quality criteria (human health, Oregon)
MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-13. Total PCDD/F Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W005	3.9 M	T	EDI-NB	XAD - C													0.000000924	JT	µg/L	0.00000614	T	µg/L	0.00000331	JT	µg/L
				XAD - C+F													**0.000051624**	J	µg/L	**0.00005014**		µg/L	**0.00002471**	J	µg/L
				XAD - F													0.0000507	T	µg/L	0.000044	T	µg/L	0.0000214	T	µg/L
			EDI-NS	XAD - C													0.00000398	JT	µg/L	0.00000173	T	µg/L	0.00000344	JT	µg/L
				XAD - C+F													**0.00001788**	J	µg/L	**0.00002823**		µg/L	**0.00001564**	J	µg/L
				XAD - F													0.0000139	T	µg/L	0.0000265	T	µg/L	0.0000122	T	µg/L
			EDI-VI	XAD - C	0.0000011	T	µg/L	0.000000757	JT	µg/L	0.00000389	T	µg/l												
				XAD - C+F	**0.0000239**		µg/L	**0.000027957**	J	µg/L	**0.00005049**		µg/l												
				XAD - F	0.0000228	T	µg/L	0.0000272	T	µg/L	0.0000466	T	µg/l												
			M	XAD - C										0.00000382	T	µg/L									
				XAD - C+F										**0.00004402**		µg/L									
				XAD - F										0.0000402	T	µg/L									
W011	6.3E	T	EDI-NB	XAD - C																0.00000183	T	µg/L	0.00000345	JT	µg/L
				XAD - C+F																**0.00002573**		µg/L	**0.00002155**	J	µg/L
				XAD - F																0.0000239	T	µg/L	0.0000181	T	µg/L
			EDI-NB-1	XAD - C													0.00000204	T	µg/L						
				XAD - C+F													**0.00005144**		µg/L						
				XAD - F													0.0000494	T	µg/L						
			EDI-NS	XAD - C																0.000000084	T	µg/L	0.00000141	JT	µg/L
				XAD - C+F																**0.000019884**	J	µg/L	**0.00001481**	J	µg/L
				XAD - F																0.0000198	JT	µg/L	0.0000134	T	µg/L
			EDI-NS-1	XAD - C													0.00000202	T	µg/L						
				XAD - C+F													**0.00001922**		µg/L						
				XAD - F													0.0000172	T	µg/L						
			EDI-VI	XAD - C	0.00000186	JT	µg/L	0.000000791	JT	µg/L	0.00000273	T	µg/l												
				XAD - C+F	**0.00002546**	J	µg/L	**0.000034491**	J	µg/L	**0.00002623**		µg/l												
				XAD - F	0.0000236	T	µg/L	0.0000337	T	µg/L	0.0000235	T	µg/l												
W013	6.7E	SP	NB-1	XAD - C	0.00000178	JT	µg/L	0.000000897	JT	µg/L	0.00000644	T	µg/l												
				XAD - C+F	**0.00005188**	J	µg/L	**0.000045597**	J	µg/L	**0.00016244**		µg/l												
				XAD - F	0.0000501	T	µg/L	0.0000447	T	µg/L	0.000156	T	µg/l												
			NB-2	XAD - C	0.00000107	T	µg/L	0.0000125	JT	µg/L	0.00000444	T	µg/l												
				XAD - C+F	**0.00004957**		µg/L	**0.0000513**	J	µg/L	**0.00003074**		µg/l												
				XAD - F	0.0000485	T	µg/L	0.0000388	T	µg/L	0.0000263	T	µg/l												
W015	6.9W	SP	NB	XAD - C	0.00000402	T	µg/L	0.00000201	JT	µg/L	0.00000296	T	µg/l												
				XAD - C+F	**0.00008202**		µg/L	**0.00004561**	J	µg/L	**0.00005036**		µg/l												
				XAD - F	0.000078	T	µg/L	0.0000436	T	µg/L	0.0000474	T	µg/l												
W023	10.9M	T	VI-M	XAD - C													0.0000018	JT	µg/L	0.000000077	T	µg/L	0.00000216	JT	µg/L
				XAD - C+F													**0.0000195**	J	µg/L	**0.000005507**	J	µg/L	**0.00000536**	J	µg/L
				XAD - F													0.0000177	T	µg/L	0.00000543	JT	µg/L	0.0000032	JT	µg/L
	11E		VI-E	XAD - C													0.00000362	JT	µg/L	0.00000935	T	µg/L	0.00000169	JT	µg/L
				XAD - C+F													**0.00002712**	J	µg/L	**0.00011835**		µg/L	**0.00003119**	J	µg/L
				XAD - F													0.0000235	T	µg/L	0.000109	T	µg/L	0.0000295	T	µg/L
	11M		EDI-VI	XAD - C	0.00000049	T	µg/L	0.000000875	JT	µg/L	0.00000174	T	µg/l												
				XAD - C+F	**0.00001859**		µg/L	**0.000016775**	J	µg/L	**0.00002654**		µg/l												
				XAD - F	0.0000181	T	µg/L	0.0000159	T	µg/L	0.0000248	T	µg/l												
			M	XAD - C										0.00000386	JT	µg/L									
				XAD - C+F										**0.00003266**	J	µg/L									
				XAD - F										0.0000288	T	µg/L									
	11W		VI-W	XAD - C													0.00000583	JT	µg/L	0.00000488	JT	µg/L	0.0000028	JT	µg/L
				XAD - C+F													**0.00001493**	J	µg/L	**0.00003998**	J	µg/L	**0.0000273**	J	µg/L
				XAD - F													0.0000091	T	µg/L	0.0000351	T	µg/L	0.0000245	T	µg/L
W024	15.9M	T	EDI-NB	XAD - C													0.000000833	JT	µg/L	0.00000429	T	µg/L	0.00000146	JT	µg/L
				XAD - C+F													**0.000009313**	J	µg/L	**0.00003809**		µg/L	**0.00000814**	J	µg/L
				XAD - F													0.00000848	T	µg/L	0.0000338	T	µg/L	0.00000668	JT	µg/L
			EDI-NS	XAD - C													0.0000027	JT	µg/L	0.00000304	JT	µg/L	0.00000443	JT	µg/L
				XAD - C+F													**0.00000849**	J	µg/L	**0.00002304**	J	µg/L	**0.00000973**	J	µg/L
				XAD - F													0.00000579	T	µg/L	0.00002	JT	µg/L	0.0000053	JT	µg/L
			M	XAD - C										0.00000413	JT	µg/L									
				XAD - C+F										**0.00003003**	J	µg/L									
				XAD - F										0.0000259	T	µg/L									

Table 5.4-13. Total PCDD/F Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W025	2E	T	VI-E	XAD - C													0.00000325	JT	µg/L	0.00000488	JT	µg/L	0.00000403	JT	µg/L
				XAD - C+F													**0.00000704**	J	µg/L	**0.00002308**	J	µg/L	**0.00001663**	J	µg/L
				XAD - F													0.00000379	JT	µg/L	0.0000182	JT	µg/L	0.0000126	T	µg/L
	2M		VI-M	XAD - C													0.0000034	JT	µg/L	0.0000026	T	µg/L	0.00000297	T	µg/L
				XAD - C+F													**0.0000059**	J	µg/L	**0.0000213**	J	µg/L	**0.00001317**		µg/L
				XAD - F													0.0000025	JT	µg/L	0.0000187	JT	µg/L	0.00000845	JT	µg/L
	2W		VI-W	XAD - C													0.00000404	JT	µg/L	0.00000426	T	µg/L	0.0000022	T	µg/L
				XAD - C+F													**0.00000621**	J	µg/L	**0.00001596**	J	µg/L	**0.00001206**		µg/L
				XAD - F													0.00000217	JT	µg/L	0.0000117	JT	µg/L	0.00000986	T	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	XAD - C																0.00000874	JT	µg/L	0.00000236	T	µg/L
				XAD - C+F																**0.00003814**	J	µg/L	**0.00002886**		µg/L
				XAD - F																0.0000294	T	µg/L	0.0000265	T	µg/L
			EDI-NB-1	XAD - C													0.00000113	T	µg/L						
				XAD - C+F													**0.00002813**		µg/L						
				XAD - F													0.000027	T	µg/L						
			EDI-NS	XAD - C																0.0000155	JT	µg/L	0.00000343	JT	µg/L
				XAD - C+F																**0.0000522**	J	µg/L	**0.00003003**	J	µg/L
				XAD - F																0.0000367	T	µg/L	0.0000266	T	µg/L
			EDI-NS-1	XAD - C													0.00000172	T	µg/L						
				XAD - C+F													**0.00002582**		µg/L						
				XAD - F													0.0000241	T	µg/L						
W032	6.7E	SP	NB	XAD - C																0.00000576	JT	µg/L	0.00000278	T	µg/L
				XAD - C+F																**0.00005516**	J	µg/L	**0.00002888**		µg/L
				XAD - F																0.0000494	T	µg/L	0.0000261	T	µg/L
			NS	XAD - C																0.00000402	T	µg/L	0.00000506	T	µg/L
				XAD - C+F																**0.00003832**		µg/L	**0.00002466**		µg/L
				XAD - F																0.0000343	T	µg/L	0.0000196	T	µg/L
W033	7.0W	SP	NB	XAD - C																0.00000394	T	µg/L	0.00000179	T	µg/L
				XAD - C+F																**0.00003904**		µg/L	**0.00002669**	J	µg/L
				XAD - F																0.0000351	T	µg/L	0.0000249	JT	µg/L
			NB-2	XAD - C																0.00000279	T	µg/L			
				XAD - C+F																**0.00005109**		µg/L			
				XAD - F																0.0000483	T	µg/L			
			NS	XAD - C																0.00000737	T	µg/L	0.00000533	T	µg/L
				XAD - C+F																**0.00004427**		µg/L	**0.00003463**		µg/L
				XAD - F																0.0000369	T	µg/L	0.0000293	T	µg/L
			NS-2	XAD - C																0.00000855	T	µg/L			
				XAD - C+F																**0.00003595**		µg/L			
				XAD - F																0.0000274	T	µg/L			
W035	8.5E (Swan Island Lagoon)	SP	NB	XAD - C																0.00000342	T	µg/L	0.0000052	T	µg/L
				XAD - C+F																**0.00004872**		µg/L	**0.0000749**		µg/L
				XAD - F																0.0000453	T	µg/L	0.0000697	T	µg/L
			NS	XAD - C																0.0000073	T	µg/L	0.00000371	T	µg/L
				XAD - C+F																**0.0000538**		µg/L	**0.00007441**	J	µg/L
				XAD - F																0.0000465	T	µg/L	0.0000707	JT	µg/L

Notes:

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-14. TCDD TEQ Data Presented by Station and Sampling Event.

AWQC-HH	0.00000000051	µg/L
AWQC-Eco	0.000038	µg/L
MCL	0.00003	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W005	3.9 M	T	EDI-NB	XAD - C													0.00000000321	JT	µg/L	0.0000000115	JT	µg/L	0.0000000102	JT	µg/L
				XAD - C+F													**0.00000019721**	J	µg/L	**0.0000001094**	J	µg/L	**0.0000000682**	J	µg/L
				XAD - F													0.000000194	JT	µg/L	0.0000000979	JT	µg/L	0.000000058	JT	µg/L
			EDI-NS	XAD - C													0.0000000113	JT	µg/L	0.000000011	JT	µg/L	0.00000000836	JT	µg/L
				XAD - C+F													**0.000000071**	J	µg/L	**0.0000000709**	J	µg/L	**0.00000004736**	J	µg/L
				XAD - F													0.0000000597	JT	µg/L	0.0000000599	JT	µg/L	0.000000039	JT	µg/L
			EDI-VI	XAD - C	0.00000000189	JT	µg/L	0.00000000291	JT	µg/L	0.0000000103	JT	µg/L												
				XAD - C+F	**0.00000004959**	J	µg/L	**0.00000009511**	J	µg/L	**0.0000003273**	J	µg/L												
				XAD - F	0.0000000477	JT	µg/L	0.0000000922	JT	µg/L	0.000000317	JT	µg/L												
			M	XAD - C										0.000000015	JT	µg/L									
				XAD - C+F										**0.0000000862**	J	µg/L									
				XAD - F										0.0000000712	JT	µg/L									
W011	6.3E	T	EDI-NB	XAD - C																0.000000000528	T	µg/L	0.00000000942	JT	µg/L
				XAD - C+F																**0.000000089028**	J	µg/L	**0.00000004252**	J	µg/L
				XAD - F																0.0000000885	JT	µg/L	0.0000000331	JT	µg/L
			EDI-NB-1	XAD - C													0.00000000612	JT	µg/L						
				XAD - C+F													**0.00000015512**	J	µg/L						
				XAD - F													0.000000149	JT	µg/L						
			EDI-NS	XAD - C																0.00000000033	JT	µg/L	0.00000000424	JT	µg/L
				XAD - C+F																**0.00000005463**	J	µg/L	**0.00000003374**	J	µg/L
				XAD - F																0.0000000543	JT	µg/L	0.0000000295	JT	µg/L
			EDI-NS-1	XAD - C													0.00000000636	JT	µg/L						
				XAD - C+F													**0.00000006366**	J	µg/L						
				XAD - F													0.0000000573	JT	µg/L						
			EDI-VI	XAD - C	0.00000000322	JT	µg/L	0.00000000463	JT	µg/L	0.00000000459	T	µg/L												
				XAD - C+F	**0.00000006212**	J	µg/L	**0.00000008943**	J	µg/L	**0.00000009109**	J	µg/L												
				XAD - F	0.0000000589	JT	µg/L	0.0000000848	JT	µg/L	0.0000000865	JT	µg/L												
W013	6.7E	SP	NB-1	XAD - C	0.00000000196	JT	µg/L	0.00000000481	JT	µg/L	0.0000000122	JT	µg/L												
				XAD - C+F	**0.00000012696**	J	µg/L	**0.00000011381**	J	µg/L	**0.0000003652**	J	µg/L												
				XAD - F	0.000000125	JT	µg/L	0.000000109	JT	µg/L	0.000000353	JT	µg/L												
			NB-2	XAD - C	0.00000000106	T	µg/L	0.0000000382	JT	µg/L	0.000000007	JT	µg/L												
				XAD - C+F	**0.00000011006**	J	µg/L	**0.0000001542**	J	µg/L	**0.000000917**	J	µg/L												
				XAD - F	0.000000109	JT	µg/L	0.000000116	JT	µg/L	0.00000091	JT	µg/L												
W015	6.9W	SP	NB	XAD - C	0.0000000334	JT	µg/L	0.0000000238	JT	µg/L	0.0000000239	JT	µg/L												
				XAD - C+F	**0.0000005024**	J	µg/L	**0.0000004408**	J	µg/L	**0.0000003569**	J	µg/L												
				XAD - F	0.000000469	JT	µg/L	0.000000417	JT	µg/L	0.000000333	JT	µg/L												
W023	10.9M	T	VI-M	XAD - C													0.00000000348	JT	µg/L	0.0000000006	JT	µg/L	0.00000000637	JT	µg/L
				XAD - C+F													**0.00000004438**	J	µg/L	**0.0000000133**	J	µg/L	**0.00000001134**	J	µg/L
				XAD - F													0.0000000409	JT	µg/L	0.0000000127	JT	µg/L	0.00000000497	JT	µg/L
	11E		VI-E	XAD - C													0.0000000128	JT	µg/L	0.0000000333	JT	µg/L	0.00000000437	JT	µg/L
				XAD - C+F													**0.0000000643**	J	µg/L	**0.0000002783**	J	µg/L	**0.00000006567**	J	µg/L
				XAD - F													0.0000000515	JT	µg/L	0.000000245	JT	µg/L	0.0000000613	JT	µg/L
	11M		EDI-VI	XAD - C	0.000000000558	T	µg/L	0.00000000309	JT	µg/L	0.00000000205	T	µg/L												
				XAD - C+F	**0.000000042958**	J	µg/L	**0.00000007379**	J	µg/L	**0.00000006425**	J	µg/L												
				XAD - F	0.0000000424	JT	µg/L	0.0000000707	JT	µg/L	0.0000000622	JT	µg/L												
			M	XAD - C										0.0000000149	JT	µg/L									
				XAD - C+F										**0.0000000912**	J	µg/L									
				XAD - F										0.0000000763	JT	µg/L									
	11W		VI-W	XAD - C													0.0000000167	JT	µg/L	0.000000011	JT	µg/L	0.00000000756	JT	µg/L
				XAD - C+F													**0.0000000407**	J	µg/L	**0.0000000871**	J	µg/L	**0.00000004756**	J	µg/L
				XAD - F													0.000000024	JT	µg/L	0.0000000761	JT	µg/L	0.00000004	JT	µg/L
W024	15.9M	T	EDI-NB	XAD - C													0.00000000107	JT	µg/L	0.0000000071	JT	µg/L	0.00000000489	JT	µg/L
				XAD - C+F													**0.00000003137**	J	µg/L	**0.0000000777**	J	µg/L	**0.00000001649**	J	µg/L
				XAD - F													0.0000000303	JT	µg/L	0.0000000706	JT	µg/L	0.0000000116	JT	µg/L
			EDI-NS	XAD - C													0.0000000149	JT	µg/L	0.00000000616	JT	µg/L	0.0000000101	JT	µg/L
				XAD - C+F													**0.0000000269**	J	µg/L	**0.00000003726**	J	µg/L	**0.0000000238**	J	µg/L
				XAD - F													0.000000012	JT	µg/L	0.0000000311	JT	µg/L	0.0000000137	JT	µg/L
			M	XAD - C										0.0000000182	JT	µg/L									
				XAD - C+F										**0.0000000635**	J	µg/L									
				XAD - F										0.0000000453	JT	µg/L									

Table 5.4-14. TCDD TEQ Data Presented by Station and Sampling Event.

AWQC-HH	0.00000000051	µg/L
AWQC-Eco	0.000038	µg/L
MCL	0.00003	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W025	2E	T	VI-E	XAD - C													0.0000000116	JT	µg/L	0.00000000937	JT	µg/L	0.000000011	JT	µg/L
				XAD - C+F													**0.00000001811**	J	µg/L	**0.00000005007**	J	µg/L	**0.0000000374**	J	µg/L
				XAD - F													0.00000000651	JT	µg/L	0.0000000407	JT	µg/L	0.0000000264	JT	µg/L
	2M	T	VI-M	XAD - C													0.0000000214	JT	µg/L	0.00000000564	JT	µg/L	0.00000000858	JT	µg/L
				XAD - C+F													**0.00000002627**	J	µg/L	**0.00000004474**	J	µg/L	**0.00000002648**	J	µg/L
				XAD - F													0.00000000487	JT	µg/L	0.0000000391	JT	µg/L	0.0000000141	JT	µg/L
	2W	T	VI-W	XAD - C													0.000000017	JT	µg/L	0.00000000865	JT	µg/L	0.00000000288	T	µg/L
				XAD - C+F													**0.00000002119**	J	µg/L	**0.00000004215**	J	µg/L	**0.00000002088**	J	µg/L
				XAD - F													0.00000000419	JT	µg/L	0.0000000335	JT	µg/L	0.000000018	JT	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	XAD - C																0.0000000505	JT	µg/L	0.00000000359	T	µg/L
				XAD - C+F																**0.0000001091**	J	µg/L	**0.00000006809**	J	µg/L
				XAD - F																0.0000000586	JT	µg/L	0.0000000645	JT	µg/L
			EDI-NB-1	XAD - C													0.0000000051	JT	µg/L						
				XAD - C+F													**0.0000000928**	J	µg/L						
				XAD - F													0.0000000877	JT	µg/L						
			EDI-NS	XAD - C																0.0000000656	JT	µg/L	0.00000000538	T	µg/L
				XAD - C+F																**0.0000001381**	J	µg/L	**0.00000006728**	J	µg/L
				XAD - F																0.0000000725	JT	µg/L	0.0000000619	JT	µg/L
			EDI-NS-1	XAD - C													0.00000000921	JT	µg/L						
				XAD - C+F													**0.00000009171**	J	µg/L						
				XAD - F													0.0000000825	JT	µg/L						
W032	6.7E	SP	NB	XAD - C																0.00000000779	JT	µg/L	0.00000000378	T	µg/L
				XAD - C+F																**0.00000010089**	J	µg/L	**0.00000004908**	J	µg/L
				XAD - F																0.0000000931	JT	µg/L	0.0000000453	JT	µg/L
			NS	XAD - C																0.0000000051	T	µg/L	0.00000000719	T	µg/L
				XAD - C+F																**0.0000000777**	J	µg/L	**0.00000005089**	J	µg/L
				XAD - F																0.0000000726	JT	µg/L	0.0000000437	JT	µg/L
W033	7.0W	SP	NB	XAD - C																0.00000000907	JT	µg/L	0.00000000274	T	µg/L
				XAD - C+F																**0.00000021207**	J	µg/L	**0.00000008404**	J	µg/L
				XAD - F																0.000000203	JT	µg/L	0.0000000813	JT	µg/L
			NB-2	XAD - C																0.00000000547	JT	µg/L			
				XAD - C+F																**0.00000018347**	J	µg/L			
				XAD - F																0.000000178	JT	µg/L			
			NS	XAD - C																0.0000000146	JT	µg/L	0.0000000143	JT	µg/L
				XAD - C+F																**0.0000000981**	J	µg/L	**0.000000075**	J	µg/L
				XAD - F																0.0000000835	JT	µg/L	0.0000000607	JT	µg/L
			NS-2	XAD - C																0.0000000173	JT	µg/L			
				XAD - C+F																**0.0000000968**	J	µg/L			
				XAD - F																0.0000000795	JT	µg/L			
W035	8.5E (Swan Island Lagoon)	SP	NB	XAD - C																0.0000000069	JT	µg/L	0.00000000817	T	µg/L
				XAD - C+F																**0.0000001149**	J	µg/L	**0.00000014917**	J	µg/L
				XAD - F																0.000000108	JT	µg/L	0.000000141	JT	µg/L
			NS	XAD - C																0.0000000119	JT	µg/L	0.00000000598	T	µg/L
				XAD - C+F																**0.0000001359**	J	µg/L	**0.00000016798**	J	µg/L
				XAD - F																0.000000124	JT	µg/L	0.000000162	JT	µg/L

Notes:

AWQC-Eco - ambient water quality criteria (ecological, Oregon)
AWQC-HH - ambient water quality criteria (human health, Oregon)
MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-15. DDx Data Presented by Station and Sampling Event.

AWQC-Eco	0.001	µg/L			Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	***0.000472***	UJT	µg/L	**0.0187**	NJT	µg/L	***0.000481***	UJT	µg/L												
W002	2.2W	SP	NB	Peristaltic	***0.000481***	UJT	µg/L																		
			NB-1	Peristaltic				***0.000495***	UT	µg/L	***0.000538***	UJT	µg/L												
W003	3.0W	SP	NB	Peristaltic	***0.00049***	UJT	µg/L	***0.0005***	UT	µg/L	***0.000505***	UJT	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	***0.0005***	UJT	µg/L				***0.000526***	UJT	µg/L												
			NB-1	Peristaltic				***0.000485***	UT	µg/L															
			NB-2	Peristaltic				***0.000485***	UT	µg/L															
W005	3.9 M	T	EDI-NB	XAD - C													0.00027259	JT	µg/L	0.00006991	JT	µg/L	0.000195	JT	µg/L
				XAD - C+F													**0.00054627**	J	µg/L	**0.0001625**	J	µg/L	**0.000578**	J	µg/L
				XAD - F													0.00027368	JT	µg/L	0.00009259	JT	µg/L	0.000383	JT	µg/L
			EDI-NS	XAD - C													0.00026787	JT	µg/L	0.00006849	JT	µg/L	0.0002	JT	µg/L
				XAD - C+F													**0.00037686**	J	µg/L	**0.00014087**	J	µg/L	**0.000535**	J	µg/L
				XAD - F													0.00010899	JT	µg/L	0.00007238	JT	µg/L	0.000335	JT	µg/L
			EDI-VI	XAD - C	0.0000571	JT	µg/L	0.0000862	T	µg/L	0.000151	JT	µg/L												
				XAD - C+F	**0.0000987**	J	µg/L	**0.000125**	J	µg/L	**0.0001763**	J	µg/L												
				XAD - F	0.0000416	JT	µg/L	0.0000388	JT	µg/L	0.0000253	JT	µg/L												
			M	XAD - C										0.000175	JT	µg/L									
				XAD - C+F										**0.000599**	J	µg/L									
				XAD - F										0.000424	JT	µg/L									
W006	4.0W	SP	NB	Peristaltic	***0.0005***	UJT	µg/L	***0.00051***	UT	µg/L	***0.000521***	UJT	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	***0.000495***	UJT	µg/L	***0.0005***	UT	µg/L	***0.000524***	UJT	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	***0.000472***	UJT	µg/L	***0.00049***	UT	µg/L	***0.000515***	UJT	µg/L												
W009	5.6W	SP	NB	Peristaltic	***0.0005***	UT	µg/L	***0.000485***	UT	µg/L	***0.000532***	UJT	µg/L												
W010	5.7E	SP	NB	Peristaltic	***0.0005***	UJT	µg/L																		
			VI	Peristaltic				***0.0005***	UT	µg/L	***0.000476***	UT	µg/L												
W011	6.3E	T	EDI-NB	XAD - C																0.00014076	JT	µg/L	0.000157	JT	µg/L
				XAD - C+F																**0.00020149**	J	µg/L	**0.000481**	J	µg/L
				XAD - F																0.00006073	JT	µg/L	0.000324	JT	µg/L
			EDI-NB-1	XAD - C													0.00017346	JT	µg/L						
				XAD - C+F													**0.00043702**	J	µg/L						
				XAD - F													0.00026356	JT	µg/L						
			EDI-NS	XAD - C																0.00009189	JT	µg/L	0.000158	JT	µg/L
				XAD - C+F																**0.00012824**	J	µg/L	**0.000502**	J	µg/L
				XAD - F																0.00003635	JT	µg/L	0.000344	JT	µg/L
			EDI-NS-1	XAD - C													0.00015448	JT	µg/L						
				XAD - C+F													**0.00029297**	J	µg/L						
				XAD - F													0.00013849	JT	µg/L						
			EDI-VI	XAD - C	0.0000587	JT	µg/L	0.0000949	T	µg/L	0.000151	JT	µg/L												
				XAD - C+F	**0.0001085**	J	µg/L	**0.0001949**		µg/L	**0.0002365**	J	µg/L												
				XAD - F	0.0000498	JT	µg/L	0.0001	T	µg/L	0.0000855	JT	µg/L												
W012	6.3W	SP	NB	Peristaltic	***0.0005***	UT	µg/L	***0.00051***	UT	µg/L	**0.000839**	T	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	***0.000472***	UT	µg/L																		
				XAD - C	0.000033	JT	µg/L	0.000047	JT	µg/L	0.00013	JT	µg/L												
				XAD - C+F	**0.0000654**	J	µg/L	**0.0000931**	J	µg/L	**0.000241**	J	µg/L												
				XAD - F	0.0000324	JT	µg/L	0.0000461	JT	µg/L	0.000111	JT	µg/L												
			NB-2	Peristaltic	***0.000526***	UT	µg/L																		
				XAD - C	0.0000267	JT	µg/L	0.0000254	JT	µg/L	0.0000778	JT	µg/L												
				XAD - C+F	**0.0000552**	J	µg/L	**0.0000492**	J	µg/L	**0.00008543**	J	µg/L												
				XAD - F	0.0000285	JT	µg/L	0.0000238	JT	µg/L	0.00000763	JT	µg/L												
W014	6.7E	SP	VI	Peristaltic	***0.00049***	UT	µg/L	***0.000481***	UT	µg/L	***0.00049***	UT	µg/L												
W015	6.9W	SP	NB	XAD - C	0.00346	T	µg/L	0.0021	T	µg/L	0.00198	T	µg/L												
				XAD - C+F	**0.00767**		µg/L	**0.00522**		µg/L	**0.00359**		µg/L												
				XAD - F	0.00421	T	µg/L	0.00312	T	µg/L	0.00161	T	µg/L												
W016	7.2W	SP	NB	XAD - C	0.000781	T	µg/L	0.000494	JT	µg/L	0.00297	T	µg/L												
				XAD - C+F	**0.002971**		µg/L	**0.001237**	J	µg/L	**0.00976**		µg/L												
				XAD - F	0.00219	T	µg/L	0.000743	JT	µg/L	0.00679	T	µg/L												
W017	7.5W	SP	NB	Peristaltic	***0.00051***	UT	µg/L	***0.00051***	UT	µg/L	**0.000693**	JT	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	UT	µg/L																		
				XAD - C	0.0000359	JT	µg/L	0.0000518	JT	µg/L	0.0000727	JT	µg/L												
				XAD - C+F	**0.0000609**	J	µg/L	**0.0001032**	J	µg/L	**0.0000998**	J	µg/L												
				XAD - F	0.000025	JT	µg/L	0.0000514	JT	µg/L	0.0000271	JT	µg/L												
W019	8.6W	SP	NB	Peristaltic	***0.000481***	UT	µg/L	**0.00115**	T	µg/L	***0.000485***	UJT	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	***0.00049***	UT	µg/L	***0.00049***	UT	µg/L	***0.00051***	UJT	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	UT	µg/L	***0.000481***	UT	µg/L	***0.00049***	UJT	µg/L												

Table 5.4-15. DDx Data Presented by Station and Sampling Event.

AWQC-Eco	0.001	µg/L			Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W022	9.7W	SP	NB	Peristaltic	***0.00049***	UT	µg/L	***0.00049***	UT	µg/L	***0.0005***	UJT	µg/L												
W023	10.9M	T	VI-M	XAD - C													0.000054988	JT	µg/L	0.00003322	JT	µg/L	0.000174	JT	µg/L
				XAD - C+F													**0.000089077**	J	µg/L	**0.00003322**	J	µg/L	**0.00059**	J	µg/L
				XAD - F													0.000034089	JT	µg/L	0.00000803	UT	µg/L	0.000416	JT	µg/L
	11E		VI-E	XAD - C													0.000057692	JT	µg/L	0.00004924	JT	µg/L	0.000182	JT	µg/L
				XAD - C+F													**0.000098972**	J	µg/L	**0.000102344**	J	µg/L	**0.000618**	J	µg/L
				XAD - F													0.00004128	JT	µg/L	0.000053104	JT	µg/L	0.000436	JT	µg/L
	11M		EDI-VI	XAD - C	0.0000124	JT	µg/L	0.0000316	JT	µg/L	0.0000578	JT	µg/L												
				XAD - C+F	**0.0000428**	J	µg/L	**0.0000458**	J	µg/L	**0.0000869**	J	µg/L												
				XAD - F	0.0000304	JT	µg/L	0.0000142	JT	µg/L	0.0000291	JT	µg/L												
			M	XAD - C										0.000155	JT	µg/L									
				XAD - C+F										**0.000584**	J	µg/L									
				XAD - F										0.000429	JT	µg/L									
	11W		VI-W	XAD - C													0.000070067	JT	µg/L	0.00004151	JT	µg/L	0.000148	JT	µg/L
				XAD - C+F													**0.000097669**	J	µg/L	**0.00010001**	J	µg/L	**0.000471**	J	µg/L
				XAD - F													0.000027602	JT	µg/L	0.0000585	JT	µg/L	0.000323	JT	µg/L
W024	15.9M	T	EDI-NB	XAD - C													0.0000388	JT	µg/L	0.00003784	JT	µg/L	0.00021	JT	µg/L
				XAD - C+F													**0.00006868**	J	µg/L	**0.00009107**	J	µg/L	**0.000421**	J	µg/L
				XAD - F													0.00002988	JT	µg/L	0.00005323	JT	µg/L	0.000211	JT	µg/L
			EDI-NS	XAD - C													0.000043702	JT	µg/L	0.00005016	JT	µg/L	0.000154	JT	µg/L
				XAD - C+F													**0.000060273**	J	µg/L	**0.00005802**	J	µg/L	**0.000346**	J	µg/L
				XAD - F													0.000016571	JT	µg/L	0.00000786	JT	µg/L	0.000192	JT	µg/L
			M	XAD - C										0.00015	JT	µg/L									
				XAD - C+F										**0.000512**	J	µg/L									
				XAD - F										0.000362	JT	µg/L									
W025	2E	T	VI-E	XAD - C													0.0002741	JT	µg/L	0.00008957	JT	µg/L	0.0000959	JT	µg/L
				XAD - C+F													**0.000284532**	J	µg/L	**0.00011956**	J	µg/L	**0.0002509**	J	µg/L
				XAD - F													0.000010432	JT	µg/L	0.00002999	JT	µg/L	0.000155	JT	µg/L
	2M		VI-M	XAD - C													0.00024812	JT	µg/L	0.00012235	JT	µg/L	0.0000975	JT	µg/L
				XAD - C+F													**0.000262476**	J	µg/L	**0.00018359**	J	µg/L	**0.0002305**	J	µg/L
				XAD - F													0.000014356	JT	µg/L	0.00006124	JT	µg/L	0.000133	JT	µg/L
	2W		VI-W	XAD - C													0.00031059	JT	µg/L	0.00010082	JT	µg/L	0.000136	JT	µg/L
				XAD - C+F													**0.000322376**	J	µg/L	**0.00014371**	J	µg/L	**0.000256**	J	µg/L
				XAD - F													0.000011786	JT	µg/L	0.00004289	JT	µg/L	0.00012	JT	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.0011***	UT	µg/L	**0.00057**	JT	µg/L
			NS	Peristaltic																***0.001***	UT	µg/L	**0.00032**	JT	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	XAD - C																0.00007311	JT	µg/L	0.00013	JT	µg/L
				XAD - C+F																**0.00014425**	J	µg/L	**0.000375**	J	µg/L
				XAD - F																0.00007114	JT	µg/L	0.000245	JT	µg/L
			EDI-NB-1	XAD - C													0.00028383	JT	µg/L						
				XAD - C+F													**0.00045373**	J	µg/L						
				XAD - F													0.0001699	JT	µg/L						
			EDI-NS	Peristaltic																**0.0019**	T	µg/L			
				XAD - C																0.00008963	JT	µg/L	0.000124	JT	µg/L
				XAD - C+F																**0.00015151**	J	µg/L	**0.000361**	J	µg/L
				XAD - F																0.00006188	JT	µg/L	0.000237	JT	µg/L
			EDI-NS-1	XAD - C													0.00031119	JT	µg/L						
				XAD - C+F													**0.00050027**	J	µg/L						
				XAD - F													0.00018908	JT	µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.0015***	UT	µg/L	**0.00018**	NJT	µg/L
			NS	Peristaltic																**0.0019**	T	µg/L	**0.00017**	JT	µg/L
W029	4.4W	SP	NB	Peristaltic																**0.002**	NJT	µg/L	**0.00047**	NJT	µg/L
			NS	Peristaltic																**0.0025**	NJT	µg/L	**0.00096**	NJT	µg/L
W030	5.5E	SP	NB	Peristaltic																**0.0033**	NJT	µg/L	***0.00094***	UT	µg/L
			NS	Peristaltic																**0.002**	JT	µg/L	**0.00022**	JT	µg/L
W031	6.1W	SP	NB	XAD - C																0.0001666	JT	µg/L	0.000287	JT	µg/L
				XAD - C+F																**0.00031121**	J	µg/L	**0.000857**	J	µg/L
				XAD - F																0.00014461	JT	µg/L	0.00057	JT	µg/L
			NS	Peristaltic																**0.0029**	JT	µg/L			
				XAD - C																0.00017671	JT	µg/L	0.000264	JT	µg/L
				XAD - C+F																**0.00019603**	J	µg/L	**0.000524**	J	µg/L
				XAD - F																0.00001932	JT	µg/L	0.00026	JT	µg/L

Table 5.4-15. DDx Data Presented by Station and Sampling Event.

AWQC-Eco	0.001	µg/L				Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W032	6.7E	SP	NB	XAD - C																0.000047901	JT	µg/L	0.000126	JT	µg/L
				XAD - C+F																**0.000101411**	J	µg/L	**0.000338**	J	µg/L
				XAD - F																0.00005351	JT	µg/L	0.000212	JT	µg/L
			NS	XAD - C																0.000046104	JT	µg/L	0.000113	JT	µg/L
				XAD - C+F																**0.000091444**	J	µg/L	**0.000266**	J	µg/L
				XAD - F																0.00004534	JT	µg/L	0.000153	JT	µg/L
W033	7.0W	SP	NB	XAD - C																0.0001517	JT	µg/L	0.000208	JT	µg/L
				XAD - C+F																**0.00043479**	J	µg/L	**0.000624**	J	µg/L
				XAD - F																0.00028309	JT	µg/L	0.000416	JT	µg/L
			NB-2	XAD - C																0.00014149	JT	µg/L			
				XAD - C+F																**0.00035949**	J	µg/L			
				XAD - F																0.000218	JT	µg/L			
			NS	XAD - C																0.00024637	JT	µg/L	0.000184	JT	µg/L
				XAD - C+F																**0.00067518**	J	µg/L	**0.00053**	J	µg/L
				XAD - F																0.00042881	JT	µg/L	0.000346	JT	µg/L
			NS-2	XAD - C																0.00020619	JT	µg/L			
				XAD - C+F																**0.00043193**	J	µg/L			
				XAD - F																0.00022574	JT	µg/L			
W034	7.5W	SP	NB	XAD - C																0.00011074	JT	µg/L	0.000119	JT	µg/L
				XAD - C+F																**0.00025323**	J	µg/L	**0.000289**	J	µg/L
				XAD - F																0.00014249	JT	µg/L	0.00017	JT	µg/L
			NS	XAD - C																0.0001273	JT	µg/L	0.000138	JT	µg/L
				XAD - C+F																**0.00031744**	J	µg/L	**0.000293**	J	µg/L
				XAD - F																0.00019014	JT	µg/L	0.000155	JT	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	XAD - C																0.00004687	JT	µg/L	0.000121	JT	µg/L
				XAD - C+F																**0.00010657**	J	µg/L	**0.00029**	J	µg/L
				XAD - F																0.0000597	JT	µg/L	0.000169	JT	µg/L
			NS	XAD - C																0.00004151	JT	µg/L	0.000105	JT	µg/L
				XAD - C+F																**0.00007672**	J	µg/L	**0.000278**	J	µg/L
				XAD - F																0.00003521	JT	µg/L	0.000173	JT	µg/L
W036	8.6W	SP	NB	Peristaltic																**0.0029**	JT	µg/L	**0.00049**	JT	µg/L
			NB-2	Peristaltic																***0.0016***	UT	µg/L			
			NS	Peristaltic																**0.0021**	T	µg/L	**0.0003**	JT	µg/L
			NS-2	Peristaltic																**0.0026**	T	µg/L			
W037	9.6W	SP	NB	Peristaltic																**0.0047**	NJT	µg/L	**0.00205**	NJT	µg/L
			NS	Peristaltic																***0.0013***	UT	µg/L	**0.00074**	NJT	µg/L
W038	9.9E	SP	NB	Peristaltic																**0.0015**	T	µg/L	**0.0004**	JT	µg/L
			NS	Peristaltic																**0.0026**	NJT	µg/L	***0.00094***	UT	µg/L

Notes:

AWQC-Eco - ambient water quality criteria (ecological, Oregon)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-16. Total PAH Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**0.012**	JT	µg/L	**0.0109**	JT	µg/L	**0.0101**	JT	µg/L												
W002	2.2W	SP	NB	Peristaltic	**0.0055**	JT	µg/L																		
			NB-1	Peristaltic				**0.005**	JT	µg/L	**0.0123**	JT	µg/L												
			NB-2	Peristaltic				**0.0049**	JT	µg/L	**0.0132**	JT	µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.015**	JT	µg/L	***0.0074***	UT	µg/L	**0.042**	JT	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**0.0797**	JT	µg/L				**0.0149**	JT	µg/L												
			NB-1	Peristaltic				**0.0055**	JT	µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													**0.03**	JT	µg/L	***0.013***	UT	µg/L	***0.013***	UT	µg/L
				XAD - C													0.0302	JT	µg/L	0.0108	JT	µg/L	0.0174	JT	µg/L
				XAD - C+F													**0.0661**	J	µg/L	**0.029**	J	µg/L	**0.02304**	J	µg/L
				XAD - F													0.0359	JT	µg/L	0.0182	JT	µg/L	0.00564	JT	µg/L
			EDI-NS	Peristaltic													**0.015**	JT	µg/L	**0.016**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C													0.0334	JT	µg/L	0.0269	JT	µg/L	0.017	JT	µg/L
				XAD - C+F													**0.0439**	J	µg/L	**0.0389**	J	µg/L	**0.02101**	J	µg/L
				XAD - F													0.0105	JT	µg/L	0.012	JT	µg/L	0.00401	JT	µg/L
			EDI-VI	Peristaltic	***0.0074***	UT	µg/L	***0.0074***	UT	µg/L	**0.0183**	JT	µg/L												
				XAD - C	0.0111	JT	µg/L	0.012	JT	µg/L	0.049	JT	µg/L												
				XAD - C+F	**0.01851**	J	µg/L	**0.0165**	J	µg/L	**0.0598**	J	µg/L												
				XAD - F	0.00741	JT	µg/L	0.0045	JT	µg/L	0.0108	JT	µg/L												
			M	Peristaltic										**0.0362**	JT	µg/L									
				XAD - C										0.0483	JT	µg/L									
				XAD - C+F										**0.0594**	J	µg/L									
				XAD - F										0.0111	JT	µg/L									
W006	4.0W	SP	NB	Peristaltic	**0.021**	JT	µg/L	**0.0373**	JT	µg/L	**0.0352**	JT	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	***0.0075***	UJT	µg/L	**0.0168**	JT	µg/L	**0.0578**	JT	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**0.0411**	JT	µg/L	**0.0102**	JT	µg/L	**0.0751**	JT	µg/L												
W009	5.6W	SP	NB	Peristaltic	**0.0779**	JT	µg/L	***0.0074***	UT	µg/L	**0.0343**	JT	µg/L												
W010	5.7E	SP	NB	Peristaltic	***0.0074***	UT	µg/L																		
			VI	Peristaltic				***0.0074***	UT	µg/L	**0.0177**	JT	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																**0.016**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C																0.00383	JT	µg/L	0.00626	JT	µg/L
				XAD - C+F																**0.01703**	J	µg/L	**0.00998**	J	µg/L
				XAD - F																0.0132	JT	µg/L	0.00372	JT	µg/L
			EDI-NB-1	Peristaltic													**0.013**	JT	µg/L						
				XAD - C													0.0233	T	µg/L						
				XAD - C+F													**0.0544**	J	µg/L						
				XAD - F													0.0311	JT	µg/L						
			EDI-NS	Peristaltic																**0.0098**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C																0.00592	JT	µg/L	0.00582	JT	µg/L
				XAD - C+F																**0.01294**	J	µg/L	**0.00945**	J	µg/L
				XAD - F																0.00702	JT	µg/L	0.00363	JT	µg/L
			EDI-NS-1	Peristaltic													***0.013***	UT	µg/L						
				XAD - C													0.0307	T	µg/L						
				XAD - C+F													**0.0421**	J	µg/L						
				XAD - F													0.0114	JT	µg/L						
			EDI-VI	Peristaltic	**0.0422**	JT	µg/L	***0.0074***	UT	µg/L	**0.0255**	JT	µg/L												
				XAD - C	0.0101	JT	µg/L	0.0412	JT	µg/L	0.0274	JT	µg/L												
				XAD - C+F	**0.01357**	J	µg/L	**0.04729**	J	µg/L	**0.0405**	J	µg/L												
				XAD - F	0.00347	T	µg/L	0.00609	JT	µg/L	0.0131	T	µg/L												
W012	6.3W	SP	NB	Peristaltic	**1.32**	JT	µg/L	**0.0312**	JT	µg/L	**2.459**	JT	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	***0.016***	UT	µg/L	**0.0026**	JT	µg/L	**0.0121**	JT	µg/L												
				XAD - C	0.0219	JT	µg/L	0.0217	JT	µg/L	0.017	JT	µg/L												
				XAD - C+F	**0.02753**	J	µg/L	**0.02481**	J	µg/L	**0.0275**	J	µg/L												
				XAD - F	0.00563	JT	µg/L	0.00311	T	µg/L	0.0105	T	µg/L												
			NB-2	Peristaltic	***0.015***	UT	µg/L	**0.0293**	JT	µg/L															
				XAD - C	0.0229	JT	µg/L	0.0344	JT	µg/L	0.0129	JT	µg/L												
				XAD - C+F	**0.02752**	J	µg/L	**0.035316**	J	µg/L	**0.01619**	J	µg/L												
				XAD - F	0.00462	JT	µg/L	0.000916	T	µg/L	0.00329	T	µg/L												
W014	6.7E	SP	VI	Peristaltic	**0.0155**	JT	µg/L	***0.0074***	UT	µg/L	**0.0148**	JT	µg/L												
W015	6.9W	SP	NB	Peristaltic	**0.0172**	JT	µg/L	**0.0293**	JT	µg/L	**0.0394**	JT	µg/L												
				XAD - C	0.0564	JT	µg/L	0.0625	JT	µg/L	0.169	JT	µg/L												
				XAD - C+F	**0.0945**	J	µg/L	**0.0803**	J	µg/L	**0.2309**	J	µg/L												
				XAD - F	0.0381	T	µg/L	0.0178	T	µg/L	0.0619	T	µg/L												

Table 5.4-16. Total PAH Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W016	7.2W	SP	NB	XAD - C	0.0101	JT	µg/L	0.0113	JT	µg/L	0.0673	JT	µg/L												
				XAD - C+F	**0.0203**	J	µg/L	**0.01816**	J	µg/L	**0.0994**	J	µg/L												
				XAD - F	0.0102	JT	µg/L	0.00686	T	µg/L	0.0321	T	µg/L												
			NB-1	Peristaltic	***0.012***	UT	µg/L	***0.0074***	UT	µg/L	**0.0388**	JT	µg/L												
			NB-2	Peristaltic	***0.0074***	UJT	µg/L																		
W017	7.5W	SP	NB	Peristaltic	**0.0116**	JT	µg/L	***0.016***	UT	µg/L	**0.0489**	JT	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.015***	UT	µg/L	**0.0087**	JT	µg/L	**0.0219**	JT	µg/L												
				XAD - C	0.00748	JT	µg/L	0.0211	JT	µg/L	0.0567	JT	µg/L												
				XAD - C+F	**0.01248**	J	µg/L	**0.0559**	J	µg/L	**0.0577**	J	µg/L												
				XAD - F	0.005	T	µg/L	0.0348	T	µg/L	0.001	JT	µg/L												
W019	8.6W	SP	NB	Peristaltic	**0.0026**	JT	µg/L	***0.0074***	UT	µg/L	**0.0492**	JT	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**0.0049**	JT	µg/L	***0.0074***	UT	µg/L	**0.0413**	JT	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.0075***	UT	µg/L	**0.0089**	JT	µg/L	**0.2883**	JT	µg/L												
W022	9.7W	SP	NB	Peristaltic	**0.0207**	JT	µg/L	**0.0072**	JT	µg/L	**0.0213**	JT	µg/L												
W023	10.9M	T	VI-M	Peristaltic													***0.013***	UT	µg/L	**0.0077**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C													0.00346	JT	µg/L	0.00111	JT	µg/L	0.0066	JT	µg/L
				XAD - C+F													**0.003971**	J	µg/L	**0.00279**	J	µg/L	**0.005684**	J	µg/L
				XAD - F													0.000511	JT	µg/L	0.00168	JT	µg/L	0.00277	JT	µg/L
	11E		VI-E	Peristaltic													**0.01**	JT	µg/L	***0.027***	UT	µg/L	***0.013***	UT	µg/L
				XAD - C													0.0108	JT	µg/L	0.00314	JT	µg/L	0.00763	JT	µg/L
				XAD - C+F													**0.01648**	J	µg/L	**0.01604**	J	µg/L	**0.01222**	J	µg/L
				XAD - F													0.00568	JT	µg/L	0.0129	JT	µg/L	0.00459	JT	µg/L
	11M		EDI-VI	Peristaltic	**0.0283**	JT	µg/L	***0.0074***	UT	µg/L	***0.043***	UT	µg/L												
				XAD - C	0.00437	JT	µg/L	0.0655	JT	µg/L	0.00831	JT	µg/L												
				XAD - C+F	**0.00614**	J	µg/L	**0.065982**	J	µg/L	**0.01058**	J	µg/L												
				XAD - F	0.00177	T	µg/L	0.000482	T	µg/L	0.00227	T	µg/L												
			M	Peristaltic										***0.0093***	UT	µg/L									
				XAD - C										0.0264	JT	µg/L									
				XAD - C+F										**0.03296**	J	µg/L									
				XAD - F										0.00656	JT	µg/L									
	11W		VI-W	Peristaltic													**0.016**	JT	µg/L	***0.036***	UT	µg/L	***0.013***	UT	µg/L
				XAD - C													0.00849	JT	µg/L	0.00232	JT	µg/L	0.00959	JT	µg/L
				XAD - C+F													**0.00926**	J	µg/L	**0.00676**	J	µg/L	**0.01329**	J	µg/L
				XAD - F													0.00077	JT	µg/L	0.00444	JT	µg/L	0.0037	JT	µg/L
W024	15.9M	T	EDI-NB	Peristaltic													***0.013***	UT	µg/L	**0.0057**	JT	µg/L	**0.018**	T	µg/L
				XAD - C													0.00381	JT	µg/L	0.00117	JT	µg/L	0.00809	JT	µg/L
				XAD - C+F													**0.004529**	J	µg/L	**0.0041**	J	µg/L	**0.008676**	J	µg/L
				XAD - F													0.000719	JT	µg/L	0.00293	JT	µg/L	0.000586	JT	µg/L
			EDI-NS	Peristaltic													***0.013***	UT	µg/L	**0.0087**	JT	µg/L	**0.014**	JT	µg/L
				XAD - C													0.00479	JT	µg/L	0.0186	JT	µg/L	0.00612	JT	µg/L
				XAD - C+F													**0.00613**	J	µg/L	**0.02055**	J	µg/L	**0.006435**	J	µg/L
				XAD - F													0.00134	JT	µg/L	0.00195	JT	µg/L	0.000315	JT	µg/L
			M	Peristaltic										**0.0028**	JT	µg/L									
				XAD - C										0.0246	JT	µg/L									
				XAD - C+F										**0.02864**	J	µg/L									
				XAD - F										0.00404	JT	µg/L									
W025	2E	T	VI-E	Peristaltic													**0.022**	JT	µg/L	**0.023**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C													0.0361	JT	µg/L	0.013	JT	µg/L	0.00687	JT	µg/L
				XAD - C+F													**0.03743**	J	µg/L	**0.02169**	J	µg/L	**0.01109**	J	µg/L
				XAD - F													0.00133	JT	µg/L	0.00869	JT	µg/L	0.00422	JT	µg/L
	2M	T	VI-M	Peristaltic													**0.014**	JT	µg/L	***0.024***	UT	µg/L	***0.013***	UT	µg/L
		T	VI-M	XAD - C													0.0334	JT	µg/L	0.00656	T	µg/L	0.00897	JT	µg/L
				XAD - C+F													**0.03501**	J	µg/L	**0.01124**	J	µg/L	**0.01147**	J	µg/L
				XAD - F													0.00161	JT	µg/L	0.00468	JT	µg/L	0.0025	JT	µg/L
	2W	T	VI-W	Peristaltic													**0.02**	JT	µg/L	**0.012**	JT	µg/L	***0.013***	UT	µg/L
		T	VI-W	XAD - C													0.0306	T	µg/L	0.00437	JT	µg/L	0.00734	JT	µg/L
				XAD - C+F													**0.03187**	J	µg/L	**0.00746**	J	µg/L	**0.00898**	J	µg/L
				XAD - F													0.00127	JT	µg/L	0.00309	JT	µg/L	0.00164	JT	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.013***	UT	µg/L	***0.013***	UT	µg/L
			NS	Peristaltic																**0.011**	JT	µg/L	***0.013***	UT	µg/L

Table 5.4-16. Total PAH Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																**0.068**	JT	µg/L	**0.017**	JT	µg/L
				XAD - C																0.0059	JT	µg/L	0.0081	JT	µg/L
				XAD - C+F																**0.0166**	J	µg/L	**0.0149**	J	µg/L
				XAD - F																0.0107	JT	µg/L	0.0068	JT	µg/L
			EDI-NB-1	Peristaltic													**0.046**	JT	µg/L						
				XAD - C													0.0282	JT	µg/L						
				XAD - C+F													**0.051**	J	µg/L						
				XAD - F													0.0228	JT	µg/L						
			EDI-NS	Peristaltic																***0.013***	UT	µg/L	**0.02**	JT	µg/L
				XAD - C																0.0119	T	µg/L	0.00921	JT	µg/L
				XAD - C+F																**0.0226**	J	µg/L	**0.01541**	J	µg/L
				XAD - F																0.0107	JT	µg/L	0.0062	JT	µg/L
			EDI-NS-1	Peristaltic													**0.036**	JT	µg/L						
				XAD - C													0.0343	JT	µg/L						
				XAD - C+F													**0.0479**	J	µg/L						
				XAD - F													0.0136	JT	µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.013***	UT	µg/L	***0.013***	UT	µg/L
			NS	Peristaltic																***0.013***	UT	µg/L	***0.013***	UT	µg/L
W029	4.4W	SP	NB	Peristaltic																**0.024**	JT	µg/L	***0.013***	UT	µg/L
			NS	Peristaltic																**0.032**	JT	µg/L	***0.013***	UT	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.013***	UT	µg/L	***0.013***	UT	µg/L
			NS	Peristaltic																***0.013***	UT	µg/L	**0.013**	JT	µg/L
W031	6.1W	SP	NB	Peristaltic																**0.032**	JT	µg/L	**7.4**	T	µg/L
			NS	Peristaltic																**0.027**	JT	µg/L	**0.058**	JT	µg/L
W032	6.7E	SP	NB	Peristaltic																***0.013***	UT	µg/L	***0.013***	UT	µg/L
				XAD - C																0.00236	JT	µg/L	0.0061	JT	µg/L
				XAD - C+F																**0.00586**	J	µg/L	**0.01042**	J	µg/L
				XAD - F																0.0035	JT	µg/L	0.00432	JT	µg/L
			NS	Peristaltic																***0.013***	UT	µg/L	***0.0065***	UT	µg/L
				XAD - C																0.00368	JT	µg/L	0.00883	JT	µg/L
				XAD - C+F																**0.00605**	J	µg/L	**0.01199**	J	µg/L
				XAD - F																0.00237	JT	µg/L	0.00316	JT	µg/L
W033	7.0W	SP	NB	Peristaltic																**0.12**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C																0.0175	JT	µg/L	0.00608	JT	µg/L
				XAD - C+F																**0.0448**	J	µg/L	**0.01268**	J	µg/L
				XAD - F																0.0273	JT	µg/L	0.0066	JT	µg/L
			NB-2	Peristaltic																**0.06**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C																0.014	JT	µg/L			
				XAD - C+F																**0.0249**	J	µg/L			
				XAD - F																0.0109	JT	µg/L			
			NS	Peristaltic																**0.035**	JT	µg/L	***0.013***	UT	µg/L
				XAD - C																0.0201	JT	µg/L	0.00606	JT	µg/L
				XAD - C+F																**0.0507**	J	µg/L	**0.01148**	J	µg/L
				XAD - F																0.0306	JT	µg/L	0.00542	JT	µg/L
			NS-2	Peristaltic																**0.032**	JT	µg/L	**0.0047**	JT	µg/L
				XAD - C																0.0218	JT	µg/L			
				XAD - C+F																**0.0325**	J	µg/L			
				XAD - F																0.0107	JT	µg/L			
W034	7.5W	SP	NB	Peristaltic																***0.019***	UT	µg/L	***0.013***	UT	µg/L
			NS	Peristaltic																**0.0062**	JT	µg/L	***0.013***	UT	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***0.013***	UT	µg/L	**0.088**	JT	µg/L
				XAD - C																0.00108	JT	µg/L	0.0142	JT	µg/L
				XAD - C+F																**0.0067**	J	µg/L	**0.0652**	J	µg/L
				XAD - F																0.00562	JT	µg/L	0.051	JT	µg/L
			NS	Peristaltic																***0.013***	UT	µg/L	**0.11**	JT	µg/L
				XAD - C																0.0298	JT	µg/L	0.0204	JT	µg/L
				XAD - C+F																**0.03935**	J	µg/L	**0.1067**	J	µg/L
				XAD - F																0.00955	JT	µg/L	0.0863	JT	µg/L
W036	8.6W	SP	NB	Peristaltic																**0.005**	JT	µg/L	**0.018**	JT	µg/L
			NS	Peristaltic																***0.013***	UT	µg/L	**0.27**	JT	µg/L

Table 5.4-16. Total PAH Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W037	9.6W	SP	NB	Peristaltic																***0.013***	UT	µg/L	***0.013***	UT	µg/L
			NS	Peristaltic																**0.034**	JT	µg/L	***0.013***	UT	µg/L
W038	9.9E	SP	NB	Peristaltic																***0.013***	UT	µg/L	***0.013***	UT	µg/L
			NS	Peristaltic																***0.013***	UT	µg/L	**0.05**	JT	µg/L

Notes:

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-17. BEHP Data Presented by Station and Sampling Event.

AWQC-HH	0.2	µg/L
MCL	6	µg/L

Sample	River Location	Collection Type	Collection Location	Collection Method	Nov-04 Low Flow Value	Qualifier	Units	Mar-05 Low Flow Value	Qualifier	Units	Jul-05 Low Flow Value	Qualifier	Units	Jan-06 High Flow Value	Qualifier	Units	Sep-06 Low Flow Value	Qualifier	Units	Nov-06 Storm Water Flow Value	Qualifier	Units	Jan-07 - Mar-07 High Flow Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	0.47	U	µg/L	0.3	U	µg/L	0.28	U	µg/L												
W002	2.2W	SP	NB	Peristaltic	0.56	U	µg/L																		
			NB-1	Peristaltic				0.29	U	µg/L	0.3	UJ	µg/L												
			NB-2	Peristaltic				0.3	U	µg/L	0.29	U	µg/L												
W003	3.0W	SP	NB	Peristaltic	0.32	U	µg/L	0.29	U	µg/L	0.28	U	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	0.69	U	µg/L				0.3	U	µg/L												
			NB-1	Peristaltic				0.28	U	µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													0.47	U	µg/L	6.8	J	µg/L	1.3	J	µg/L
			EDI-NS	Peristaltic													0.7		µg/L	0.64	UJ	µg/L	0.27	U	µg/L
			EDI-VI	Peristaltic	0.38	U	µg/L	0.29	U	µg/L	0.42	U	µg/L												
				XAD - C	0.00432	U	µg/L	0.00312	U	µg/L	0.00361	J	µg/L												
				XAD - C+F	0.00432	U	µg/L	0.00491	U	µg/L	0.00909	J	µg/L												
				XAD - F	0.00351	U	µg/L	0.00491	U	µg/L	0.00548	J	µg/L												
			M	Peristaltic										0.29	U	µg/L									
W006	4.0W	SP	NB	Peristaltic	0.45	U	µg/L	0.29	U	µg/L	0.29	U	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	0.44	U	µg/L	0.29	U	µg/L	0.29	U	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	0.44	U	µg/L	0.29	U	µg/L	0.3	U	µg/L												
W009	5.6W	SP	NB	Peristaltic	0.41	U	µg/L	0.28	U	µg/L	0.28	U	µg/L												
W010	5.7E	SP	NB	Peristaltic	0.84	U	µg/L																		
			VI	Peristaltic				0.28	U	µg/L	4	U	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																1.9	UJ	µg/L	2.2	J	µg/L
			EDI-NB-1	Peristaltic													0.24	U	µg/L						
			EDI-NS	Peristaltic																1.2	UJ	µg/L	0.41	U	µg/L
			EDI-NS-1	Peristaltic													0.15	U	µg/L						
			EDI-VI	Peristaltic	1.3	U	µg/L	0.29	U	µg/L	0.3	U	µg/L												
				XAD - C	0.00514	U	µg/L	0.00346	U	µg/L	0.00631	J	µg/L												
				XAD - C+F	0.00607	U	µg/L	0.00639	U	µg/L	0.01107	J	µg/L												
				XAD - F	0.00607	U	µg/L	0.00639	U	µg/L	0.00476	J	µg/L												
W012	6.3W	SP	NB	Peristaltic	0.43	U	µg/L	0.29	U	µg/L	0.61	U	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	0.47	U	µg/L	0.27	U	µg/L	0.3	U	µg/L												
				XAD - C	0.00431	U	µg/L	0.00338	U	µg/L	0.0198		µg/L												
				XAD - C+F	0.00859	U	µg/L	0.0056	U	µg/L	0.025	J	µg/L												
				XAD - F	0.00859	U	µg/L	0.0056	U	µg/L	0.0052	J	µg/L												
			NB-2	Peristaltic	0.27	U	µg/L																		
				XAD - C	0.00543	U	µg/L	0.00358	U	µg/L	0.0121		µg/L												
				XAD - C+F	0.00543	U	µg/L	0.00693	U	µg/L	0.0121		µg/L												
				XAD - F	0.00485	U	µg/L	0.00693	U	µg/L	0.00257	U	µg/L												
W014	6.7E	SP	VI	Peristaltic	0.45	U	µg/L	0.29	U	µg/L	0.91	U	µg/L												
W015	6.9W	SP	NB	Peristaltic	0.87	U	µg/L	0.29	U	µg/L	2.1	U	µg/L												
				XAD - C	0.00566	U	µg/L	0.00346	U	µg/L	0.00351	J	µg/L												
				XAD - C+F	0.033		µg/L	0.00855	U	µg/L	0.00775	J	µg/L												
				XAD - F	0.033		µg/L	0.00855	U	µg/L	0.00424	J	µg/L												
W016	7.2W	SP	NB	XAD - C	0.00426	U	µg/L	0.00338	U	µg/L	0.00435	J	µg/L												
				XAD - C+F	0.00749	U	µg/L	0.0066	U	µg/L	0.00892	J	µg/L												
				XAD - F	0.00749	U	µg/L	0.0066	U	µg/L	0.00457	J	µg/L												
			NB-1	Peristaltic	0.27	U	µg/L	0.28	U	µg/L	1.5	U	µg/L												
			NB-2	Peristaltic	0.29	UJ	µg/L																		
W017	7.5W	SP	NB	Peristaltic	0.7	U	µg/L	0.29	U	µg/L	4.1	U	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	0.46	U	µg/L	0.29	U	µg/L	0.29	U	µg/L												
				XAD - C	0.00562	U	µg/L	0.00355	U	µg/L	0.00394	J	µg/L												
				XAD - C+F	0.0057	U	µg/L	0.00831	U	µg/L	0.00987	J	µg/L												
				XAD - F	0.0057	U	µg/L	0.00831	U	µg/L	0.00593	J	µg/L												
W019	8.6W	SP	NB	Peristaltic	0.44	U	µg/L	0.29	U	µg/L	0.29	U	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	0.58	U	µg/L	0.29	U	µg/L	0.29	U	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	0.69	U	µg/L	0.3	U	µg/L	0.29	U	µg/L												
W022	9.7W	SP	NB	Peristaltic	0.27	U	µg/L	0.27	U	µg/L	0.81	U	µg/L												
W023	10.9M	T	VI-M	Peristaltic													0.21	U	µg/L	0.78	U	µg/L	1.1	J	µg/L
	11E		VI-E	Peristaltic													0.36	U	µg/L	1.2	U	µg/L	0.82	U	µg/L
	11M		EDI-VI	Peristaltic	0.9	U	µg/L	0.3	U	µg/L	0.34	U	µg/L												
				XAD - C	0.00494	U	µg/L	0.004	U	µg/L	0.0171		µg/L												
				XAD - C+F	0.00647	U	µg/L	0.00632	U	µg/L	0.02299	J	µg/L												
				XAD - F	0.00647	U	µg/L	0.00632	U	µg/L	0.00589	J	µg/L												
			M	Peristaltic										0.29	U	µg/L									
	11W		VI-W	Peristaltic													0.21	U	µg/L	1.8	U	µg/L	0.42	U	µg/L

Table 5.4-17. BEHP Data Presented by Station and Sampling Event.

AWQC-HH	0.2	µg/L
MCL	6	µg/L

Sample	River Location	Collection Type	Collection Location	Collection Method	Nov-04 Low Flow Value	Qualifier	Units	Mar-05 Low Flow Value	Qualifier	Units	Jul-05 Low Flow Value	Qualifier	Units	Jan-06 High Flow Value	Qualifier	Units	Sep-06 Low Flow Value	Qualifier	Units	Nov-06 Storm Water Flow Value	Qualifier	Units	Jan-07 - Mar-07 High Flow Value	Qualifier	Units
W024	15.9M	T	EDI-NB	Peristaltic													***0.4***	U	µg/L	***1.9***	UJ	µg/L	**2.1**	J	µg/L
			EDI-NS	Peristaltic													***0.14***	U	µg/L	***0.26***	UJ	µg/L	***0.76***	UJ	µg/L
			M	Peristaltic										***0.27***	U	µg/L									
W025	2E	T	VI-E	Peristaltic													**1.5**		µg/L	***1.1***	UJ	µg/L	**1.6**	J	µg/L
	2M	T	VI-M	Peristaltic													***0.26***	U	µg/L	***0.59***	U	µg/L	***0.12***	U	µg/L
	2W	T	VI-W	Peristaltic													**1.2**		µg/L	***0.14***	U	µg/L	***0.16***	U	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.52***	UJ	µg/L	***0.23***	U	µg/L
			NS	Peristaltic																***0.79***	UJ	µg/L	***0.63***	U	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																***0.23***	UJ	µg/L	***1.4***	U	µg/L
			EDI-NB-1	Peristaltic													**1.3**		µg/L						
			EDI-NS	Peristaltic																***0.29***	UJ	µg/L	***0.66***	U	µg/L
			EDI-NS-1	Peristaltic													***0.12***	U	µg/L						
W028	3.6E	SP	NB	Peristaltic																***2.1***	UJ	µg/L	***0.25***	U	µg/L
			NS	Peristaltic																***0.52***	UJ	µg/L	***0.098***	U	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.79***	UJ	µg/L	**1.9**	J	µg/L
			NS	Peristaltic																***0.28***	UJ	µg/L	***0.75***	U	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.29***	UJ	µg/L	***0.26***	U	µg/L
		SP	NS	Peristaltic																***0.76***	UJ	µg/L	***0.58***	U	µg/L
W031	6.1W	SP	NB	Peristaltic																***0.32***	UJ	µg/L	***0.73***	U	µg/L
			NS	Peristaltic																***0.48***	UJ	µg/L	***0.35***	U	µg/L
W032	6.7E	SP	NB	Peristaltic																***2.6***	UJ	µg/L	**3.5**	J	µg/L
			NS	Peristaltic																***0.83***	UJ	µg/L	***0.71***	U	µg/L
W033	7.0W	SP	NB	Peristaltic																***0.29***	UJ	µg/L	***0.69***	U	µg/L
			NB-2	Peristaltic																***0.28***	UJ	µg/L	***0.9***	U	µg/L
			NS	Peristaltic																***0.22***	UJ	µg/L	***0.48***	U	µg/L
			NS-2	Peristaltic																***0.21***	UJ	µg/L	**0.98**	J	µg/L
W034	7.5W	SP	NB	Peristaltic																***0.47***	UJ	µg/L	***0.4***	U	µg/L
			NS	Peristaltic																***0.25***	UJ	µg/L	***0.6***	U	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***1.9***	UJ	µg/L	***0.36***	U	µg/L
			NS	Peristaltic																***0.82***	UJ	µg/L	***0.31***	U	µg/L
W036	8.6W	SP	NB	Peristaltic																***0.78***	UJ	µg/L	***0.56***	U	µg/L
			NS	Peristaltic																***0.35***	UJ	µg/L	**2.8**	J	µg/L
W037	9.6W	SP	NB	Peristaltic																***0.62***	UJ	µg/L	***0.78***	U	µg/L
			NS	Peristaltic																***0.4***	UJ	µg/L	***0.41***	U	µg/L
W038	9.9E	SP	NB	Peristaltic																***0.73***	UJ	µg/L	***0.82***	U	µg/L
			NS	Peristaltic																***0.75***	UJ	µg/L	**1**	J	µg/L

Notes:

AWQC-HH - ambient water quality criteria (human health, Oregon)
MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Table 5.4-18. Total Chlordane Data Presented by Station and Sampling Event.

AWQC-HH	0.000081	µg/L
AWQC-Eco	0.0043	µg/L
MCL	2	µg/L

					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow	
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	***0.000472***	UJT	µg/L	***0.00049***	UT	µg/L	***0.000481***	UJT	µg/L												
W002	2.2W	SP	NB	Peristaltic	***0.000481***	UJT	µg/L																		
			NB-1	Peristaltic				***0.000495***	UT	µg/L	**0.00212**	JT	µg/L												
W003	3.0W	SP	NB	Peristaltic	***0.00049***	UJT	µg/L	***0.0005***	UT	µg/L	***0.000505***	UJT	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	***0.0005***	UT	µg/L				***0.000526***	UJT	µg/L												
			NB-1	Peristaltic				***0.000485***	UT	µg/L															
			NB-2	Peristaltic				***0.000485***	UT	µg/L															
W005	3.9 M	T	EDI-NB	XAD - C													0.0000401	JT	µg/L	0.0000219	JT	µg/L	0.0000538	JT	µg/L
				XAD - C+F													**0.0000588**	J	µg/L	**0.0000219**	J	µg/L	**0.0000943**	J	µg/L
				XAD - F													0.0000187	JT	µg/L	0.0000156	UT	µg/L	0.0000405	JT	µg/L
			EDI-NS	XAD - C													0.0000335	JT	µg/L	0.0000265	JT	µg/L	0.0000557	JT	µg/L
				XAD - C+F													**0.00004319**	J	µg/L	**0.0000265**	J	µg/L	**0.0000907**	J	µg/L
				XAD - F													0.00000969	JT	µg/L	0.00000485	UT	µg/L	0.000035	JT	µg/L
			EDI-VI	XAD - C	0.0000134	JT	µg/L	0.0000199	JT	µg/L	0.0000259	JT	µg/L												
				XAD - C+F	**0.00001713**	J	µg/L	**0.00002369**	J	µg/L	**0.000026001**	J	µg/L												
				XAD - F	0.00000373	JT	µg/L	0.00000379	JT	µg/L	0.000000101	JT	µg/L												
			M	XAD - C										0.0000436	JT	µg/L									
				XAD - C+F										**0.0000694**	J	µg/L									
				XAD - F										0.0000258	JT	µg/L									
W006	4.0W	SP	NB	Peristaltic	***0.0005***	UT	µg/L	***0.00051***	UT	µg/L	***0.000521***	UT	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	***0.000495***	UT	µg/L	***0.0005***	UT	µg/L	***0.000524***	UT	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	***0.000472***	UT	µg/L	***0.00049***	UT	µg/L	***0.000515***	UT	µg/L												
W009	5.6W	SP	NB	Peristaltic	***0.0005***	UT	µg/L	***0.000485***	UT	µg/L	***0.000532***	UT	µg/L												
W010	5.7E	SP	NB	Peristaltic	***0.0005***	UT	µg/L																		
			VI	Peristaltic				***0.0005***	UT	µg/L	***0.000476***	UT	µg/L												
W011	6.3E	T	EDI-NB	XAD - C																0.0000212	JT	µg/L	0.0000393	JT	µg/L
				XAD - C+F																**0.0000212**	J	µg/L	**0.0000685**	J	µg/L
				XAD - F																0.0000144	UT	µg/L	0.0000292	JT	µg/L
			EDI-NB-1	XAD - C													0.0000299	JT	µg/L						
				XAD - C+F													**0.0000478**	J	µg/L						
				XAD - F													0.0000179	JT	µg/L						
			EDI-NS	XAD - C																0.0000166	JT	µg/L	0.0000391	JT	µg/L
				XAD - C+F																**0.0000166**	J	µg/L	**0.0000663**	J	µg/L
				XAD - F																0.0000151	UT	µg/L	0.0000272	JT	µg/L
			EDI-NS-1	XAD - C													0.0000293	JT	µg/L						
				XAD - C+F													**0.0000406**	J	µg/L						
				XAD - F													0.0000113	JT	µg/L						
			EDI-VI	XAD - C	0.0000188	JT	µg/L	0.0000223	JT	µg/L	0.0000283	JT	µg/L												
				XAD - C+F	**0.0000233**	J	µg/L	**0.00003066**	J	µg/L	**0.00003701**	J	µg/L												
				XAD - F	0.0000045	JT	µg/L	0.00000836	JT	µg/L	0.00000871	JT	µg/L												
W012	6.3W	SP	NB	Peristaltic	***0.0005***	UT	µg/L	***0.00051***	UT	µg/L	***0.000481***	UT	µg/L												
W013			NB-1	Peristaltic	***0.000472***	UT	µg/L																		
				XAD - C	0.0000144	JT	µg/L	0.0000179	JT	µg/L	0.0000219	JT	µg/L												
				XAD - C+F	**0.00001924**	J	µg/L	**0.00002399**	J	µg/L	**0.0000353**	J	µg/L												
				XAD - F	0.00000484	JT	µg/L	0.00000609	JT	µg/L	0.0000134	JT	µg/L												
			NB-2	Peristaltic	***0.000526***	UT	µg/L																		
				XAD - C	0.0000127	JT	µg/L	0.0000126	JT	µg/L	0.0000263	JT	µg/L												
				XAD - C+F	**0.00001728**	J	µg/L	**0.00001786**	J	µg/L	**0.000027236**	J	µg/L												
				XAD - F	0.00000458	JT	µg/L	0.00000526	JT	µg/L	0.000000936	JT	µg/L												
W014	6.7E	SP	VI	Peristaltic	***0.00049***	UT	µg/L	***0.000481***	UT	µg/L	***0.00049***	UT	µg/L												
W015	6.9W	SP	NB	XAD - C	0.0000555	JT	µg/L	0.0000216	JT	µg/L	0.0000252	JT	µg/L												
				XAD - C+F	**0.0002405**	J	µg/L	**0.0000343**	J	µg/L	**0.0000424**	J	µg/L												
				XAD - F	0.000185	JT	µg/L	0.0000127	JT	µg/L	0.0000172	JT	µg/L												
W016	7.2W	SP	NB	XAD - C	0.000014	JT	µg/L	0.0000206	JT	µg/L	0.0000235	JT	µg/L												
				XAD - C+F	**0.00002139**	J	µg/L	**0.00003004**	J	µg/L	**0.000039**	J	µg/L												
				XAD - F	0.00000739	JT	µg/L	0.00000944	JT	µg/L	0.0000155	JT	µg/L												
W017	7.5W	SP	NB	Peristaltic	***0.00051***	UT	µg/L	***0.00051***	UT	µg/L	***0.000481***	UT	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	UT	µg/L																		
				XAD - C	0.0000165	JT	µg/L	0.000019	JT	µg/L	0.0000266	JT	µg/L												
				XAD - C+F	**0.00002134**	J	µg/L	**0.00002607**	J	µg/L	**0.00003184**	J	µg/L												
				XAD - F	0.00000484	JT	µg/L	0.00000707	JT	µg/L	0.00000524	JT	µg/L												

Table 5.4-18. Total Chlordane Data Presented by Station and Sampling Event.

AWQC-HH	0.000081	µg/L
AWQC-Eco	0.0043	µg/L
MCL	2	µg/L

					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow	
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W019	8.6W	SP	NB	Peristaltic	***0.000481***	UT	µg/L	***0.0005***	UT	µg/L	***0.000485***	UT	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	***0.00049***	UT	µg/L	***0.00049***	UT	µg/L	***0.00051***	UT	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	UT	µg/L	***0.000481***	UT	µg/L	***0.00049***	UT	µg/L												
W022	9.7W	SP	NB	Peristaltic	***0.00049***	UT	µg/L	***0.00049***	UT	µg/L	***0.0005***	UT	µg/L												
W023	10.9M	T	VI-M	XAD - C													0.0000247	JT	µg/L	0.0000167	JT	µg/L	0.0000365	JT	µg/L
				XAD - C+F													**0.00003038**	J	µg/L	**0.0000167**	J	µg/L	**0.0000698**	J	µg/L
				XAD - F													0.00000568	JT	µg/L	0.0000158	UT	µg/L	0.0000333	JT	µg/L
	11E		VI-E	XAD - C													0.0000256	JT	µg/L	0.0000145	JT	µg/L	0.0000477	JT	µg/L
				XAD - C+F													**0.00003331**	J	µg/L	**0.00002139**	J	µg/L	**0.0000911**	J	µg/L
				XAD - F													0.00000771	JT	µg/L	0.00000689	JT	µg/L	0.0000434	JT	µg/L
	11M		EDI-VI	XAD - C	0.00000787	JT	µg/L	0.000018	JT	µg/L	0.0000214	JT	µg/L												
				XAD - C+F	**0.00001337**	J	µg/L	**0.00002079**	J	µg/L	**0.00002781**	J	µg/L												
				XAD - F	0.0000055	JT	µg/L	0.00000279	JT	µg/L	0.00000641	JT	µg/L												
			M	XAD - C										0.0000457	JT	µg/L									
				XAD - C+F										**0.0000732**	J	µg/L									
				XAD - F										0.0000275	JT	µg/L									
	11W		VI-W	XAD - C													0.0000269	JT	µg/L	0.0000205	JT	µg/L	0.0000449	JT	µg/L
				XAD - C+F													**0.00003315**	J	µg/L	**0.0000205**	J	µg/L	**0.0000742**	J	µg/L
				XAD - F													0.00000625	JT	µg/L	0.0000167	UT	µg/L	0.0000293	JT	µg/L
W024	15.9M	T	EDI-NB	XAD - C													0.0000181	JT	µg/L	0.0000234	JT	µg/L	0.0000361	JT	µg/L
				XAD - C+F													**0.00002232**	J	µg/L	**0.0000234**	J	µg/L	**0.0000483**	J	µg/L
				XAD - F													0.00000422	JT	µg/L	0.0000153	UT	µg/L	0.0000122	JT	µg/L
			EDI-NS	XAD - C													0.0000197	JT	µg/L	0.0000277	JT	µg/L	0.0000265	JT	µg/L
				XAD - C+F													**0.00002267**	J	µg/L	**0.0000277**	J	µg/L	**0.0000384**	J	µg/L
				XAD - F													0.00000297	JT	µg/L	0.000014	UT	µg/L	0.0000119	JT	µg/L
			M	XAD - C										0.0000474	JT	µg/L									
				XAD - C+F										**0.0000727**	J	µg/L									
				XAD - F										0.0000253	JT	µg/L									
W025	2E	T	VI-E	XAD - C													0.0000331	JT	µg/L	0.0000183	JT	µg/L	0.0000281	JT	µg/L
				XAD - C+F													**0.0000331**	J	µg/L	**0.0000183**	J	µg/L	**0.0000418**	J	µg/L
				XAD - F													0.0000111	UT	µg/L	0.0000164	UT	µg/L	0.0000137	JT	µg/L
	2M		VI-M	XAD - C													0.0000298	JT	µg/L	0.000021	JT	µg/L	0.0000284	JT	µg/L
				XAD - C+F													**0.0000298**	J	µg/L	**0.000021**	J	µg/L	**0.0000397**	J	µg/L
				XAD - F													0.00000982	UT	µg/L	0.0000168	UT	µg/L	0.0000113	JT	µg/L
	2W		VI-W	XAD - C													0.0000312	JT	µg/L	0.0000121	JT	µg/L	0.0000349	JT	µg/L
				XAD - C+F													**0.0000312**	J	µg/L	**0.00001342**	J	µg/L	**0.00004364**	J	µg/L
				XAD - F													0.0000081	UT	µg/L	0.00000132	JT	µg/L	0.00000874	JT	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.0015***	UT	µg/L	***0.00073***	UT	µg/L
			NS	Peristaltic																***0.0018***	UT	µg/L	***0.00073***	UT	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	XAD - C																0.0000268	JT	µg/L	0.0000378	JT	µg/L
				XAD - C+F																**0.0000366**	J	µg/L	**0.0000626**	J	µg/L
				XAD - F																0.0000098	JT	µg/L	0.0000248	JT	µg/L
			EDI-NB-1	XAD - C													0.0000318	JT	µg/L						
				XAD - C+F													**0.00004105**	J	µg/L						
				XAD - F													0.00000925	JT	µg/L						
			EDI-NS	Peristaltic																***0.0015***	UT	µg/L			
				XAD - C																0.0000316	JT	µg/L	0.0000348	JT	µg/L
				XAD - C+F																**0.00003757**	J	µg/L	**0.000056**	J	µg/L
				XAD - F																0.00000597	JT	µg/L	0.0000212	JT	µg/L
			EDI-NS-1	XAD - C													0.0000324	JT	µg/L						
				XAD - C+F													**0.0000448**	J	µg/L						
				XAD - F													0.0000124	JT	µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.002***	UT	µg/L	***0.00073***	UT	µg/L
			NS	Peristaltic																***0.0013***	UT	µg/L	***0.00073***	UT	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.0013***	UT	µg/L	**0.00029**	JT	µg/L
			NS	Peristaltic																***0.0016***	UT	µg/L	***0.00073***	UT	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.0024***	UT	µg/L	**0.0006**	NJT	µg/L
			NS	Peristaltic																***0.0014***	UT	µg/L	**0.00051**	T	µg/L
W031	6.1W	SP	NB	XAD - C																0.0000208	JT	µg/L	0.0000441	JT	µg/L
				XAD - C+F																**0.00002445**	J	µg/L	**0.0000834**	J	µg/L
				XAD - F																0.00000365	JT	µg/L	0.0000393	JT	µg/L
			NS	Peristaltic																***0.0013***	UT	µg/L			
				XAD - C																0.00000672	JT	µg/L	0.0000422	JT	µg/L
				XAD - C+F																**0.000007317**	J	µg/L	**0.0000596**	J	µg/L
				XAD - F																0.000000597	JT	µg/L	0.0000174	JT	µg/L

Table 5.4-18. Total Chlordane Data Presented by Station and Sampling Event.

AWQC-HH	0.000081	µg/L
AWQC-Eco	0.0043	µg/L
MCL	2	µg/L

Sample	River Location	Collection Type	Collection Location	Collection Method	Nov-04 Low Flow Value	Qualifier	Units	Mar-05 Low Flow Value	Qualifier	Units	Jul-05 Low Flow Value	Qualifier	Units	Jan-06 High Flow Value	Qualifier	Units	Sep-06 Low Flow Value	Qualifier	Units	Nov-06 Storm Water Flow Value	Qualifier	Units	Jan-07 - Mar-07 High Flow Value	Qualifier	Units
W032	6.7E	SP	NB	XAD - C																0.0000212	JT	µg/L	0.0000352	JT	µg/L
				XAD - C+F																**0.0000325**	J	µg/L	**0.0000523**	J	µg/L
				XAD - F																0.0000113	JT	µg/L	0.0000171	JT	µg/L
			NS	XAD - C																0.0000299	JT	µg/L	0.0000332	JT	µg/L
				XAD - C+F																**0.000035**	J	µg/L	**0.0000477**	J	µg/L
				XAD - F																0.0000051	JT	µg/L	0.0000145	JT	µg/L
W033	7.0W	SP	NB	XAD - C																0.000024	JT	µg/L	0.0000495	JT	µg/L
				XAD - C+F																**0.00002601**	J	µg/L	**0.0000859**	J	µg/L
				XAD - F																0.00000201	JT	µg/L	0.0000364	JT	µg/L
			NB-2	XAD - C																0.0000275	JT	µg/L			
				XAD - C+F																**0.00003614**	J	µg/L			
				XAD - F																0.00000864	JT	µg/L			
			NS	XAD - C																0.0000272	JT	µg/L	0.0000456	JT	µg/L
				XAD - C+F																**0.00003684**	J	µg/L	**0.0000788**	J	µg/L
				XAD - F																0.00000964	JT	µg/L	0.0000332	JT	µg/L
			NS-2	XAD - C																0.0000211	JT	µg/L			
				XAD - C+F																**0.0000244**	J	µg/L			
				XAD - F																0.0000033	JT	µg/L			
W034	7.5W	SP	NB	XAD - C																0.0000106	JT	µg/L	0.0000351	JT	µg/L
				XAD - C+F																**0.0000106**	J	µg/L	**0.0000466**	J	µg/L
				XAD - F																0.0000327	UT	µg/L	0.0000115	JT	µg/L
			NS	XAD - C																0.0000219	JT	µg/L	0.0000378	JT	µg/L
				XAD - C+F																**0.00002637**	J	µg/L	**0.0000511**	J	µg/L
				XAD - F																0.00000447	JT	µg/L	0.0000133	JT	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	XAD - C																0.0000206	JT	µg/L	0.0000332	JT	µg/L
				XAD - C+F																**0.00003058**	J	µg/L	**0.0000524**	J	µg/L
				XAD - F																0.00000998	JT	µg/L	0.0000192	JT	µg/L
			NS	XAD - C																0.0000162	JT	µg/L	0.0000344	JT	µg/L
				XAD - C+F																**0.00002525**	J	µg/L	**0.0000522**	J	µg/L
				XAD - F																0.00000905	JT	µg/L	0.0000178	JT	µg/L
W036	8.6W	SP	NB	Peristaltic																***0.00085***	UT	µg/L	***0.00073***	UT	µg/L
			NB-2	Peristaltic																***0.00073***	UT	µg/L			
			NS	Peristaltic																***0.0018***	UT	µg/L	***0.00073***	UT	µg/L
			NS-2	Peristaltic																**0.0016**	JT	µg/L			
W037	9.6W	SP	NB	Peristaltic																***0.00077***	UT	µg/L	***0.00073***	UT	µg/L
			NS	Peristaltic																***0.0014***	UT	µg/L	***0.00073***	UT	µg/L
W038	9.9E	SP	NB	Peristaltic																***0.0014***	UT	µg/L	***0.00073***	UT	µg/L
			NS	Peristaltic																**0.00055**	NJT	µg/L	***0.00073***	UT	µg/L

Notes:

AWQC-Eco - ambient water quality criteria (ecological chronic, Oregon)
AWQC-HH - ambient water quality criteria (human health, USEPA)
MCL - maximum concentration limit

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-19. Aldrin Data Presented by Station and Sampling Event.

AWQC-HH	0.000005	µg/L			Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	***0.000472***	UJ	µg/L	***0.00049***	U	µg/L	***0.000481***	UJ	µg/L												
W002	2.2W	SP	NB	Peristaltic	***0.000481***	UJ	µg/L																		
			NB-1	Peristaltic				***0.000495***	U	µg/L	***0.000538***	UJ	µg/L												
W003	3.0W	SP	NB	Peristaltic	***0.00049***	UJ	µg/L	***0.0005***	U	µg/L	***0.000505***	UJ	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	***0.0005***	U	µg/L				***0.000526***	UJ	µg/L												
			NB-1	Peristaltic				***0.000485***	U	µg/L															
			NB-2	Peristaltic				***0.000485***	U	µg/L															
W005	3.9 M	T	EDI-NB	XAD - C													0.00000446	J	µg/L	0.00000366	J	µg/L	0.00000226	J	µg/L
				XAD - C+F													**0.00000662**	J	µg/L	**0.00000366**	J	µg/L	**0.000003203**	J	µg/L
				XAD - F													0.00000216	J	µg/L	0.00000173	U	µg/L	0.000000943	J	µg/L
			EDI-NS	XAD - C													0.00000274	J	µg/L	0.0000045	U	µg/L	0.00000314	J	µg/L
				XAD - C+F													**0.00000274**	J	µg/L	***0.0000045***	U	µg/L	**0.000003996**	J	µg/L
				XAD - F													0.00000112	U	µg/L	0.0000017	U	µg/L	0.000000856	J	µg/L
			EDI-VI	XAD - C	0.000000668	UJ	µg/L	0.00000107	J	µg/L	0.0000022	J	µg/L												
				XAD - C+F	**0.000000296**	J	µg/L	**0.000001476**	J	µg/L	**0.000002307**	J	µg/L												
				XAD - F	0.000000296	J	µg/L	0.000000406	J	µg/L	0.000000107	J	µg/L												
			M	XAD - C										0.00000186	J	µg/L									
				XAD - C+F										**0.00000361**	J	µg/L									
				XAD - F										0.00000175	J	µg/L									
W006	4.0W	SP	NB	Peristaltic	***0.0005***	U	µg/L	***0.00051***	U	µg/L	***0.000521***	U	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	***0.000495***	U	µg/L	***0.0005***	U	µg/L	***0.000524***	U	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	***0.000472***	U	µg/L	***0.00049***	U	µg/L	***0.000515***	U	µg/L												
W009	5.6W	SP	NB	Peristaltic	***0.0005***	U	µg/L	***0.000485***	U	µg/L	***0.000532***	U	µg/L												
W010	5.7E	SP	NB	Peristaltic	***0.0005***	U	µg/L																		
			VI	Peristaltic				***0.0005***	U	µg/L	***0.000476***	U	µg/L												
W011	6.3E	T	EDI-NB	XAD - C																0.00000211	U	µg/L	0.00000206	J	µg/L
				XAD - C+F																***0.00000211***	U	µg/L	**0.000002806**	J	µg/L
				XAD - F																0.00000153	U	µg/L	0.000000746	J	µg/L
			EDI-NB-1	XAD - C													0.00000281	J	µg/L						
				XAD - C+F													**0.00000505**	J	µg/L						
				XAD - F													0.00000224	J	µg/L						
			EDI-NS	XAD - C																0.00000233	U	µg/L	0.00000184	J	µg/L
				XAD - C+F																***0.00000233***	U	µg/L	**0.000002573**	J	µg/L
				XAD - F																0.00000108	U	µg/L	0.000000733	J	µg/L
			EDI-NS-1	XAD - C													0.00000256	J	µg/L						
				XAD - C+F													**0.00000372**	J	µg/L						
				XAD - F													0.00000116	J	µg/L						
			EDI-VI	XAD - C	0.000000871	J	µg/L	0.00000109	J	µg/L	0.00000198	J	µg/L												
				XAD - C+F	**0.000001203**	J	µg/L	**0.000001594**	J	µg/L	**0.000002744**	J	µg/L												
				XAD - F	0.000000332	J	µg/L	0.000000504	J	µg/L	0.000000764	J	µg/L												
W012	6.3W	SP	NB	Peristaltic	***0.0005***	U	µg/L	***0.00051***	U	µg/L	***0.000481***	U	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	***0.000472***	U	µg/L																		
				XAD - C	0.000000537	J	µg/L	0.000000791	J	µg/L	0.00000119	J	µg/L												
				XAD - C+F	**0.000000943**	J	µg/L	**0.000001178**	J	µg/L	**0.000002143**	J	µg/L												
				XAD - F	0.000000406	J	µg/L	0.000000387	J	µg/L	0.000000953	J	µg/L												
			NB-2	Peristaltic	***0.000526***	U	µg/L																		
				XAD - C	0.000000418	UJ	µg/L	0.00000144	J	µg/L	0.00000128	J	µg/L												
				XAD - C+F	**0.00000031**	J	µg/L	**0.000001773**	J	µg/L	**0.000001402**	J	µg/L												
				XAD - F	0.00000031	J	µg/L	0.000000333	J	µg/L	0.000000122	J	µg/L												
W014	6.7E	SP	VI	Peristaltic	***0.00049***	U	µg/L	***0.000481***	U	µg/L	***0.00049***	U	µg/L												
W015	6.9W	SP	NB	XAD - C	0.00000327	J	µg/L	0.00000142	J	µg/L	0.00000115	J	µg/L												
				XAD - C+F	**0.00001627**	J	µg/L	**0.000002113**	J	µg/L	**0.00000241**	J	µg/L												
				XAD - F	0.000013		µg/L	0.000000693	J	µg/L	0.00000126	J	µg/L												
W016	7.2W	SP	NB	XAD - C	0.000000702	J	µg/L	0.0000014	J	µg/L	0.00000144	U	µg/L												
				XAD - C+F	**0.000000702**	J	µg/L	**0.000002052**	J	µg/L	**0.000000979**	J	µg/L												
				XAD - F	0.000000504	UJ	µg/L	0.000000652	J	µg/L	0.000000979	J	µg/L												
W017	7.5W	SP	NB	Peristaltic	***0.00051***	U	µg/L	***0.00051***	U	µg/L	***0.000481***	U	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	U	µg/L																		
				XAD - C	0.000000659	J	µg/L	0.000000972	J	µg/L	0.00000143	U	µg/L												
				XAD - C+F	**0.000001049**	J	µg/L	**0.000001601**	J	µg/L	**0.0000004**	J	µg/L												
				XAD - F	0.00000039	J	µg/L	0.000000629	J	µg/L	0.0000004	J	µg/L												
W019	8.6W	SP	NB	Peristaltic	***0.000481***	U	µg/L	***0.0005***	U	µg/L	***0.000485***	U	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	***0.00049***	U	µg/L	***0.00049***	U	µg/L	***0.00051***	U	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	U	µg/L	***0.000481***	U	µg/L	***0.00049***	U	µg/L												
W022	9.7W	SP	NB	Peristaltic	***0.00049***	U	µg/L	***0.00049***	U	µg/L	***0.0005***	U	µg/L												
W023	10.9M	T	VI-M	XAD - C													0.00000156	J	µg/L	0.00000112	U	µg/L	0.00000171	J	µg/L
				XAD - C+F													**0.00000217**	J	µg/L	***0.00000112***	U	µg/L	**0.000002459**	J	µg/L

Table 5.4-19. Aldrin Data Presented by Station and Sampling Event.

AWQC-HH	0.000005	µg/L			Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
				XAD - F													0.00000061	J	µg/L	0.000000606	U	µg/L	0.000000749	J	µg/L
	11E		VI-E	XAD - C													0.00000186	J	µg/L	0.0000011	J	µg/L	0.00000162	J	µg/L
				XAD - C+F													**0.00000186**	J	µg/L	**0.0000011**	J	µg/L	**0.00000337**	J	µg/L
				XAD - F													0.000000624	U	µg/L	0.00000194	U	µg/L	0.00000175	J	µg/L
	11M		EDI-VI	XAD - C	0.000000341	UJ	µg/L	0.000000646	J	µg/L	0.00000149	J	µg/L												
				XAD - C+F	***0.000000341***	UJ	µg/L	**0.000000843**	J	µg/L	**0.000001941**	J	µg/L												
				XAD - F	0.000000272	UJ	µg/L	0.000000197	J	µg/L	0.000000451	J	µg/L												
			M	XAD - C										0.00000192	J	µg/L									
				XAD - C+F										**0.00000389**	J	µg/L									
				XAD - F										0.00000197	J	µg/L									
	11W		VI-W	XAD - C													0.00000218	J	µg/L	0.00000161	J	µg/L	0.00000201	J	µg/L
				XAD - C+F													**0.000002775**	J	µg/L	**0.00000161**	J	µg/L	**0.00000313**	J	µg/L
				XAD - F													0.000000595	J	µg/L	0.000000868	U	µg/L	0.00000112	J	µg/L
W024	15.9M	T	EDI-NB	XAD - C													0.00000128	U	µg/L	0.00000201	J	µg/L	0.00000252	J	µg/L
				XAD - C+F													***0.00000128***	U	µg/L	**0.00000201**	J	µg/L	**0.000003332**	J	µg/L
				XAD - F													0.000000501	U	µg/L	0.00000158	U	µg/L	0.000000812	J	µg/L
			EDI-NS	XAD - C													0.00000149	J	µg/L	0.00000204	J	µg/L	0.00000259	J	µg/L
				XAD - C+F													**0.000001791**	J	µg/L	**0.00000204**	J	µg/L	**0.00000259**	J	µg/L
				XAD - F													0.000000301	J	µg/L	0.00000058	U	µg/L	0.000000524	U	µg/L
			M	XAD - C										0.00000194	J	µg/L									
				XAD - C+F										**0.00000319**	J	µg/L									
				XAD - F										0.00000125	J	µg/L									
W025	2E	T	VI-E	XAD - C													0.00000409	J	µg/L	0.00000245	U	µg/L	0.000003	J	µg/L
				XAD - C+F													**0.00000409**	J	µg/L	***0.00000245***	U	µg/L	**0.000003917**	J	µg/L
				XAD - F													0.00000526	U	µg/L	0.0000011	U	µg/L	0.000000917	J	µg/L
	2M		VI-M	XAD - C													0.00000316	J	µg/L	0.00000189	U	µg/L	0.00000124	J	µg/L
				XAD - C+F													**0.00000316**	J	µg/L	**0.00000119**	J	µg/L	**0.00000124**	J	µg/L
				XAD - F													0.00000024	U	µg/L	0.00000119	J	µg/L	0.000000456	U	µg/L
	2W		VI-W	XAD - C													0.00000294	J	µg/L	0.00000197	J	µg/L	0.00000163	J	µg/L
				XAD - C+F													**0.00000294**	J	µg/L	**0.00000326**	J	µg/L	**0.000002045**	J	µg/L
				XAD - F													0.000000191	U	µg/L	0.00000129	J	µg/L	0.000000415	J	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.0005***	U	µg/L	***0.0007***	U	µg/L
			NS	Peristaltic																***0.00048***	U	µg/L	***0.00064***	U	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	XAD - C																0.00000352	J	µg/L	0.00000284	J	µg/L
				XAD - C+F																**0.00000575**	J	µg/L	**0.00000475**	J	µg/L
				XAD - F																0.00000223	J	µg/L	0.00000191	J	µg/L
			EDI-NB-1	XAD - C													0.00000301	J	µg/L						
				XAD - C+F													**0.00000439**	J	µg/L						
				XAD - F													0.00000138	J	µg/L						
			EDI-NS	Peristaltic																***0.00047***	U	µg/L			
				XAD - C																0.00000724	U	µg/L	0.00000241	J	µg/L
				XAD - C+F																**0.00000263**	J	µg/L	**0.00000347**	J	µg/L
				XAD - F																0.00000263	J	µg/L	0.00000106	J	µg/L
			EDI-NS-1	XAD - C													0.00000326	J	µg/L						
				XAD - C+F													**0.0000046**	J	µg/L						
				XAD - F													0.00000134	J	µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.0002***	U	µg/L	***0.00069***	U	µg/L
			NS	Peristaltic																***0.00023***	U	µg/L	***0.00048***	U	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.00046***	U	µg/L	***0.0018***	U	µg/L
			NS	Peristaltic																***0.00048***	U	µg/L	***0.0018***	U	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.00023***	U	µg/L	**0.0052**		µg/L
			NS	Peristaltic																***0.00029***	U	µg/L	***0.0058***	U	µg/L
W031	6.1W	SP	NB	XAD - C																0.0000038	U	µg/L	0.00000283	U	µg/L
				XAD - C+F																**0.00000366**	J	µg/L	**0.0000012**	J	µg/L
				XAD - F																0.00000366	J	µg/L	0.0000012	J	µg/L
			NS	Peristaltic																***0.00027***	U	µg/L			
				XAD - C																0.00000391	U	µg/L	0.00000215	U	µg/L
				XAD - C+F																**0.000000635**	J	µg/L	***0.00000215***	U	µg/L
				XAD - F																0.000000635	J	µg/L	0.000000882	U	µg/L

Table 5.4-19. Aldrin Data Presented by Station and Sampling Event.

AWQC-HH	0.000005	µg/L																								
					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W032	6.7E	SP	NB	XAD - C																0.00000195	U	µg/L	0.00000182	J	µg/L
				XAD - C+F																**0.00000223**	J	µg/L	**0.00000243**	J	µg/L
				XAD - F																0.00000223	J	µg/L	0.00000061	J	µg/L
			NS	XAD - C																0.00000203	J	µg/L	0.00000174	J	µg/L
				XAD - C+F																**0.00000203**	J	µg/L	**0.000002454**	J	µg/L
				XAD - F																0.00000155	U	µg/L	0.000000714	J	µg/L
W033	7.0W	SP	NB	XAD - C																0.00000367	J	µg/L	0.00000259	J	µg/L
				XAD - C+F																**0.00000367**	J	µg/L	**0.00000407**	J	µg/L
				XAD - F																0.00000237	U	µg/L	0.00000148	J	µg/L
			NB-2	XAD - C																0.00000262	U	µg/L			
				XAD - C+F																**0.0000017**	J	µg/L			
				XAD - F																0.0000017	J	µg/L			
			NS	XAD - C																0.00000426	J	µg/L	0.00000216	J	µg/L
				XAD - C+F																**0.00000426**	J	µg/L	**0.00000216**	J	µg/L
				XAD - F																0.00000637	U	µg/L	0.00000133	U	µg/L
			NS-2	XAD - C																0.00000306	J	µg/L			
				XAD - C+F																**0.00000484**	J	µg/L			
				XAD - F																0.00000178	J	µg/L			
W034	7.5W	SP	NB	XAD - C																0.00000313	U	µg/L	0.00000182	U	µg/L
				XAD - C+F																***0.00000313***	U	µg/L	**0.000000514**	J	µg/L
				XAD - F																0.00000229	U	µg/L	0.000000514	J	µg/L
			NS	XAD - C																0.00000412	U	µg/L	0.00000247	U	µg/L
				XAD - C+F																***0.00000412***	U	µg/L	***0.00000247***	U	µg/L
				XAD - F																0.00000128	U	µg/L	0.000000892	U	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	XAD - C																0.00000258	U	µg/L	0.00000197	J	µg/L
				XAD - C+F																**0.00000141**	J	µg/L	**0.00000301**	J	µg/L
				XAD - F																0.00000141	J	µg/L	0.00000104	J	µg/L
			NS	XAD - C																0.00000187	U	µg/L	0.00000251	J	µg/L
				XAD - C+F																***0.0000167***	U	µg/L	**0.00000352**	J	µg/L
				XAD - F																0.0000167	U	µg/L	0.00000101	J	µg/L
W036	8.6W	SP	NB	Peristaltic																***0.00048***	U	µg/L	***0.00084***	U	µg/L
			NB-2	Peristaltic																***0.00033***	U	µg/L			
			NS	Peristaltic																***0.00032***	U	µg/L	***0.00099***	U	µg/L
			NS-2	Peristaltic																***0.00048***	U	µg/L			
W037	9.6W	SP	NB	Peristaltic																***0.000057***	U	µg/L	***0.00069***	U	µg/L
			NS	Peristaltic																***0.00028***	U	µg/L	***0.00088***	U	µg/L
W038	9.9E	SP	NB	Peristaltic																***0.00034***	U	µg/L	***0.00048***	U	µg/L
			NS	Peristaltic																***0.00021***	U	µg/L	***0.00048***	U	µg/L

Notes:

AWQC-HH - ambient water quality criteria (human health, Oregon)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Table 5.4-20. Dieldrin Data Presented by Station and Sampling Event.

AWQC-HH	0.0000053	µg/L
AWQC-Eco	0.056	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	***0.000472***	UJ	µg/L	***0.00049***	U	µg/L	***0.000481***	UJ	µg/L												
W002	2.2W	SP	NB	Peristaltic	***0.000481***	UJ	µg/L																		
			NB-1	Peristaltic				***0.000495***	U	µg/L	***0.000538***	UJ	µg/L												
W003	3.0W	SP	NB	Peristaltic	***0.00049***	UJ	µg/L	***0.0005***	U	µg/L	***0.000505***	UJ	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	***0.0005***	U	µg/L				***0.000526***	UJ	µg/L												
			NB-1	Peristaltic				***0.000485***	U	µg/L															
			NB-2	Peristaltic				***0.000485***	U	µg/L															
W005	3.9 M	T	EDI-NB	XAD - C													0.0000434		µg/L	0.0000368	J	µg/L	0.000138		µg/L
				XAD - C+F													**0.00004866**	J	µg/L	**0.0000368**	J	µg/L	**0.0001572**	J	µg/L
				XAD - F													0.00000526	J	µg/L	0.00000395	U	µg/L	0.0000192	J	µg/L
			EDI-NS	XAD - C													0.0000436		µg/L	0.000034	J	µg/L	0.000144		µg/L
				XAD - C+F													**0.00004703**	J	µg/L	**0.000034**	J	µg/L	**0.0001593**	J	µg/L
				XAD - F													0.00000343	J	µg/L	0.00000374	U	µg/L	0.0000153	J	µg/L
			EDI-VI	XAD - C	0.0000275		µg/L	0.0000319		µg/L	0.0000392		µg/L												
				XAD - C+F	**0.0000275**	J	µg/L	**0.0000338**	J	µg/L	**0.0000392**	J	µg/L												
				XAD - F	0.00000167	UJ	µg/L	0.0000019	J	µg/L	0.000000192	UJ	µg/L												
			M	XAD - C										0.00033		µg/L									
				XAD - C+F										**0.0003837**		µg/L									
				XAD - F										0.0000537		µg/L									
W006	4.0W	SP	NB	Peristaltic	***0.0005***	U	µg/L	***0.00051***	U	µg/L	***0.000521***	U	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	***0.000495***	U	µg/L	***0.0005***	U	µg/L	***0.000524***	U	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	***0.000472***	U	µg/L	***0.00049***	U	µg/L	***0.000515***	U	µg/L												
W009	5.6W	SP	NB	Peristaltic	***0.0005***	U	µg/L	***0.000485***	U	µg/L	***0.000532***	U	µg/L												
W010	5.7E	SP	NB	Peristaltic	***0.0005***	U	µg/L																		
			VI	Peristaltic				***0.0005***	U	µg/L	***0.000476***	U	µg/L												
W011	6.3E	T	EDI-NB	XAD - C																0.0000319	J	µg/L	0.000125		µg/L
				XAD - C+F																**0.0000319**	J	µg/L	**0.0001439**	J	µg/L
				XAD - F																0.00000268	U	µg/L	0.0000189	J	µg/L
			EDI-NB-1	XAD - C													0.000041		µg/L						
				XAD - C+F													**0.00004606**	J	µg/L						
				XAD - F													0.00000506	J	µg/L						
			EDI-NS	XAD - C																0.000031	J	µg/L	0.000126		µg/L
				XAD - C+F																**0.0000322**	J	µg/L	**0.0001435**	J	µg/L
				XAD - F																0.0000012	J	µg/L	0.0000175	J	µg/L
			EDI-NS-1	XAD - C													0.0000444		µg/L						
				XAD - C+F													**0.0000444**		µg/L						
				XAD - F													0.000004	U	µg/L						
			EDI-VI	XAD - C	0.0000299		µg/L	0.0000373		µg/L	0.0000409		µg/L												
				XAD - C+F	**0.0000299**	J	µg/L	**0.0000405**	J	µg/L	**0.00004336**	J	µg/L												
				XAD - F	0.000002	UJ	µg/L	0.0000032	J	µg/L	0.00000246	J	µg/L												
W012	6.3W	SP	NB	Peristaltic	***0.0005***	U	µg/L	***0.00051***	U	µg/L	***0.000481***	U	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	***0.000472***	U	µg/L																		
			NB-1	XAD - C	0.0000301		µg/L	0.0000291		µg/L	0.00004		µg/L												
				XAD - C+F	**0.0000321**	J	µg/L	**0.00003145**	J	µg/L	**0.00004427**	J	µg/L												
				XAD - F	0.000002	J	µg/L	0.00000235	J	µg/L	0.00000427	J	µg/L												
			NB-2	Peristaltic	***0.000526***	U	µg/L																		
				XAD - C	0.0000249		µg/L	0.0000227		µg/L	0.0000372		µg/L												
				XAD - C+F	**0.00002704**	J	µg/L	**0.0000227**		µg/L	**0.00003744**	J	µg/L												
				XAD - F	0.00000214	J	µg/L	0.00000195	U	µg/L	0.00000024	J	µg/L												
W014	6.7E	SP	VI	Peristaltic	***0.00049***	U	µg/L	***0.000481***	U	µg/L	***0.00049***	U	µg/L												
W015	6.9W	SP	NB	XAD - C	0.0000468		µg/L	0.000036		µg/L	0.0000441		µg/L												
				XAD - C+F	**0.0000625**		µg/L	**0.00003987**	J	µg/L	**0.00005095**	J	µg/L												
				XAD - F	0.0000157		µg/L	0.00000387	J	µg/L	0.00000685	J	µg/L												
W016	7.2W	SP	NB	XAD - C	0.000023		µg/L	0.0000349		µg/L	0.0000424		µg/L												
				XAD - C+F	**0.000023**	J	µg/L	**0.00003827**	J	µg/L	**0.00004696**	J	µg/L												
				XAD - F	0.00000203	UJ	µg/L	0.00000337	J	µg/L	0.00000456	J	µg/L												
W017	7.5W	SP	NB	Peristaltic	***0.00051***	U	µg/L	***0.00051***	U	µg/L	***0.000481***	U	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	U	µg/L																		
				XAD - C	0.0000306		µg/L	0.000029		µg/L	0.0000421		µg/L												
				XAD - C+F	**0.0000306**	J	µg/L	**0.0000308**	J	µg/L	**0.00004364**	J	µg/L												
				XAD - F	0.00000184	UJ	µg/L	0.0000018	J	µg/L	0.00000154	J	µg/L												
W019	8.6W	SP	NB	Peristaltic	***0.000481***	U	µg/L	***0.0005***	U	µg/L	***0.000485***	U	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	***0.00049***	U	µg/L	***0.00049***	U	µg/L	***0.00051***	U	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.000481***	U	µg/L	***0.000481***	U	µg/L	***0.00049***	U	µg/L												
W022	9.7W	SP	NB	Peristaltic	***0.00049***	U	µg/L	***0.00049***	U	µg/L	***0.0005***	U	µg/L												

Table 5.4-20. Dieldrin Data Presented by Station and Sampling Event.

AWQC-HH	0.0000053	µg/L
AWQC-Eco	0.056	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W023	10.9M	T	VI-M	XAD - C													0.0000377		µg/L	0.0000283	J	µg/L	0.000107		µg/L
				XAD - C+F													**0.0000377**		µg/L	**0.0000283**	J	µg/L	**0.0001233**	J	µg/L
				XAD - F													0.00000205	U	µg/L	0.00000678	U	µg/L	0.0000163	J	µg/L
	11E		VI-E	XAD - C													0.0000392		µg/L	0.0000334	J	µg/L	0.000151		µg/L
				XAD - C+F													**0.0000416**	J	µg/L	**0.0000387**	J	µg/L	**0.0001768**		µg/L
				XAD - F													0.0000024	J	µg/L	0.0000053	J	µg/L	0.0000258		µg/L
	11M		EDI-VI	XAD - C	0.0000143		µg/L	0.0000286		µg/L	0.0000385		µg/L												
				XAD - C+F	**0.00001673**	J	µg/L	**0.00002985**	J	µg/L	**0.00004049**	J	µg/L												
				XAD - F	0.00000243	J	µg/L	0.00000125	J	µg/L	0.00000199	J	µg/L												
			M	XAD - C										0.000302		µg/L									
				XAD - C+F										**0.000353**		µg/L									
				XAD - F										0.000051		µg/L									
	11W		VI-W	XAD - C													0.0000437		µg/L	0.0000304	J	µg/L	0.000147		µg/L
				XAD - C+F													**0.00004615**	J	µg/L	**0.00003468**	J	µg/L	**0.0001646**	J	µg/L
				XAD - F													0.00000245	J	µg/L	0.00000428	J	µg/L	0.0000176	J	µg/L
W024	15.9M	T	EDI-NB	XAD - C													0.0000332		µg/L	0.0000403	J	µg/L	0.0000918		µg/L
				XAD - C+F													**0.00003481**	J	µg/L	**0.00004815**	J	µg/L	**0.00009933**	J	µg/L
				XAD - F													0.00000161	J	µg/L	0.00000785	J	µg/L	0.00000753	J	µg/L
			EDI-NS	XAD - C													0.0000353		µg/L	0.0000467	J	µg/L	0.0000632		µg/L
				XAD - C+F													**0.0000353**		µg/L	**0.00005367**	J	µg/L	**0.00007046**	J	µg/L
				XAD - F													0.000000989	U	µg/L	0.00000697	J	µg/L	0.00000726	J	µg/L
			M	XAD - C										0.00027		µg/L									
				XAD - C+F										**0.0003161**		µg/L									
				XAD - F										0.0000461		µg/L									
W025	2E	T	VI-E	XAD - C													0.0000435		µg/L	0.0000293	J	µg/L	0.0000777		µg/L
				XAD - C+F													**0.000044489**	J	µg/L	**0.00003127**	J	µg/L	**0.00008629**	J	µg/L
				XAD - F													0.000000989	J	µg/L	0.00000197	J	µg/L	0.00000859	J	µg/L
	2M		VI-M	XAD - C													0.0000401		µg/L	0.0000307	J	µg/L	0.0000777		µg/L
				XAD - C+F													**0.0000401**		µg/L	**0.0000307**	J	µg/L	**0.00008487**	J	µg/L
				XAD - F													0.000000731	U	µg/L	0.00000132	U	µg/L	0.00000717	J	µg/L
	2W		VI-W	XAD - C													0.0000437		µg/L	0.0000251	J	µg/L	0.0000853		µg/L
				XAD - C+F													**0.0000437**		µg/L	**0.0000251**	J	µg/L	**0.00009142**	J	µg/L
				XAD - F													0.000000948	U	µg/L	0.00000291	U	µg/L	0.00000612	J	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
			NS	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	XAD - C																0.0000306	J	µg/L	0.000135		µg/L
				XAD - C+F																**0.0000306**	J	µg/L	**0.0001577**		µg/L
				XAD - F																0.00000231	U	µg/L	0.0000227		µg/L
			EDI-NB-1	XAD - C													0.000041		µg/L						
				XAD - C+F													**0.000041**		µg/L						
				XAD - F													0.00000374	U	µg/L						
			EDI-NS	Peristaltic																***0.0004***	U	µg/L			
				XAD - C																0.0000371	J	µg/L	0.00013		µg/L
				XAD - C+F																**0.0000371**	J	µg/L	**0.0001502**		µg/L
				XAD - F																0.0000022	U	µg/L	0.0000202		µg/L
			EDI-NS-1	XAD - C													0.0000442		µg/L						
				XAD - C+F													**0.0000442**		µg/L						
				XAD - F													0.00000369	U	µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.0004***	U	µg/L	**0.0012**	J	µg/L
			NS	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.00042***	U	µg/L	**0.001**	NJ	µg/L
			NS	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
			NS	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
W031	6.1W	SP	NB	XAD - C																0.0000459	J	µg/L	0.000117		µg/L
				XAD - C+F																**0.00005005**	J	µg/L	**0.0001362**	J	µg/L
				XAD - F																0.00000415	J	µg/L	0.0000192	J	µg/L
			NS	Peristaltic																***0.0004***	U	µg/L			
				XAD - C																0.0000498	J	µg/L	0.000119		µg/L
				XAD - C+F																**0.0000498**	J	µg/L	**0.0001298**	J	µg/L
				XAD - F																0.00000203	U	µg/L	0.0000108	J	µg/L

Table 5.4-20. Dieldrin Data Presented by Station and Sampling Event.

AWQC-HH	0.0000053	µg/L
AWQC-Eco	0.056	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W032	6.7E	SP	NB	XAD - C																0.0000463	J	µg/L	0.000109		µg/L
			NB	XAD - C+F																**0.00004934**	J	µg/L	**0.0001225**	J	µg/L
			NB	XAD - F																0.00000304	J	µg/L	0.0000135	J	µg/L
			NS	XAD - C																0.0000433	J	µg/L	0.0000993		µg/L
			NS	XAD - C+F																**0.00004623**	J	µg/L	**0.0001113**	J	µg/L
			NS	XAD - F																0.00000293	J	µg/L	0.000012	J	µg/L
W033	7.0W	SP	NB	XAD - C																0.0000335	J	µg/L	0.000158		µg/L
				XAD - C+F																**0.00003699**	J	µg/L	**0.0001904**		µg/L
				XAD - F																0.00000349	J	µg/L	0.0000324		µg/L
			NB-2	XAD - C																0.0000338	J	µg/L			
				XAD - C+F																**0.00003617**	J	µg/L			
				XAD - F																0.00000237	J	µg/L			
			NS	XAD - C																0.0000366	J	µg/L	0.000151		µg/L
				XAD - C+F																**0.0000366**	J	µg/L	**0.0001802**		µg/L
				XAD - F																0.00000281	U	µg/L	0.0000292		µg/L
			NS-2	XAD - C																0.0000346	J	µg/L			
				XAD - C+F																**0.00003702**	J	µg/L			
				XAD - F																0.00000242	J	µg/L			
W034	7.5W	SP	NB	XAD - C																0.0000368	J	µg/L	0.000105		µg/L
				XAD - C+F																**0.0000368**	J	µg/L	**0.0001146**	J	µg/L
				XAD - F																0.00000265	U	µg/L	0.0000096	J	µg/L
			NS	XAD - C																0.0000319	J	µg/L	0.000116		µg/L
				XAD - C+F																**0.0000319**	J	µg/L	**0.00012467**	J	µg/L
				XAD - F																0.00000256	U	µg/L	0.00000867	J	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	XAD - C																0.0000444	J	µg/L	0.0000995		µg/L
				XAD - C+F																**0.0000444**	J	µg/L	**0.0001096**	J	µg/L
				XAD - F																0.0000036	U	µg/L	0.0000101	J	µg/L
			NS	XAD - C																0.0000326	J	µg/L	0.0000985		µg/L
				XAD - C+F																**0.0000326**	J	µg/L	**0.00010847**	J	µg/L
				XAD - F																0.00000281	U	µg/L	0.00000997	J	µg/L
W036	8.6W	SP	NB	Peristaltic																***0.0004***	U	µg/L	**0.0012**	NJ	µg/L
			NB-2	Peristaltic																***0.0004***	U	µg/L			
			NS	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
			NS-2	Peristaltic																***0.0004***	U	µg/L			
W037	9.6W	SP	NB	Peristaltic																***0.00042***	U	µg/L	***0.0004***	U	µg/L
			NS	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
W038	9.9E	SP	NB	Peristaltic																***0.0004***	U	µg/L	***0.0004***	U	µg/L
			NS	Peristaltic																***0.0004***	U	µg/L	***0.0004***	UJ	µg/L

Notes:

AWQC-Eco - ambient water quality criteria (ecological, Oregon)
AWQC-HH - ambient water quality criteria (human health, Oregon)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Table 5.4-21a. Total Arsenic Data Presented by Station and Sampling Event.

AWQC-HH	2.1	µg/L
AWQC-Eco	150	µg/L
MCL	10	µg/L

					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow	
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**0.328**	T	µg/L	**0.4245**	T	µg/L	**0.745**	T	µg/L												
W002	2.2W	SP	NB	Peristaltic	**0.35**		µg/L																		
			NB-1	Peristaltic				**0.533**		µg/L	**0.64**		µg/L												
			NB-2	Peristaltic				**0.557**		µg/L	**0.71**		µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.355**		µg/L	**0.437**		µg/L	**0.49**		µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**0.39**		µg/L				**0.48**		µg/L												
			NB-1	Peristaltic				**0.489**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													**0.51**		µg/L	**0.476**	J	µg/L	**0.309**		µg/L
			EDI-NS	Peristaltic													**0.46**		µg/L	**0.446**	J	µg/L	**0.324**		µg/L
			EDI-VI	Peristaltic	**0.39**		µg/L	**0.452**		µg/L	**0.55**		µg/L												
			M	Peristaltic										**0.54**		µg/L									
W006	4.0W	SP	NB	Peristaltic	**0.399**		µg/L	**0.428**		µg/L	**0.49**	T	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**0.3805**	T	µg/L	**0.4485**	T	µg/L	**0.48**		µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**0.389**		µg/L	**0.417**		µg/L	**0.48**		µg/L												
W009	5.6W	SP	NB	Peristaltic	**0.374**		µg/L	**0.414**		µg/L	**0.5**		µg/L												
W010	5.7E	SP	NB	Peristaltic	**0.38**		µg/L																		
			VI	Peristaltic				**0.419**		µg/L	**0.54**		µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																***0.447***	UJ	µg/L	**0.356**	JT	µg/L
			EDI-NB-1	Peristaltic													**0.455**		µg/L						
			EDI-NS	Peristaltic																***0.422***	UJ	µg/L	**0.317**	J	µg/L
			EDI-NS-1	Peristaltic													**0.457**		µg/L						
			EDI-VI	Peristaltic	**0.365**		µg/L	**0.447**		µg/L	**0.5**		µg/L												
W012	6.3W	SP	NB	Peristaltic	**0.3525**	T	µg/L	**0.437**		µg/L	**0.56**		µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**0.369**	T	µg/L	**0.362**		µg/L	**0.43**		µg/L												
			NB-2	Peristaltic	**0.359**		µg/L	**0.405**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**0.365**		µg/L	**0.435**		µg/L	**0.52**		µg/L												
W015	6.9W	SP	NB	Peristaltic	**0.399**	T	µg/L	**0.435**		µg/L	**0.52**		µg/L												
W016	7.2W	SP	NB-1	Peristaltic	**0.386**		µg/L	**0.437**		µg/L	**0.5**		µg/L												
			NB-2	Peristaltic	**0.373**		µg/L																		
W017	7.5W	SP	NB	Peristaltic	**0.41**		µg/L	**0.52**		µg/L	**0.56**		µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.337**		µg/L	**0.363**		µg/L	**0.48**		µg/L												
W019	8.6W	SP	NB	Peristaltic	**0.368**		µg/L	**0.4455**	T	µg/L	**0.54**		µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**0.407**		µg/L	**0.395**		µg/L	**0.47**		µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.383**		µg/L	**0.41**		µg/L	**0.48**		µg/L												
W022	9.7W	SP	NB	Peristaltic	**0.668**		µg/L	**0.463**		µg/L	**0.53**		µg/L												
W023	10.9M	T	VI-M	Peristaltic													**0.46**		µg/L	***0.41***	UJ	µg/L	**0.307**	T	µg/L
	11E		VI-E	Peristaltic													**0.47**		µg/L	***0.419***	UJ	µg/L	**0.329**		µg/L
	11M		EDI-VI	Peristaltic	**0.349**	T	µg/L	**0.426**		µg/L	**0.485**	T	µg/L												
			M	Peristaltic										**0.48**		µg/L									
	11W		VI-W	Peristaltic													**0.48**		µg/L	***0.394***	UJ	µg/L	**0.334**		µg/L
W024	15.9M	T	EDI-NB	Peristaltic													**0.427**	T	µg/L	***0.406***	UJT	µg/L	**0.254**	T	µg/L
			EDI-NS	Peristaltic													**0.418**		µg/L	***0.42***	UJ	µg/L	**0.459**	T	µg/L
			M	Peristaltic										**0.28**		µg/L									
W025	2E	T	VI-E	Peristaltic													**0.64**	T	µg/L	***0.436***	UJ	µg/L	**0.299**		µg/L
	2M		VI-M	Peristaltic													**0.61**		µg/L	***0.442***	UJ	µg/L	**0.257**		µg/L
	2W		VI-W	Peristaltic													**0.56**		µg/L	***0.647***	UJ	µg/L	**0.267**	T	µg/L
W026	2.1E	SP	NB	Peristaltic																**0.481**	J	µg/L	**0.32**	J	µg/L
			NS	Peristaltic																**0.458**	J	µg/L	**0.32**	J	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																**0.457**	J	µg/L	**0.402**	J	µg/L
			EDI-NB-1	Peristaltic													**0.5**		µg/L						
			EDI-NS	Peristaltic																**0.439**	J	µg/L	**0.353**	J	µg/L
			EDI-NS-1	Peristaltic													**0.49**		µg/L						
W028	3.6E	SP	NB	Peristaltic																**0.442**	J	µg/L	**0.306**	J	µg/L
			NS	Peristaltic																**0.478**	J	µg/L	**0.333**	J	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.457***	UJ	µg/L	**0.329**	J	µg/L
			NS	Peristaltic																***0.457***	UJ	µg/L	**0.317**	JT	µg/L
W030	5.5E	SP	NB	Peristaltic																**0.428**	J	µg/L	**0.328**	J	µg/L
			NS	Peristaltic																**0.453**	J	µg/L	**0.317**	J	µg/L
W031	6.1W	SP	NB	Peristaltic																**0.458**	J	µg/L	**0.478**	J	µg/L
			NS	Peristaltic																**0.451**	J	µg/L	**0.324**	J	µg/L
W032	6.7E	SP	NB	Peristaltic																**0.458**	J	µg/L	**0.32**		µg/L
			NS	Peristaltic																***0.456***	UJ	µg/L	**0.305**	T	µg/L

Table 5.4-21a. Total Arsenic Data Presented by Station and Sampling Event.

AWQC-HH	2.1	µg/L
AWQC-Eco	150	µg/L
MCL	10	µg/L

					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow	
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W033	7.0W	SP	NB	Peristaltic																***0.44***	UJ	µg/L	**0.34**	J	µg/L
			NB-2	Peristaltic																***0.412***	UJ	µg/L	**0.35**	J	µg/L
			NS	Peristaltic																***0.441***	UJ	µg/L	**0.33**	JT	µg/L
			NS-2	Peristaltic																***0.439***	UJ	µg/L	**0.32**	J	µg/L
W034	7.5W	SP	NB	Peristaltic																**0.442**	J	µg/L	**0.357**	JT	µg/L
			NS	Peristaltic																**0.439**	J	µg/L	**0.627**	J	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																**0.457**	J	µg/L	**0.383**	J	µg/L
			NS	Peristaltic																**0.464**	J	µg/L	**0.355**	J	µg/L
W036	8.6W	SP	NB	Peristaltic																**0.436**	J	µg/L	**0.377**	J	µg/L
			NS	Peristaltic																**0.46**	J	µg/L	**0.366**	JT	µg/L
W037	9.6W	SP	NB	Peristaltic																**0.484**	J	µg/L	**0.318**	J	µg/L
			NS	Peristaltic																**0.467**	JT	µg/L	**0.356**	J	µg/L
W038	9.9E	SP	NB	Peristaltic																**0.526**	JT	µg/L	**0.31**		µg/L
			NS	Peristaltic																**0.512**	JT	µg/L	**0.3**		µg/L

Notes:

AWQC-Eco - ambient water quality criteria (ecological, Oregon)
AWQC-HH - ambient water quality criteria (human health, Oregon)
MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-21b. Dissolved Arsenic Data Presented by Station and Sampling Event.

AWQC-HH	2.1	µg/L
AWQC-Eco	150	µg/L
MCL	10	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**0.286**		µg/L	**0.359**		µg/L	**0.64**		µg/L												
W002	2.2W	SP	NB	Peristaltic	**0.285**		µg/L																		
			NB-1	Peristaltic				**0.471**		µg/L	**0.62**		µg/L												
			NB-2	Peristaltic				**0.508**		µg/L	**0.62**		µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.299**		µg/L	**0.353**		µg/L	**0.41**		µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**0.315**		µg/L				**0.41**		µg/L												
			NB-1	Peristaltic				**0.406**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													***0.42***	U	µg/L	***0.396***	U	µg/L	**0.253**		µg/L
			EDI-NS	Peristaltic													**0.19**		µg/L	***0.397***	U	µg/L	**0.274**		µg/L
			EDI-VI	Peristaltic	**0.328**		µg/L	**0.394**		µg/L	**0.48**		µg/L												
			M	Peristaltic										**0.21**		µg/L									
W006	4.0W	SP	NB	Peristaltic	**0.319**		µg/L	**0.33**		µg/L	**0.42**		µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**0.315**		µg/L	**0.373**		µg/L	**0.42**		µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**0.333**		µg/L	**0.375**		µg/L	**0.43**		µg/L												
W009	5.6W	SP	NB	Peristaltic	**0.329**		µg/L	**0.362**		µg/L	**0.42**		µg/L												
W010	5.7E	SP	NB	Peristaltic	**0.322**		µg/L																		
			VI	Peristaltic				**0.36**		µg/L	**0.46**		µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																***0.398***	U	µg/L	**0.271**	J	µg/L
			EDI-NB-1	Peristaltic													***0.41***	U	µg/L						
			EDI-NS	Peristaltic																***0.39***	U	µg/L	**0.255**	J	µg/L
			EDI-NS-1	Peristaltic													***0.389***	U	µg/L						
			EDI-VI	Peristaltic	**0.308**		µg/L	**0.402**		µg/L	**0.45**		µg/L												
W012	6.3W	SP	NB	Peristaltic	**0.31**		µg/L	**0.379**		µg/L	**0.47**		µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**0.291**		µg/L	**0.301**		µg/L	**0.37**		µg/L												
			NB-2	Peristaltic	**0.252**		µg/L	**0.31**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**0.322**		µg/L	**0.378**		µg/L	**0.46**		µg/L												
W015	6.9W	SP	NB	Peristaltic	**0.353**		µg/L	**0.372**		µg/L	**0.45**		µg/L												
W016	7.2W	SP	NB-1	Peristaltic	**0.333**		µg/L	**0.376**		µg/L	**0.45**		µg/L												
			NB-2	Peristaltic	**0.33**		µg/L																		
W017	7.5W	SP	NB	Peristaltic	**0.337**		µg/L	**0.392**		µg/L	**0.47**		µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.249**		µg/L	**0.298**		µg/L	**0.41**		µg/L												
W019	8.6W	SP	NB	Peristaltic	**0.307**		µg/L	**0.389**		µg/L	**0.46**		µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**0.359**		µg/L	**0.325**		µg/L	**0.44**		µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.342**		µg/L	**0.323**		µg/L	**0.43**		µg/L												
W022	9.7W	SP	NB	Peristaltic	**0.493**		µg/L	**0.397**		µg/L	**0.45**		µg/L												
W023	10.9M	T	VI-M	Peristaltic													**0.43**		µg/L	***0.388***	U	µg/L	**0.207**		µg/L
	11E		VI-E	Peristaltic													**0.43**		µg/L	***0.373***	U	µg/L	**0.221**		µg/L
	11M		EDI-VI	Peristaltic	**0.29**		µg/L	**0.36**		µg/L	**0.43**		µg/L												
			M	Peristaltic										**0.21**		µg/L									
	11W		VI-W	Peristaltic													**0.44**		µg/L	***0.372***	U	µg/L	**0.218**		µg/L
W024	15.9M	T	EDI-NB	Peristaltic													**0.394**		µg/L	***0.384***	UT	µg/L	**0.186**		µg/L
			EDI-NS	Peristaltic													**0.395**		µg/L	***0.381***	U	µg/L	**0.191**		µg/L
			M	Peristaltic										**0.2**		µg/L									
W025	2E	T	VI-E	Peristaltic													**0.58**		µg/L	***0.396***	U	µg/L	**0.207**		µg/L
	2M		VI-M	Peristaltic													**0.6**		µg/L	***0.374***	U	µg/L	**0.201**		µg/L
	2W		VI-W	Peristaltic													**0.52**		µg/L	***0.586***	U	µg/L	**0.201**		µg/L
W026	2.1E	SP	NB	Peristaltic																***0.425***	U	µg/L	**0.26**	J	µg/L
			NS	Peristaltic																***0.422***	U	µg/L	**0.23**	J	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																***0.397***	U	µg/L	**0.281**	J	µg/L
			EDI-NB-1	Peristaltic													**0.48**		µg/L						
			EDI-NS	Peristaltic																***0.403***	UJ	µg/L	**0.216**	J	µg/L
			EDI-NS-1	Peristaltic													**0.47**		µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.384***	UJ	µg/L	**0.202**	J	µg/L
			NS	Peristaltic																***0.395***	UJ	µg/L	**0.213**	J	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.39***	U	µg/L	**0.206**	J	µg/L
			NS	Peristaltic																***0.418***	U	µg/L	**0.223**	J	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.405***	UJ	µg/L	**0.185**	J	µg/L
			NS	Peristaltic																***0.395***	U	µg/L	**0.222**	J	µg/L

Table 5.4-21b. Dissolved Arsenic Data Presented by Station and Sampling Event.

AWQC-HH	2.1	µg/L
AWQC-Eco	150	µg/L
MCL	10	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W031	6.1W	SP	NB	Peristaltic																***0.393***	UJ	µg/L	**0.261**	J	µg/L
			NS	Peristaltic																***0.399***	UJ	µg/L	**0.26**	J	µg/L
W032	6.7E	SP	NB	Peristaltic																**0.404**	JT	µg/L	**0.22**		µg/L
			NS	Peristaltic																**0.38**	J	µg/L	**0.22**		µg/L
W033	7.0W	SP	NB	Peristaltic																***0.391***	U	µg/L	**0.26**	J	µg/L
			NB-2	Peristaltic																***0.402***	U	µg/L	**0.23**	J	µg/L
			NS	Peristaltic																***0.381***	U	µg/L	**0.26**	J	µg/L
			NS-2	Peristaltic																***0.387***	U	µg/L	**0.28**	J	µg/L
W034	7.5W	SP	NB	Peristaltic																**0.412**		µg/L	**0.285**	J	µg/L
			NS	Peristaltic																***0.389***	U	µg/L	**0.341**	J	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***0.402***	U	µg/L	**0.296**	J	µg/L
			NS	Peristaltic																***0.404***	U	µg/L	**0.281**	J	µg/L
W036	8.6W	SP	NB	Peristaltic																***0.387***	U	µg/L	**0.201**	J	µg/L
			NS	Peristaltic																***0.4***	U	µg/L	**0.208**	J	µg/L
W037	9.6W	SP	NB	Peristaltic																**0.401**	J	µg/L	**0.224**	J	µg/L
			NS	Peristaltic																***0.425***	UJT	µg/L	**0.211**	J	µg/L
W038	9.9E	SP	NB	Peristaltic																**0.48**	T	µg/L	**0.21**		µg/L
			NS	Peristaltic																***0.468***	UJT	µg/L	**0.21**		µg/L

Notes:

AWQC-Eco - ambient water quality criteria (ecological, Oregon)
AWQC-HH - ambient water quality criteria (human health, Oregon)
MCL - maximum concentration limit (USEPA)
C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-22a. Total Chromium Data Presented by Station and Sampling Event.

MCL	100	µg/L			Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**0.305**	T	µg/L	**0.48**	T	µg/L	**0.625**	T	µg/L												
W002	2.2W	SP	NB	Peristaltic	**0.36**		µg/L																		
			NB-1	Peristaltic				**0.47**		µg/L	**0.55**		µg/L												
			NB-2	Peristaltic				**0.43**		µg/L	***0.48***	U	µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.33**		µg/L	**0.47**		µg/L	**0.54**		µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**0.51**		µg/L				***0.48***	U	µg/L												
			NB-1	Peristaltic				**0.91**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													**1.09**		µg/L	***0.34***	U	µg/L	**0.99**		µg/L
			EDI-NS	Peristaltic													**0.38**		µg/L	***0.38***	U	µg/L	**0.99**		µg/L
			EDI-VI	Peristaltic	**0.3**		µg/L	**0.38**		µg/L	**0.53**		µg/L												
			M	Peristaltic										**1.25**		µg/L									
W006	4.0W	SP	NB	Peristaltic	**0.37**		µg/L	**0.6**		µg/L	***0.38***	UT	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**0.2**	JT	µg/L	***0.31***	UT	µg/L	***0.37***	U	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**0.305**	T	µg/L	***0.29***	U	µg/L	***0.29***	U	µg/L												
W009	5.6W	SP	NB	Peristaltic	**0.3**		µg/L	**0.38**		µg/L	***0.48***	U	µg/L												
W010	5.7E	SP	NB	Peristaltic	**0.32**		µg/L																		
			VI	Peristaltic				**0.36**		µg/L	***0.43***	U	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																***0.21***	U	µg/L	**1.28**	T	µg/L
			EDI-NB-1	Peristaltic													**0.55**		µg/L						
			EDI-NS	Peristaltic																***0.22***	U	µg/L	**1.1**		µg/L
			EDI-NS-1	Peristaltic													**0.35**		µg/L						
			EDI-VI	Peristaltic	**0.3**		µg/L	**0.29**		µg/L	***0.43***	U	µg/L												
W012	6.3W	SP	NB	Peristaltic	**0.285**	T	µg/L	**0.26**		µg/L	**0.59**		µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**0.325**	T	µg/L	***0.42***	U	µg/L	***0.39***	U	µg/L												
			NB-2	Peristaltic	**0.31**		µg/L	**0.68**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**0.3**		µg/L	**0.24**		µg/L	***0.35***	U	µg/L												
W015	6.9W	SP	NB	Peristaltic	**0.325**	T	µg/L	**0.38**		µg/L	***0.36***	U	µg/L												
W016	7.2W	SP	NB-1	Peristaltic	**0.3**		µg/L	***0.33***	U	µg/L	***0.48***	U	µg/L												
			NB-2	Peristaltic	**0.29**		µg/L																		
W017	7.5W	SP	NB	Peristaltic	**0.34**		µg/L	**0.27**		µg/L	***0.46***	U	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.31**		µg/L	**0.4**		µg/L	***0.36***	U	µg/L												
W019	8.6W	SP	NB	Peristaltic	**0.3**		µg/L	**0.325**	T	µg/L	**0.51**		µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**0.2**		µg/L	**0.22**		µg/L	***0.36***	U	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.23**		µg/L	**0.21**		µg/L	***0.32***	U	µg/L												
W022	9.7W	SP	NB	Peristaltic	**0.37**		µg/L	**0.33**		µg/L	***0.44***	U	µg/L												
W023	10.9M	T	VI-M	Peristaltic													**0.38**		µg/L	***0.27***	U	µg/L	**0.96**	T	µg/L
	11E		VI-E	Peristaltic													**0.5**		µg/L	***0.3***	U	µg/L	**1**		µg/L
	11M		EDI-VI	Peristaltic	**0.29**		µg/L	**0.61**		µg/L	***0.33***	UT	µg/L												
			M	Peristaltic										**1.62**		µg/L									
	11W		VI-W	Peristaltic													**0.41**		µg/L	***0.25***	U	µg/L	**1.14**		µg/L
W024	15.9M	T	EDI-NB	Peristaltic													**0.355**	T	µg/L	***0.27***	UT	µg/L	**0.72**	T	µg/L
			EDI-NS	Peristaltic													**0.34**		µg/L	***0.25***	U	µg/L	**0.83**	T	µg/L
			M	Peristaltic										**1.68**		µg/L									
W025	2E	T	VI-E	Peristaltic													**0.42**	T	µg/L	***0.29***	U	µg/L	**0.74**		µg/L
	2M		VI-M	Peristaltic													**0.37**		µg/L	***0.3***	U	µg/L	**0.58**		µg/L
	2W		VI-W	Peristaltic													**0.35**		µg/L	***0.29***	U	µg/L	**0.59**	T	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.38***	U	µg/L	**0.86**		µg/L
			NS	Peristaltic																***0.34***	U	µg/L	**0.79**		µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																***0.39***	U	µg/L	**1.73**		µg/L
			EDI-NB-1	Peristaltic													**0.51**		µg/L						
			EDI-NS	Peristaltic																***0.28***	U	µg/L	**1.53**		µg/L
			EDI-NS-1	Peristaltic													**0.46**		µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.31***	U	µg/L	**1.02**		µg/L
			NS	Peristaltic																***0.34***	U	µg/L	**1.07**		µg/L
W029	4.4W	SP	NB	Peristaltic																***0.26***	U	µg/L	**0.88**		µg/L
			NS	Peristaltic																***0.24***	U	µg/L	**0.865**	T	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.3***	U	µg/L	**0.99**		µg/L
			NS	Peristaltic																***0.29***	U	µg/L	**0.95**		µg/L
W031	6.1W	SP	NB	Peristaltic																***0.29***	U	µg/L	**1.92**		µg/L
			NS	Peristaltic																***0.36***	U	µg/L	**1.01**		µg/L

Table 5.4-22a. Total Chromium Data Presented by Station and Sampling Event.

MCL	100	µg/L				Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W032	6.7E	SP	NB	Peristaltic																***0.33***	U	µg/L	**0.7**		µg/L
			NS	Peristaltic																***0.42***	U	µg/L	**0.725**	T	µg/L
W033	7.0W	SP	NB	Peristaltic																***0.31***	U	µg/L	**1.08**		µg/L
			NB-2	Peristaltic																***0.26***	U	µg/L	**1.06**		µg/L
			NS	Peristaltic																***0.29***	U	µg/L	**0.925**	T	µg/L
			NS-2	Peristaltic																***0.23***	U	µg/L	**0.93**		µg/L
W034	7.5W	SP	NB	Peristaltic																***0.34***	U	µg/L	**0.99**	T	µg/L
			NS	Peristaltic																***0.32***	U	µg/L	**0.88**		µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***0.39***	U	µg/L	**0.88**		µg/L
			NS	Peristaltic																***0.34***	U	µg/L	**0.86**		µg/L
W036	8.6W	SP	NB	Peristaltic																***0.37***	U	µg/L	**1.62**		µg/L
			NS	Peristaltic																***0.29***	U	µg/L	**1.7**	T	µg/L
W037	9.6W	SP	NB	Peristaltic																***0.31***	U	µg/L	**1.17**		µg/L
			NS	Peristaltic																***0.31***	UT	µg/L	**1.08**		µg/L
W038	9.9E	SP	NB	Peristaltic																***0.36***	UT	µg/L	**0.85**		µg/L
			NS	Peristaltic																***0.32***	UT	µg/L	**0.82**		µg/L

Notes:

MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-22b. Dissolved Chromium Data Presented by Station and Sampling Event.

MCL	100	µg/L			Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow	
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**0.13**	J	µg/L	**0.22**	T	µg/L	***0.14***	U	µg/L												
W002	2.2W	SP	NB	Peristaltic	**0.13**	J	µg/L																		
			NB-1	Peristaltic				**0.24**		µg/L	***0.13***	U	µg/L												
			NB-2	Peristaltic				**0.19**	J	µg/L	***0.11***	U	µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.13**	J	µg/L	**0.29**		µg/L	***0.16***	U	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**0.13**	J	µg/L				***0.16***	U	µg/L												
			NB-1	Peristaltic				**0.33**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													***0.22***	U	µg/L	***0.23***	U	µg/L	**0.57**		µg/L
			EDI-NS	Peristaltic													***0.26***	U	µg/L	***0.15***	U	µg/L	**0.65**		µg/L
			EDI-VI	Peristaltic	**0.2**	J	µg/L	***0.18***	U	µg/L	**0.26**		µg/L												
			M	Peristaltic										***0.18***	U	µg/L									
W006	4.0W	SP	NB	Peristaltic	**0.13**	J	µg/L	**0.22**		µg/L	***0.17***	U	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**0.13**	J	µg/L	***0.2***	U	µg/L	***0.2***	U	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**0.14**	J	µg/L	***0.17***	U	µg/L	***0.25***	U	µg/L												
W009	5.6W	SP	NB	Peristaltic	**0.16**	J	µg/L	***0.2***	U	µg/L	***0.2***	U	µg/L												
W010	5.7E	SP	NB	Peristaltic	**0.14**	J	µg/L																		
			VI	Peristaltic				***0.18***	U	µg/L	***0.19***	U	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																***0.14***	U	µg/L	**0.54**		µg/L
			EDI-NB-1	Peristaltic													***0.25***	U	µg/L						
			EDI-NS	Peristaltic																***0.14***	U	µg/L	**0.5**		µg/L
			EDI-NS-1	Peristaltic													**0.2**	J	µg/L						
			EDI-VI	Peristaltic	**0.12**	J	µg/L	**0.15**	J	µg/L	**0.29**		µg/L												
W012	6.3W	SP	NB	Peristaltic	**0.17**	J	µg/L	**0.14**	J	µg/L	***0.16***	U	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**0.13**	J	µg/L	**0.19**	J	µg/L	***0.18***	U	µg/L												
			NB-2	Peristaltic	***0.16***	U	µg/L	**0.22**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**0.17**	J	µg/L	**0.13**	J	µg/L	***0.21***	U	µg/L												
W015	6.9W	SP	NB	Peristaltic	***0.15***	U	µg/L	***0.19***	U	µg/L	***0.18***	U	µg/L												
W016	7.2W	SP	NB-1	Peristaltic	***0.16***	U	µg/L	***0.17***	U	µg/L	***0.21***	U	µg/L												
			NB-2	Peristaltic	***0.15***	U	µg/L																		
W017	7.5W	SP	NB	Peristaltic	**0.17**	J	µg/L	**0.12**	J	µg/L	***0.16***	U	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.12**	J	µg/L	**0.23**		µg/L	***0.24***	U	µg/L												
W019	8.6W	SP	NB	Peristaltic	**0.16**	J	µg/L	**0.13**	J	µg/L	***0.21***	U	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**0.16**	J	µg/L	**0.1**	J	µg/L	***0.22***	U	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.16**	J	µg/L	**0.11**	J	µg/L	**0.25**		µg/L												
W022	9.7W	SP	NB	Peristaltic	**0.19**	J	µg/L	**0.11**	J	µg/L	**0.28**		µg/L												
W023	10.9M	T	VI-M	Peristaltic													***0.26***	U	µg/L	***0.19***	U	µg/L	***0.34***	U	µg/L
	11E		VI-E	Peristaltic													***0.26***	U	µg/L	***0.2***	U	µg/L	***0.35***	U	µg/L
	11M		EDI-VI	Peristaltic	***0.14***	U	µg/L	**0.24**		µg/L	***0.22***	U	µg/L												
			M	Peristaltic										***0.2***	U	µg/L									
	11W		VI-W	Peristaltic													***0.26***	U	µg/L	***0.19***	U	µg/L	***0.35***	U	µg/L
W024	15.9M	T	EDI-NB	Peristaltic													***0.24***	U	µg/L	***0.17***	UT	µg/L	**0.57**	J	µg/L
			EDI-NS	Peristaltic													***0.22***	U	µg/L	***0.16***	U	µg/L	**0.83**		µg/L
			M	Peristaltic										***0.17***	U	µg/L									
W025	2E	T	VI-E	Peristaltic													***0.24***	U	µg/L	***0.17***	U	µg/L	***0.27***	U	µg/L
	2M		VI-M	Peristaltic													**0.26**		µg/L	***0.15***	U	µg/L	***0.28***	U	µg/L
	2W		VI-W	Peristaltic													***0.23***	U	µg/L	***0.16***	U	µg/L	***0.25***	U	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.15***	U	µg/L	***0.24***	U	µg/L
			NS	Peristaltic																***0.13***	U	µg/L	***0.23***	U	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																***0.16***	U	µg/L	**0.8**		µg/L
			EDI-NB-1	Peristaltic													***0.23***	U	µg/L						
			EDI-NS	Peristaltic																***0.16***	U	µg/L	**0.69**		µg/L
			EDI-NS-1	Peristaltic													***0.23***	U	µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.18***	U	µg/L	***0.15***	U	µg/L
			NS	Peristaltic																***0.2***	U	µg/L	***0.14***	U	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.16***	U	µg/L	***0.13***	U	µg/L
			NS	Peristaltic																***0.1***	U	µg/L	***0.12***	U	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.18***	U	µg/L	***0.2***	U	µg/L
			NS	Peristaltic																***0.14***	U	µg/L	***0.23***	U	µg/L
W031	6.1W	SP	NB	Peristaltic																***0.13***	U	µg/L	***0.55***	U	µg/L
			NS	Peristaltic																***0.17***	U	µg/L	***0.59***	U	µg/L

Table 5.4-22b. Dissolved Chromium Data Presented by Station and Sampling Event.

MCL	100	µg/L				Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W032	6.7E	SP	NB	Peristaltic																***0.21***	U	µg/L	***0.24***	U	µg/L
			NS	Peristaltic																***0.17***	U	µg/L	***0.23***	U	µg/L
W033	7.0W	SP	NB	Peristaltic																***0.2***	U	µg/L	**0.43**		µg/L
			NB-2	Peristaltic																***0.15***	U	µg/L	***0.26***	U	µg/L
			NS	Peristaltic																***0.13***	U	µg/L	**0.43**		µg/L
			NS-2	Peristaltic																***0.17***	U	µg/L	**0.5**		µg/L
W034	7.5W	SP	NB	Peristaltic																***0.14***	U	µg/L	***0.44***	U	µg/L
			NS	Peristaltic																***0.19***	U	µg/L	**0.64**		µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***0.16***	U	µg/L	***0.48***	U	µg/L
			NS	Peristaltic																***0.13***	U	µg/L	***0.45***	U	µg/L
W036	8.6W	SP	NB	Peristaltic																***0.2***	U	µg/L	***0.31***	U	µg/L
			NS	Peristaltic																***0.16***	U	µg/L	***0.39***	U	µg/L
W037	9.6W	SP	NB	Peristaltic																***0.18***	U	µg/L	***0.36***	U	µg/L
			NS	Peristaltic																***0.14***	UT	µg/L	***0.32***	U	µg/L
W038	9.9E	SP	NB	Peristaltic																***0.15***	UT	µg/L	***0.24***	U	µg/L
			NS	Peristaltic																***0.16***	UT	µg/L	***0.17***	U	µg/L

Notes:

MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-23a. Total Copper Data Presented by Station and Sampling Event.

AWQC-HH	1300	µg/L
MCL	1300	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**0.8**	T	µg/L	**1.075**	T	µg/L	**1.69**	T	µg/L												
W002	2.2W	SP	NB	Peristaltic	**0.92**		µg/L																		
			NB-1	Peristaltic				**0.94**		µg/L	**1.42**		µg/L												
			NB-2	Peristaltic				**0.96**		µg/L	**1.5**		µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.87**		µg/L	**1.22**		µg/L	**1.41**		µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**1.13**		µg/L				**1.38**		µg/L												
			NB-1	Peristaltic				**2.09**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													**1.55**		µg/L	**1.02**		µg/L	**1.86**		µg/L
			EDI-NS	Peristaltic													**1.1**		µg/L	**0.96**		µg/L	**1.76**		µg/L
			EDI-VI	Peristaltic	**0.84**		µg/L	**0.91**		µg/L	**1.33**	J	µg/L												
			M	Peristaltic										**3.05**	J	µg/L									
W006	4.0W	SP	NB	Peristaltic	**1**		µg/L	**1.14**		µg/L	**1.35**	JT	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**0.77**	T	µg/L	**0.89**	T	µg/L	**1.36**	J	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**0.8**	T	µg/L	**0.89**		µg/L	**1.09**	J	µg/L												
W009	5.6W	SP	NB	Peristaltic	**0.8**		µg/L	**0.98**		µg/L	**1.43**	J	µg/L												
W010	5.7E	SP	NB	Peristaltic	**0.9**		µg/L																		
			VI	Peristaltic				**0.86**		µg/L	**1.2**	J	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																**0.85**		µg/L	**2.12**	T	µg/L
			EDI-NB-1	Peristaltic													**1.3**		µg/L						
			EDI-NS	Peristaltic																**0.72**		µg/L	**1.94**		µg/L
			EDI-NS-1	Peristaltic													**0.88**		µg/L						
			EDI-VI	Peristaltic	**0.8**		µg/L	**1.06**		µg/L	**1.42**	J	µg/L												
W012	6.3W	SP	NB	Peristaltic	**0.78**	T	µg/L	**0.99**		µg/L	**1.93**	J	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**0.965**	T	µg/L	**0.94**		µg/L	**1.19**		µg/L												
			NB-2	Peristaltic	**0.98**		µg/L	**1.48**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**0.87**		µg/L	**0.93**		µg/L	**1.45**	J	µg/L												
W015	6.9W	SP	NB	Peristaltic	**0.685**	T	µg/L	**1.02**		µg/L	**1.25**	J	µg/L												
W016	7.2W	SP	NB-1	Peristaltic	**0.69**		µg/L	**0.97**		µg/L	**1.29**		µg/L												
			NB-2	Peristaltic	**0.73**		µg/L																		
W017	7.5W	SP	NB	Peristaltic	**0.86**		µg/L	**1.77**		µg/L	**1.38**	J	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.98**		µg/L	**1.06**		µg/L	**1.28**	J	µg/L												
W019	8.6W	SP	NB	Peristaltic	**0.8**		µg/L	**1.01**	T	µg/L	**1.61**	J	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**0.8**		µg/L	**1.28**		µg/L	**1.71**	J	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.86**		µg/L	**1.27**		µg/L	**1.74**	J	µg/L												
W022	9.7W	SP	NB	Peristaltic	**1.05**		µg/L	**1.02**		µg/L	**1.27**	J	µg/L												
W023	10.9M	T	VI-M	Peristaltic													**0.84**		µg/L	**0.65**		µg/L	**1.76**	T	µg/L
	11E		VI-E	Peristaltic													**1.12**		µg/L	**0.94**		µg/L	**1.79**		µg/L
	11M		EDI-VI	Peristaltic	**0.85**		µg/L	**0.82**		µg/L	**1.03**	JT	µg/L												
			M	Peristaltic										**3.68**	J	µg/L									
	11W		VI-W	Peristaltic													**1.01**		µg/L	**0.75**		µg/L	**2.05**		µg/L
W024	15.9M	T	EDI-NB	Peristaltic													**0.705**	T	µg/L	**0.83**	T	µg/L	**1.16**	T	µg/L
			EDI-NS	Peristaltic													**0.68**		µg/L	**1.1**		µg/L	**1.19**	T	µg/L
			M	Peristaltic										**3.57**	J	µg/L									
W025	2E	T	VI-E	Peristaltic													**1.22**	T	µg/L	**0.84**		µg/L	**1.33**		µg/L
	2M		VI-M	Peristaltic													**1.09**		µg/L	**0.86**		µg/L	**1.1**		µg/L
	2W		VI-W	Peristaltic													**1.08**		µg/L	**0.87**		µg/L	**1.1**	T	µg/L
W026	2.1E	SP	NB	Peristaltic																**1.07**		µg/L	**1.64**		µg/L
			NS	Peristaltic																**0.88**		µg/L	**1.47**		µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																**0.89**		µg/L	**2.93**		µg/L
			EDI-NB-1	Peristaltic													**1.3**		µg/L						
			EDI-NS	Peristaltic																**0.86**		µg/L	**2.56**		µg/L
			EDI-NS-1	Peristaltic													**1.24**		µg/L						
W028	3.6E	SP	NB	Peristaltic																**0.92**		µg/L	**1.95**		µg/L
			NS	Peristaltic																**0.94**		µg/L	**1.98**		µg/L
W029	4.4W	SP	NB	Peristaltic																**0.84**		µg/L	**1.73**		µg/L
			NS	Peristaltic																**0.88**		µg/L	**1.76**	T	µg/L
W030	5.5E	SP	NB	Peristaltic																**0.93**		µg/L	**1.83**		µg/L
			NS	Peristaltic																**0.95**		µg/L	**1.94**		µg/L
W031	6.1W	SP	NB	Peristaltic																**0.95**		µg/L	**3.49**		µg/L
			NS	Peristaltic																**1.11**		µg/L	**1.68**		µg/L
W032	6.7E	SP	NB	Peristaltic																**0.93**		µg/L	**1.63**		µg/L
			NS	Peristaltic																**0.88**		µg/L	**1.69**	T	µg/L

Table 5.4-23a. Total Copper Data Presented by Station and Sampling Event.

AWQC-HH	1300	µg/L
MCL	1300	µg/L

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W033	7.0W	SP	NB	Peristaltic																**0.89**		µg/L	**2.14**		µg/L
			NB-2	Peristaltic																**0.79**		µg/L	**2.05**		µg/L
			NS	Peristaltic																**0.85**		µg/L	**1.69**	T	µg/L
			NS-2	Peristaltic																**0.82**		µg/L	**1.79**		µg/L
W034	7.5W	SP	NB	Peristaltic																**0.86**		µg/L	**1.71**	T	µg/L
			NS	Peristaltic																**0.89**		µg/L	**1.62**		µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																**1.01**		µg/L	**2.21**		µg/L
			NS	Peristaltic																**1.14**		µg/L	**2.07**		µg/L
W036	8.6W	SP	NB	Peristaltic																**0.96**		µg/L	**2.71**		µg/L
			NS	Peristaltic																**0.9**		µg/L	**2.72**	T	µg/L
W037	9.6W	SP	NB	Peristaltic																**0.89**		µg/L	**2.08**		µg/L
			NS	Peristaltic																**0.87**	T	µg/L	**1.96**		µg/L
W038	9.9E	SP	NB	Peristaltic																**0.85**	T	µg/L	**1.72**		µg/L
			NS	Peristaltic																**0.86**	T	µg/L	**1.75**		µg/L

Notes:

AWQC-HH - ambient water quality criteria (human health, Oregon)
MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin
Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-23b. Dissolved Copper Data Presented by Station and Sampling Event.

AWQC-HH	1300	µg/L
MCL	1300	µg/L

Sample	River Location	Collection Type	Collection Location	Collection Method	Nov-04 Low Flow Value	Qualifier	Units	Mar-05 Low Flow Value	Qualifier	Units	Jul-05 Low Flow Value	Qualifier	Units	Jan-06 High Flow Value	Qualifier	Units	Sep-06 Low Flow Value	Qualifier	Units	Nov-06 Storm Water Flow Value	Qualifier	Units	Jan-07 - Mar-07 High Flow Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**0.45**		µg/L	**0.665**	T	µg/L	**0.84**		µg/L												
W002	2.2W	SP	NB	Peristaltic	**0.51**		µg/L																		
			NB-1	Peristaltic				**0.63**		µg/L	**0.84**		µg/L												
			NB-2	Peristaltic				**0.67**		µg/L	**0.82**		µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.46**		µg/L	**0.7**		µg/L	**0.74**		µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**0.61**		µg/L				**0.87**		µg/L												
			NB-1	Peristaltic				**0.95**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													**0.77**		µg/L	**0.57**		µg/L	**1.09**		µg/L
			EDI-NS	Peristaltic													**0.75**		µg/L	**0.56**		µg/L	**1.19**		µg/L
			EDI-VI	Peristaltic	**0.7**		µg/L	**0.6**		µg/L	**0.77**	J	µg/L												
			M	Peristaltic										**0.77**	J	µg/L									
W006	4.0W	SP	NB	Peristaltic	**0.93**		µg/L	**0.62**		µg/L	**0.83**		µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**0.51**		µg/L	**0.64**		µg/L	**0.87**		µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**0.46**		µg/L	**0.66**		µg/L	**0.84**		µg/L												
W009	5.6W	SP	NB	Peristaltic	**0.5**		µg/L	**0.6**		µg/L	**0.73**		µg/L												
W010	5.7E	SP	NB	Peristaltic	**0.5**		µg/L																		
			VI	Peristaltic				**0.59**		µg/L	**0.9**	J	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																**0.49**		µg/L	**1.15**		µg/L
			EDI-NB-1	Peristaltic													**0.68**		µg/L						
			EDI-NS	Peristaltic																**0.51**		µg/L	**1.08**		µg/L
			EDI-NS-1	Peristaltic													**0.68**		µg/L						
			EDI-VI	Peristaltic	**0.45**		µg/L	**0.68**		µg/L	**0.83**	J	µg/L												
W012	6.3W	SP	NB	Peristaltic	**0.42**		µg/L	**0.64**		µg/L	**0.85**	J	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**0.53**		µg/L	***0.54***	U	µg/L	**0.86**		µg/L												
			NB-2	Peristaltic	***0.44***	U	µg/L	**0.59**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**0.45**		µg/L	**0.63**		µg/L	**0.87**		µg/L												
W015	6.9W	SP	NB	Peristaltic	**0.42**		µg/L	**0.74**		µg/L	**0.84**	J	µg/L												
W016	7.2W	SP	NB-1	Peristaltic	**0.37**		µg/L	**0.61**		µg/L	**1.12**		µg/L												
			NB-2	Peristaltic	**0.4**		µg/L																		
W017	7.5W	SP	NB	Peristaltic	**0.46**		µg/L	**0.77**		µg/L	**0.79**	J	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.61**		µg/L	**0.64**		µg/L	**0.86**	J	µg/L												
W019	8.6W	SP	NB	Peristaltic	**0.44**		µg/L	**0.62**		µg/L	**0.85**	J	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**0.61**		µg/L	**0.89**		µg/L	**1.19**	J	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**0.65**		µg/L	**0.9**		µg/L	**1.23**	J	µg/L												
W022	9.7W	SP	NB	Peristaltic	**0.49**		µg/L	**0.88**		µg/L	**1.64**	J	µg/L												
W023	10.9M	T	VI-M	Peristaltic													**0.61**		µg/L	**1.23**		µg/L	**0.65**		µg/L
	11E		VI-E	Peristaltic													**0.66**		µg/L	**0.56**		µg/L	**0.64**		µg/L
	11M		EDI-VI	Peristaltic	**0.46**		µg/L	**0.52**		µg/L	**0.79**	J	µg/L												
			M	Peristaltic										**2.39**	J	µg/L									
	11W		VI-W	Peristaltic													**0.63**		µg/L	**0.46**		µg/L	**0.63**		µg/L
W024	15.9M	T	EDI-NB	Peristaltic													**0.56**		µg/L	**0.51**	T	µg/L	**0.49**		µg/L
			EDI-NS	Peristaltic													**0.47**		µg/L	**0.48**		µg/L	**0.5**		µg/L
			M	Peristaltic										**0.68**	J	µg/L									
W025	2E	T	VI-E	Peristaltic													**0.82**		µg/L	**0.53**		µg/L	**0.43**		µg/L
	2M		VI-M	Peristaltic													**0.82**		µg/L	**0.59**		µg/L	**0.51**		µg/L
	2W		VI-W	Peristaltic													**0.78**		µg/L	**0.55**		µg/L	**0.49**		µg/L
W026	2.1E	SP	NB	Peristaltic																**0.63**		µg/L	**0.65**		µg/L
			NS	Peristaltic																**0.54**		µg/L	**0.57**		µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																**0.55**		µg/L	**1.26**		µg/L
			EDI-NB-1	Peristaltic													**0.8**		µg/L						
			EDI-NS	Peristaltic																**0.56**		µg/L	**1.15**		µg/L
			EDI-NS-1	Peristaltic													**0.76**		µg/L						
W028	3.6E	SP	NB	Peristaltic																**0.56**		µg/L	**0.61**		µg/L
			NS	Peristaltic																**0.64**		µg/L	**0.62**		µg/L
W029	4.4W	SP	NB	Peristaltic																**0.54**		µg/L	**0.6**		µg/L
			NS	Peristaltic																**0.5**		µg/L	**0.59**		µg/L
W030	5.5E	SP	NB	Peristaltic																**0.6**		µg/L	**0.64**		µg/L
			NS	Peristaltic																**0.58**		µg/L	**0.65**		µg/L
W031	6.1W	SP	NB	Peristaltic																**0.58**		µg/L	**0.9**		µg/L
			NS	Peristaltic																**0.55**		µg/L	**0.93**		µg/L
W032	6.7E	SP	NB	Peristaltic																**0.58**		µg/L	**0.64**		µg/L
			NS	Peristaltic																**0.59**		µg/L	**0.64**		µg/L

Table 5.4-23b. Dissolved Copper Data Presented by Station and Sampling Event.

AWQC-HH	1300	µg/L																								
MCL	1300	µg/L																								
					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W033	7.0W	SP	NB	Peristaltic																**0.52**		µg/L	**0.87**		µg/L
			NB-2	Peristaltic																**0.51**		µg/L	**0.62**		µg/L
			NS	Peristaltic																**0.51**		µg/L	**0.89**		µg/L
			NS-2	Peristaltic																**0.56**		µg/L	**0.98**		µg/L
W034	7.5W	SP	NB	Peristaltic																**0.5**		µg/L	**0.84**		µg/L
			NS	Peristaltic																**0.51**		µg/L	**1.02**		µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																**0.53**		µg/L	**1.22**		µg/L
			NS	Peristaltic																**0.78**		µg/L	**1.22**		µg/L
W036	8.6W	SP	NB	Peristaltic																**0.54**		µg/L	**0.65**		µg/L
			NS	Peristaltic																**0.58**		µg/L	**0.68**		µg/L
W037	9.6W	SP	NB	Peristaltic																**0.58**		µg/L	**0.73**		µg/L
			NS	Peristaltic																**0.56**	T	µg/L	**0.55**		µg/L
W038	9.9E	SP	NB	Peristaltic																**0.5**	T	µg/L	**0.6**		µg/L
			NS	Peristaltic																**0.5**	T	µg/L	**0.57**		µg/L

Notes:

AWQC-HH - ambient water quality criteria (human health, Oregon)
MCL - maximum concentration limit (USEPA)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-24a. Total Zinc Data Presented by Station and Sampling Event.

AWQC-HH	2100	µg/L																							
					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**1.65**	T	µg/L	**2.3**	T	µg/L	**3.47**	JT	µg/L												
W002	2.2W	SP	NB	Peristaltic	**1.8**		µg/L																		
			NB-1	Peristaltic				**2**		µg/L	**2.48**	J	µg/L												
			NB-2	Peristaltic				**2**		µg/L	**2.78**	J	µg/L												
W003	3.0W	SP	NB	Peristaltic	**1.8**		µg/L	**2.1**		µg/L	**2.94**	J	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**4.4**		µg/L				**3.28**	J	µg/L												
			NB-1	Peristaltic				**8.8**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													**4.2**		µg/L	***3.8***	U	µg/L	**5.6**		µg/L
			EDI-NS	Peristaltic													**3.4**		µg/L	***3.6***	U	µg/L	**4.2**		µg/L
			EDI-VI	Peristaltic	**2.2**		µg/L	**2.2**		µg/L	**3.12**		µg/L												
			M	Peristaltic										**5.02**		µg/L									
W006	4.0W	SP	NB	Peristaltic	**2.5**		µg/L	**2.5**		µg/L	**3.25**	JT	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**1.95**	T	µg/L	**2.25**	T	µg/L	**3.1**	J	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**2.9**	T	µg/L	**4.8**		µg/L	**6.1**	J	µg/L												
W009	5.6W	SP	NB	Peristaltic	**2.3**		µg/L	**2.3**		µg/L	**3.5**	J	µg/L												
W010	5.7E	SP	NB	Peristaltic	**2.1**		µg/L																		
			VI	Peristaltic				**2.2**		µg/L	**2.8**	J	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																***4***	U	µg/L	**3.9**	T	µg/L
			EDI-NB-1	Peristaltic													**3.7**		µg/L						
			EDI-NS	Peristaltic																***4.1***	U	µg/L	**4.2**		µg/L
			EDI-NS-1	Peristaltic													**2.6**		µg/L						
			EDI-VI	Peristaltic	**2.1**		µg/L	**2.3**		µg/L	**2.83**		µg/L												
W012	6.3W	SP	NB	Peristaltic	**2.1**	T	µg/L	**2.5**		µg/L	**4.3**	J	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**1.65**	T	µg/L	***2.3***	U	µg/L	**2.91**	J	µg/L												
			NB-2	Peristaltic	**1.9**		µg/L	**4.7**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**2.6**		µg/L	**2.3**		µg/L	**3.2**	J	µg/L												
W015	6.9W	SP	NB	Peristaltic	**2**	T	µg/L	**2.9**		µg/L	**2.9**	J	µg/L												
W016	7.2W	SP	NB-1	Peristaltic	**2.1**		µg/L	**2.2**		µg/L	**2.6**	J	µg/L												
			NB-2	Peristaltic	**2**		µg/L																		
W017	7.5W	SP	NB	Peristaltic	**2.4**		µg/L	**2.6**		µg/L	**3.5**	J	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**2**		µg/L	**2.7**		µg/L	**3.34**		µg/L												
W019	8.6W	SP	NB	Peristaltic	**2.2**		µg/L	**2.85**	T	µg/L	**3.72**		µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**3.1**		µg/L	**2.9**		µg/L	**4.56**		µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**3**		µg/L	**2.6**		µg/L	**3.32**		µg/L												
W022	9.7W	SP	NB	Peristaltic	**57.9**		µg/L	**5**		µg/L	**6.77**		µg/L												
W023	10.9M	T	VI-M	Peristaltic													**3.2**		µg/L	***2.7***	U	µg/L	**4.55**	T	µg/L
	11E		VI-E	Peristaltic													**4.5**		µg/L	***4***	U	µg/L	**4**		µg/L
	11M		EDI-VI	Peristaltic	**2.8**		µg/L	**2.2**		µg/L	**2.32**	T	µg/L												
			M	Peristaltic										**6.38**		µg/L									
	11W		VI-W	Peristaltic													**6.1**		µg/L	***2.6***	U	µg/L	**4**		µg/L
W024	15.9M	T	EDI-NB	Peristaltic													**2.4**	T	µg/L	***4.5***	UJT	µg/L	**2.45**	T	µg/L
			EDI-NS	Peristaltic													**2.5**		µg/L	***5.4***	U	µg/L	**2.3**	T	µg/L
			M	Peristaltic										**6.38**		µg/L									
W025	2E	T	VI-E	Peristaltic													**3.35**	T	µg/L	***4.5***	U	µg/L	**3.5**		µg/L
	2M		VI-M	Peristaltic													**2.6**		µg/L	***3.6***	U	µg/L	**1.9**		µg/L
	2W		VI-W	Peristaltic													**3**		µg/L	***3.6***	U	µg/L	**1.85**	T	µg/L
W026	2.1E	SP	NB	Peristaltic																***4.9***	U	µg/L	**3.6**		µg/L
			NS	Peristaltic																***4.3***	U	µg/L	**3.4**		µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																***3.4***	U	µg/L	**6**		µg/L
			EDI-NB-1	Peristaltic													**3.5**		µg/L						
			EDI-NS	Peristaltic																***3.3***	U	µg/L	**4.9**		µg/L
			EDI-NS-1	Peristaltic													**3.4**		µg/L						
W028	3.6E	SP	NB	Peristaltic																***5***	U	µg/L	**3.6**		µg/L
			NS	Peristaltic																***7***	U	µg/L	**4.3**		µg/L
W029	4.4W	SP	NB	Peristaltic																***3.7***	U	µg/L	**3**		µg/L
			NS	Peristaltic																***3.2***	U	µg/L	**3.2**	T	µg/L
W030	5.5E	SP	NB	Peristaltic																***3.7***	U	µg/L	**3.9**		µg/L
			NS	Peristaltic																***3.4***	U	µg/L	**3.3**		µg/L
W031	6.1W	SP	NB	Peristaltic																***3.4***	U	µg/L	**8.4**		µg/L
			NS	Peristaltic																***3.5***	U	µg/L	**3.5**		µg/L
W032	6.7E	SP	NB	Peristaltic																***3.9***	U	µg/L	**4.3**		µg/L
			NS	Peristaltic																***3.3***	U	µg/L	**3.4**	T	µg/L

Table 5.4-24a. Total Zinc Data Presented by Station and Sampling Event.

AWQC-HH	2100	µg/L				Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
						Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W033	7.0W	SP	NB	Peristaltic																***4.6***	U	µg/L	**4.2**		µg/L
			NB-2	Peristaltic																***3***	U	µg/L	**4.5**		µg/L
			NS	Peristaltic																***4.4***	U	µg/L	**4.3**	T	µg/L
			NS-2	Peristaltic																***3.7***	U	µg/L	**3.8**		µg/L
W034	7.5W	SP	NB	Peristaltic																***3.9***	U	µg/L	**3.95**	T	µg/L
			NS	Peristaltic																***3.4***	U	µg/L	**3.5**		µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***6***	U	µg/L	**6.5**		µg/L
			NS	Peristaltic																***4.8***	U	µg/L	**5.6**		µg/L
W036	8.6W	SP	NB	Peristaltic																***4.5***	U	µg/L	**5.5**		µg/L
			NS	Peristaltic																***3.7***	U	µg/L	**5.55**	T	µg/L
W037	9.6W	SP	NB	Peristaltic																***4.7***	U	µg/L	**4.4**		µg/L
			NS	Peristaltic																***3.1***	UT	µg/L	**5.3**		µg/L
W038	9.9E	SP	NB	Peristaltic																***4.6***	UT	µg/L	**4.7**		µg/L
			NS	Peristaltic																***3***	UT	µg/L	**3.3**		µg/L

Notes:

AWQC-HH - ambient water quality criteria (human health, Oregon)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin
Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-24b. Dissolved Zinc Data Presented by Station and Sampling Event.

AWQC-HH	2100	µg/L			Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	**1.4**		µg/L	**1.4**	T	µg/L	***1.21***	UJ	µg/L												
W002	2.2W	SP	NB	Peristaltic	**2.3**		µg/L																		
			NB-1	Peristaltic				**1.2**		µg/L	***1.17***	UJ	µg/L												
			NB-2	Peristaltic				**1.1**		µg/L	***1.46***	UJ	µg/L												
W003	3.0W	SP	NB	Peristaltic	**0.9**		µg/L	**1.8**		µg/L	**1.9**	J	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	**2.5**		µg/L				**1.88**	J	µg/L												
			NB-1	Peristaltic				**4.3**		µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													***1.9***	U	µg/L	***4.1***	U	µg/L	***2.8***	U	µg/L
			EDI-NS	Peristaltic													***2.4***	U	µg/L	***2.3***	U	µg/L	***2.3***	U	µg/L
			EDI-VI	Peristaltic	**1.5**		µg/L	**1.5**		µg/L	**1.79**		µg/L												
			M	Peristaltic										**2.5**		µg/L									
W006	4.0W	SP	NB	Peristaltic	**2.8**		µg/L	**1.8**		µg/L	**2**	J	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	**1.5**		µg/L	**1.7**		µg/L	**2.4**	J	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	**1.9**		µg/L	**4.2**		µg/L	**4.7**	J	µg/L												
W009	5.6W	SP	NB	Peristaltic	**1.7**		µg/L	**1.6**		µg/L	**1.8**	J	µg/L												
W010	5.7E	SP	NB	Peristaltic	**1.7**		µg/L																		
			VI	Peristaltic				**4.7**		µg/L	**2**	J	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																***1.7***	U	µg/L	***2.9***	U	µg/L
			EDI-NB-1	Peristaltic													***2***	U	µg/L						
			EDI-NS	Peristaltic																***2.2***	U	µg/L	***2***	U	µg/L
			EDI-NS-1	Peristaltic													***2***	U	µg/L						
			EDI-VI	Peristaltic	**1.5**		µg/L	**1.9**		µg/L	**1.75**		µg/L												
W012	6.3W	SP	NB	Peristaltic	**1.5**		µg/L	**1.7**		µg/L	**1.8**	J	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	**0.9**	J	µg/L	**1.4**		µg/L	***1.63***	UJ	µg/L												
			NB-2	Peristaltic	***2.2***	U	µg/L	**1.8**		µg/L															
W014	6.7E	SP	VI	Peristaltic	**1.6**		µg/L	**2.1**		µg/L	**2.3**	J	µg/L												
W015	6.9W	SP	NB	Peristaltic	**2.2**		µg/L	**1.8**		µg/L	**1.6**	J	µg/L												
W016	7.2W	SP	NB-1	Peristaltic	***1.4***	U	µg/L	**1.7**		µg/L	**2.15**	J	µg/L												
			NB-2	Peristaltic	***1.6***	U	µg/L																		
W017	7.5W	SP	NB	Peristaltic	**1.6**		µg/L	**1.7**		µg/L	**1.8**	J	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	**4.9**		µg/L	**2.3**		µg/L	**2.67**		µg/L												
W019	8.6W	SP	NB	Peristaltic	**1.6**		µg/L	**1.7**		µg/L	**1.74**		µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	**2.5**		µg/L	**2.5**		µg/L	**1.79**		µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	**3.2**		µg/L	**2**		µg/L	**1.61**		µg/L												
W022	9.7W	SP	NB	Peristaltic	**41.9**		µg/L	**3.7**		µg/L	**2.7**		µg/L												
W023	10.9M	T	VI-M	Peristaltic													***2.1***	U	µg/L	***2.1***	U	µg/L	***1.4***	U	µg/L
	11E		VI-E	Peristaltic													***2.6***	U	µg/L	***3.7***	U	µg/L	***1.7***	U	µg/L
	11M		EDI-VI	Peristaltic	**2.2**		µg/L	**1.4**		µg/L	**2.18**		µg/L												
			M	Peristaltic										***2.1***	U	µg/L									
	11W		VI-W	Peristaltic													***3.2***	U	µg/L	***1.9***	U	µg/L	***2***	U	µg/L
W024	15.9M	T	EDI-NB	Peristaltic													***2***	U	µg/L	***2.1***	UT	µg/L	***0.9***	U	µg/L
			EDI-NS	Peristaltic													***1.7***	U	µg/L	***2.7***	U	µg/L	***0.9***	U	µg/L
			M	Peristaltic										***0.67***	U	µg/L									
W025	2E	T	VI-E	Peristaltic													***2.2***	U	µg/L	***3.8***	U	µg/L	***0.6***	U	µg/L
	2M		VI-M	Peristaltic													***2.7***	U	µg/L	**5.1**		µg/L	***0.8***	U	µg/L
	2W		VI-W	Peristaltic													***7.4***	U	µg/L	***2.7***	U	µg/L	***0.7***	U	µg/L
W026	2.1E	SP	NB	Peristaltic																***2.4***	U	µg/L	***1.3***	U	µg/L
			NS	Peristaltic																***4.4***	U	µg/L	***1.1***	U	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																***3.2***	U	µg/L	***2.2***	U	µg/L
			EDI-NB-1	Peristaltic													***2***	U	µg/L						
			EDI-NS	Peristaltic																***4.1***	U	µg/L	***2.2***	U	µg/L
			EDI-NS-1	Peristaltic													***2.3***	U	µg/L						
W028	3.6E	SP	NB	Peristaltic																***2.2***	U	µg/L	***1.3***	U	µg/L
			NS	Peristaltic																***3.7***	U	µg/L	***1.1***	U	µg/L
W029	4.4W	SP	NB	Peristaltic																***2.8***	U	µg/L	***0.5***	U	µg/L
			NS	Peristaltic																***2.2***	U	µg/L	***0.7***	U	µg/L
W030	5.5E	SP	NB	Peristaltic																***2.6***	U	µg/L	***2***	U	µg/L
			NS	Peristaltic																***2.7***	U	µg/L	***1.9***	U	µg/L
W031	6.1W	SP	NB	Peristaltic																***2.6***	U	µg/L	***2.2***	U	µg/L
			NS	Peristaltic																**5.4**		µg/L	***1.9***	U	µg/L

Table 5.4-24b. Dissolved Zinc Data Presented by Station and Sampling Event.

AWQC-HH	2100	µg/L																							
					Nov-04			Mar-05			Jul-05			Jan-06			Sep-06			Nov-06			Jan-07 - Mar-07		
					Low Flow			Low Flow			Low Flow			High Flow			Low Flow			Storm Water Flow			High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W032	6.7E	SP	NB	Peristaltic																***3.1***	U	µg/L	***1***	U	µg/L
			NS	Peristaltic																***3.9***	U	µg/L	***1.6***	U	µg/L
W033	7.0W	SP	NB	Peristaltic																***2.3***	U	µg/L	***1.8***	U	µg/L
			NB-2	Peristaltic																***3.4***	U	µg/L	***1.5***	U	µg/L
			NS	Peristaltic																***3.5***	U	µg/L	***1.9***	U	µg/L
			NS-2	Peristaltic																***2.6***	U	µg/L	***2***	U	µg/L
W034	7.5W	SP	NB	Peristaltic																***2.9***	U	µg/L	***2.2***	U	µg/L
			NS	Peristaltic																**6.6**		µg/L	***2.5***	U	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***2.4***	U	µg/L	***3.6***	U	µg/L
			NS	Peristaltic																**5.2**		µg/L	***3.2***	U	µg/L
W036	8.6W	SP	NB	Peristaltic																**4.8**		µg/L	***1.5***	U	µg/L
			NS	Peristaltic																***2.5***	U	µg/L	***1.9***	U	µg/L
W037	9.6W	SP	NB	Peristaltic																***2.8***	U	µg/L	***3***	U	µg/L
			NS	Peristaltic																***2.6***	UT	µg/L	***1.3***	U	µg/L
W038	9.9E	SP	NB	Peristaltic																***3.6***	UT	µg/L	***4***	U	µg/L
			NS	Peristaltic																***3.1***	UT	µg/L	***2.1***	U	µg/L

Notes:

AWQC-HH - ambient water quality criteria (human health, Oregon)

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.4-25. TBT Ion Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W001	2.0E	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0026***	U	µg/L	***0.0006***	U	µg/L												
W002	2.2W	SP	NB	Peristaltic	***0.0071***	U	µg/L																		
			NB-1	Peristaltic				***0.0006***	U	µg/L	***0.0006***	U	µg/L												
			NB-2	Peristaltic				***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W003	3.0W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W004	3.7E (International Slip)	SP	NB	Peristaltic	***0.0071***	U	µg/L				***0.0006***	U	µg/L												
			NB-1	Peristaltic				**0.0023**	J	µg/L															
W005	3.9 M	T	EDI-NB	Peristaltic													***0.0006***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L
			EDI-NS	Peristaltic													***0.0006***	UJ	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L
			EDI-VI	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0011***	U	µg/L												
			M	Peristaltic										***0.013***	U	µg/L									
W006	4.0W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	**0.0011**	J	µg/L												
W007	4.4E (T4/slip 1)	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	**0.00099**	J	µg/L												
W008	4.6E (T4/slip 3)	SP	NB	Peristaltic	***0.0071***	U	µg/L	**0.00095**	J	µg/L	**0.0012**	J	µg/L												
W009	5.6W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	**0.0011**	J	µg/L												
W010	5.7E	SP	NB	Peristaltic	***0.0071***	U	µg/L																		
			VI	Peristaltic				***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W011	6.3E	T	EDI-NB	Peristaltic																**0.001**	J	µg/L	***0.0006***	U	µg/L
			EDI-NB-1	Peristaltic													***0.0006***	U	µg/L						
			EDI-NS	Peristaltic																***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
			EDI-NS-1	Peristaltic													***0.0006***	U	µg/L						
			EDI-VI	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.00091***	U	µg/L												
W012	6.3W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W013	6.7E	SP	NB-1	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
			NB-2	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L															
W014	6.7E	SP	VI	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W015	6.9W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W016	7.2W	SP	NB-1	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
			NB-2	Peristaltic	***0.0071***	U	µg/L																		
W017	7.5W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W018	8.3E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0013***	U	µg/L												
W019	8.6W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W020	9.1E (Swan Island Lagoon)	SP	VI	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0011***	U	µg/L												
W021	8.7E (Swan Island Lagoon)	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W022	9.7W	SP	NB	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L												
W023	10.9M	T	VI-M	Peristaltic													***0.0006***	U	µg/L	***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
	11E		VI-E	Peristaltic													***0.0006***	U	µg/L	***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
	11M		EDI-VI	Peristaltic	***0.0071***	U	µg/L	***0.0006***	U	µg/L	***0.0007***	U	µg/L												
			M	Peristaltic										***0.013***	U	µg/L									
	11W		VI-W	Peristaltic													***0.0006***	U	µg/L	***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
W024	15.9M	T	EDI-NB	Peristaltic													***0.0006***	U	µg/L	**0.011**	J	µg/L	***0.0006***	U	µg/L
			EDI-NS	Peristaltic													***0.0006***	U	µg/L	***0.0006***	U	µg/L	***0.0006***	U	µg/L
			M	Peristaltic										***0.013***	U	µg/L									
W025	2E	T	VI-E	Peristaltic													***0.0006***	U	µg/L	***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
	2M		VI-M	Peristaltic													***0.0006***	U	µg/L	***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
	2W		VI-W	Peristaltic													***0.0006***	U	µg/L	***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
W026	2.1E	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
W027	2.9W (Multnomah Channel)	T	EDI-NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			EDI-NB-1	Peristaltic													***0.0006***	U	µg/L						
			EDI-NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			EDI-NS-1	Peristaltic													***0.0006***	U	µg/L						
W028	3.6E	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
W029	4.4W	SP	NB	Peristaltic																***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
W030	5.5E	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L

Table 5.4-25. TBT Ion Data Presented by Station and Sampling Event.

					Nov-04 Low Flow			Mar-05 Low Flow			Jul-05 Low Flow			Jan-06 High Flow			Sep-06 Low Flow			Nov-06 Storm Water Flow			Jan-07 - Mar-07 High Flow		
Sample	River Location	Collection Type	Collection Location	Collection Method	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units	Value	Qualifier	Units
W031	6.1W	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
W032	6.7E	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
W033	7.0W	SP	NB	Peristaltic																***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
			NB-2	Peristaltic																***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
			NS-2	Peristaltic																**0.0013**	J	µg/L	***0.0006***	U	µg/L
W034	7.5W	SP	NB	Peristaltic																***0.0045***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
W035	8.5E (Swan Island Lagoon)	SP	NB	Peristaltic																***0.0006***	U	µg/L	**0.0035**	J	µg/L
			NS	Peristaltic																**0.0014**	J	µg/L	**0.0021**	J	µg/L
W036	8.6W	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	UJ	µg/L	***0.0006***	U	µg/L
W037	9.6W	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
W038	9.9E	SP	NB	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L
			NS	Peristaltic																***0.0006***	U	µg/L	***0.0006***	U	µg/L

Notes:

C - column
E - East
EDI - equal distance integrated
F - filter
M - mid-channel
NB - near bottom
SP - single point
T - transect
VI - vertically integrated
W - West
XAD - hydrophobic crosslinked polystyrene copolymer resin

Bold font indicates combined column plus filter results.
Italicized font indicates result is not detected at the concentration shown.

Reason codes for qualifiers:

J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Table 5.5-1. Summary Statistics for Indicator Contaminants in Transition Zone Water, Differentiated by Sample Method, Filtration, and Sample Depth.

								Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**Sample Method**	**Filtration**	**Sample Depth (cm bml)**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Conventionals																			
Total organic carbon	mg/L	GeoProbe	unfiltered	91	21	21	100	2.38	95.5	GP67	13.2	6.47	30.5	2.38	95.5	GP67	13.2	6.47	30.5
Metals																			
Arsenic	µg/L	Peeper	n/a	0-38	39	37	95	0.3 J	17.2	W04CPR	6.13	5.9 J	14.4 J	0.2 U	17.2	W04CPR	5.82	5.76 T	14.3 J
Arsenic	µg/L	Trident	filtered	0-30	60	55	92	0.55	76.8	EM03ATR	13.3	8.55	38.1	0.21 U	76.8	EM03ATR	12.2	7.97	33.3
Arsenic	µg/L	Trident	unfiltered	0-30	64	61	95	0.72	51.2 T	W12ATR	11.8	8.56	32 T	0.5 U	51.2 T	W12ATR	11.2	7.54	31.5
Arsenic	µg/L	Trident	filtered	60-150	12	12	100	0.98	77.3 T	EM03ATR	17.6	12.3	51.5	0.98	77.3 T	EM03ATR	17.6	12.3	51.5
Arsenic	µg/L	Trident	unfiltered	60-150	24	23	96	1.36	77.1	EM03ATR	16.5	9.53	70.4	0.31 U	77.1	EM03ATR	15.8	9.08	68.2
Arsenic	µg/L	GeoProbe	filtered	0-90	4	4	100	0.94	5.52	GS-B5	2.74	2.25	5.05	0.94	5.52	GS-B5	2.74	2.25	5.05
Arsenic	µg/L	GeoProbe	unfiltered	0-90	35	22	63	0.77	65.4 J	GS-D3	20	16.1 J	45.2 J	0.77	65.4 J	GS-D3	16.3	10 U	41.1 J
Chromium	µg/L	Peeper	n/a	0-38	39	17	44	0.92	31.6	CP07B	4.56	1.23	24.2	0.14 U	31.6	CP07B	2.21	0.435 U	5.12 J
Chromium	µg/L	Trident	filtered	0-30	62	34	55	0.2 J	98.3	CP07B	7.08	0.72	39.4	0.09 U	98.3	CP07B	4.07	0.44	7.32
Chromium	µg/L	Trident	unfiltered	0-30	65	45	69	0.79	122	CP07B	11.8	5.11	30.8 J	0.3 U	122	CP07B	8.4	3.36	26.4
Chromium	µg/L	Trident	filtered	60-150	13	7	54	0.36	49.6	CP07B	7.87	0.98	35.1	0.28 U	49.6	CP07B	4.34	0.39 U	20.7
Chromium	µg/L	Trident	unfiltered	60-150	25	20	80	0.8	102	CP07B	15.5	8.08	31.2	0.78 UJ	102	CP07B	12.5	6.1	27.1
Chromium	µg/L	GeoProbe	filtered	0-90	4	3	75	0.45	0.69	GS-B5	0.55	0.51 J	0.672 J	0.03 UJ	0.69	GS-B5	0.416	0.48 J	0.663 J
Chromium	µg/L	GeoProbe	unfiltered	0-90	35	35	100	2.07	537	GS-B9	104	46.3	381 J	2.07	537	GS-B9	104	46.3	381 J
Copper	µg/L	Peeper	n/a	0-38	39	5	13	1.63	22.1	CP07DPR	6.23	2.44	18.3	0.17 UJ	22.1	CP07DPR	1.58	0.585 UJ	3.08 UJ
Copper	µg/L	Trident	filtered	0-30	50	10	20	0.36 T	3.63	R2RP03TR	1.19	0.97 J	2.71	0.08 U	3.63	R2RP03TR	0.405	0.23 U	1.19
Copper	µg/L	Trident	unfiltered	0-30	53	35	66	1.54	63.1	EM02CTR	15.2	9.07	45.9 J	0.34 U	63.1	EM02CTR	10.4	4.6	41.6 J
Copper	µg/L	Trident	filtered	60-150	12	6	50	0.24	1.89 J	R2AR02TR	1	0.95 J	1.75 J	0.24	1.89 J	R2AR02TR	0.659	0.455 U	1.58 J
Copper	µg/L	Trident	unfiltered	60-150	18	13	72	1.79	43.7	SL03FTR	17.5	12.7	39	0.83 U	43.7	SL03FTR	13.7	10.9	37
Copper	µg/L	GeoProbe	filtered	0-90	4	4	100	0.28	0.79	GS-B2	0.505	0.475	0.772	0.28	0.79	GS-B2	0.505	0.475	0.772
Copper	µg/L	GeoProbe	unfiltered	0-90	35	29	83	1.01 J	555	GS-B9	139	47.5	476	1.01 J	555	GS-B9	116	18.8	472
Zinc	µg/L	Peeper	n/a	0-38	39	18	46	7.11 JT	418	R2CP01PR	48.9	10.8 J	219 J	1.51 UJ	418	R2CP01PR	23.4	2.53 UJ	104 J
Zinc	µg/L	Trident	filtered	0-30	60	32	53	0.95 T	526	R2AR01TR	20.8	3.77	12	0.75 UJ	526	R2AR01TR	11.6	2.04 J	9.97
Zinc	µg/L	Trident	unfiltered	0-30	64	39	61	7.81 J	556 T	R2AR01TR	52.4	22.9	116 J	2.28 UJ	556 T	R2AR01TR	33.4	13.4 J	105
Zinc	µg/L	Trident	filtered	60-150	12	6	50	1.87 J	9.78	R2AR02TR	4.95	4.3	9.21	1.6 U	9.78	R2AR02TR	3.1	1.93 J	8.52
Zinc	µg/L	Trident	unfiltered	60-150	24	17	71	18.6 J	161	CP07BTR	63.9	46.6	124	2.98 U	161	CP07BTR	46.3	35.4	114
Zinc	µg/L	GeoProbe	filtered	0-90	4	4	100	2.93	22.5	GS-B5	8.47	4.22	19.8	2.93	22.5	GS-B5	8.47	4.22	19.8
Zinc	µg/L	GeoProbe	unfiltered	0-90	35	34	97	8.3	3590	GS-B4	528	184	1530	8.3	3590	GS-B4	513	179	1530
PCDD/Fs Homologs																			
Total PCDD/Fs	pg/L	Trident	filtered	0-30	3	1	33	0.865 T	0.865 T	RP07BTR	0.865	0.865 T	0.865 T	0.865 T	10.2 UT	RP03CTR	3.24	3.74 UT	4.98 U
Total PCDD/Fs	pg/L	Trident	unfiltered	0-30	3	2	67	29 T	51.3 T	RP07BTR	40.2	40.2	50.2	29 T	222 UT	RP03CTR	63.7	51.3 T	105
PCDD/Fs																			
TCDD TEQ (ND = 0)	pg/L	Trident	filtered	0-30	3	0	0	--	--	--	--	--	--	0.363 UT	2.48 UT	RP03CTR	0.551	0.233 UT	1.14 U
TCDD TEQ (ND = 0)	pg/L	Trident	unfiltered	0-30	3	2	67	1.32 JT	1.72 JT	RP07BTR	1.52	1.52 J	1.7 J	1.32 JT	2.78 UT	RP03CTR	1.48	1.39 UT	1.69 J
Pesticides																			
DDx	µg/L	Peeper	n/a	0-38	8	2	25	0.0135 NJA	0.032 NJA	AP03B-1	0.0228	0.0228 J	0.0311 J	0.0077 UT	0.032 NJA	AP03B-1	0.0105	0.00825 UJ	0.0255 J
DDx	µg/L	Trident	filtered	0-30	8	5	62	0.0084 NJA	0.158 NJT	RP03CTR	0.0543	0.036 JT	0.134 J	0.0042 UA	0.158 NJT	RP03CTR	0.0369	0.0233 J	0.117 J
DDx	µg/L	Trident	unfiltered	0-30	10	10	100	0.0075 JA	3.05 JT	AP03ATR	1.33	1.44 J	2.77 J	0.0075 JA	3.05 JT	AP03ATR	1.33	1.44 J	2.77 J
DDx	µg/L	Trident	filtered	60-150	1	1	100	0.179 JT	0.179 JT	RP03CTR	0.179	0.179 JT	0.179 JT	0.179 JT	0.179 JT	RP03CTR	0.179	0.179 JT	0.179 JT
DDx	µg/L	Trident	unfiltered	60-150	4	4	100	0.169 JT	5.73 JT	AP03ATR	2.42	1.89 J	5.41 J	0.169 JT	5.73 JT	AP03ATR	2.42	1.89 J	5.41 J
PAHs																			
Total PAHs	µg/L	Peeper	n/a	0-38	24	24	100	0.105 JT	300 JT	GS01BPR	40.1	8.5 J	177 J	0.105 JT	300 JT	GS01BPR	40.1	8.5 J	177 J
Total PAHs	µg/L	Trident	filtered	0-30	39	37	95	0.0031 JT	1200 JT	GS02ATR	77.5	1.97 JT	316 J	0.0031 JT	1200 JT	GS02ATR	73.5	1.7 JT	205 J
Total PAHs	µg/L	Trident	unfiltered	0-30	42	39	93	0.0025 JT	3490 T	GS07BTR	178	6.01 JT	1200 J	0.0025 JT	3490 T	GS07BTR	165	4.55 J	1140 J
Total PAHs	µg/L	Trident	filtered	60-150	4	4	100	0.182 JT	15.8 JT	EM03ATR	4.34	0.69 J	13.6 J	0.182 JT	15.8 JT	EM03ATR	4.34	0.69 J	13.6 J
Total PAHs	µg/L	Trident	unfiltered	60-150	10	10	100	0.61 T	430 T	GS08DTR	90.5	14.9 J	346	0.61 T	430 T	GS08DTR	90.5	14.9 J	346
Total PAHs	µg/L	GeoProbe	unfiltered	0-90	35	35	100	0.093 JA	15100 JA	GP73	2290	170 T	12800 J	0.093 JA	15100 JA	GP73	2290	170 T	12800 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

-- data not available
bml - below mud line
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalence

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.5-2. Summary Statistics for Indicator Contaminants in Seeps.

							Detected Concentrations					Detected and Not Detected Concentrations				
Analyte	**Units**	**Seep ID**	**Fraction**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Metals																
Arsenic	µg/L	WLCGND05SEEP01	total	2	1	50	1.15	1.15	1.15	1.15	1.15	1 U	1.15	0.825	0.825	1.12
Arsenic	µg/L	WLCGND05SEEP02	total	2	2	100	4.79	6.03	5.41	5.41	5.97	4.79	6.03	5.41	5.41	5.97
Arsenic	µg/L	WLCGND05SEEP03	total	2	2	100	1.92	46.6	24.3	24.3	44.4	1.92	46.6	24.3	24.3	44.4
Arsenic	µg/L	WLCRPI04OF22B	total	2	2	100	5.76 J	8.1 J	6.93	6.93 J	7.98 J	5.76 J	8.1 J	6.93	6.93 J	7.98 J
Arsenic	µg/L	WLCRPI04OF22C	total	4	1	25	1.14 J	1.14 J	1.14	1.14 J	1.14 J	0.964 U	1.14 J	0.651	0.491 U	1.04 J
Arsenic	µg/L	WLCRPI04OF22B	dissolved	1	1	100	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
Arsenic	µg/L	WLCRPI04OF22C	dissolved	2	0	0	--	--	--	--	--	0.964 U	0.964 U	0.482	0.482 U	0.482 U
Chromium	µg/L	WLCGND05SEEP01	total	2	2	100	2.32	2.44	2.38	2.38	2.43	2.32	2.44	2.38	2.38	2.43
Chromium	µg/L	WLCGND05SEEP02	total	2	2	100	25.2	41.4	33.3	33.3	40.6	25.2	41.4	33.3	33.3	40.6
Chromium	µg/L	WLCGND05SEEP03	total	2	2	100	1.94	46.5	24.2	24.2	44.3	1.94	46.5	24.2	24.2	44.3
Chromium	µg/L	WLCRPI04OF22B		2	1	50	1.22 J	1.22 J	1.22	1.22 J	1.22 J	1.22 J	1.31 U	0.938	0.938 J	1.19 J
Chromium	µg/L	WLCRPI04OF22C	total	4	2	50	0.97	3.39	2.18	2.18	3.27	0.0354 U	3.39	1.18	0.665	3.03
Chromium	µg/L	WLCRPI04OF22B	dissolved	1	0	0	--	--	--	--	--	0.72 U	0.72 U	0.36	0.36 U	0.36 U
Chromium	µg/L	WLCRPI04OF22C	dissolved	2	1	50	1.25	1.25	1.25	1.25	1.25	0.791 U	1.25	0.823	0.823	1.21
Copper	µg/L	WLCGND05SEEP01	total	2	2	100	32.5	140	86.3	86.3	135	32.5	140	86.3	86.3	135
Copper	µg/L	WLCGND05SEEP02	total	2	2	100	241	373	307	307	366	241	373	307	307	366
Copper	µg/L	WLCGND05SEEP03	total	2	2	100	5.44	1510	758	758	1430	5.44	1510	758	758	1430
Copper	µg/L	WLCRPI04OF22B	total	2	2	100	2.07	11.6	6.84	6.84	11.1	2.07	11.6	6.84	6.84	11.1
Copper	µg/L	WLCRPI04OF22C	total	4	4	100	0.81	45	13	3.03	38.7	0.81	45	13	3.03	38.7
Copper	µg/L	WLCRPI04OF22B	dissolved	1	0	0	--	--	--	--	--	0.788 U	0.788 U	0.394	0.394 U	0.394 U
Copper	µg/L	WLCRPI04OF22C	dissolved	2	2	100	1.79	2.58	2.19	2.19	2.54	1.79	2.58	2.19	2.19	2.54
Zinc	µg/L	WLCGND05SEEP01	total	2	2	100	215	573	394	394	555	215	573	394	394	555
Zinc	µg/L	WLCGND05SEEP02	total	2	2	100	1170	1450	1310	1310	1440	1170	1450	1310	1310	1440
Zinc	µg/L	WLCGND05SEEP03	total	2	2	100	787	2060	1420	1420	2000	787	2060	1420	1420	2000
Zinc	µg/L	WLCRPI04OF22B	total	2	2	100	6.82 J	24.9	15.9	15.9 J	24 J	6.82 J	24.9	15.9	15.9 J	24 J
Zinc	µg/L	WLCRPI04OF22C	total	4	3	75	2.87 J	13.9	7.88	6.87	13.2	2.87 J	13.9	6.87	5.35	12.8
Zinc	µg/L	WLCRPI04OF22B	dissolved	1	1	100	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34
Zinc	µg/L	WLCRPI04OF22C	dissolved	2	1	50	5.21	5.21	5.21	5.21	5.21	5.21	11.9 U	5.58	5.58	5.91
PCBs[c]																
Total PCBs	µg/L	WLCGND05SEEP01	total	2	0	0	--	--	--	--	--	1 UT	1 UT	0.5	0.5 U	0.5 U
Total PCBs	µg/L	WLCGND05SEEP02	total	2	2	100	0.602 T	0.828 T	0.715	0.715	0.817	0.602 T	0.828 T	0.715	0.715	0.817
Total PCBs	µg/L	WLCRPI04OF22B	total	1	0	0	--	--	--	--	--	0.5 UT	0.5 UT	0.25	0.25 UT	0.25 UT
PCDD/Fs Homologs																
Total PCDD/Fs	pg/L	WLCRPI04OF22B	total	1	1	100	177 T	177 T	177	177 T	177 T	177 T	177 T	177	177 T	177 T
Total PCDD/Fs	pg/L	WLCRPI04OF22C	total	3	2	67	186 T	243 JT	215	215 J	240 J	12 UT	243 JT	145	186 T	237 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/L	WLCRPI04OF22B	total	2	1	50	0.042 T	0.042 T	0.042	0.042 T	0.042 T	0.042 T	12 UT	3.02	3.02	5.7
TCDD TEQ (ND = 0)	pg/L	WLCRPI04OF22C	total	4	2	50	0.244 JT	0.355 JT	0.3	0.3 J	0.349 J	0.244 JT	12 UT	2.76	2.4 J	5.77 U
Pesticides																
Aldrin	µg/L	WLCRPI04OF22B	total	3	1	33	0.00407	0.00407	0.00407	0.00407	0.00407	0.00407	0.05 U	0.018	0.025 U	0.025 U
Aldrin	µg/L	WLCRPI04OF22C	total	4	0	0	--	--	--	--	--	0.00112 U	0.05 U	0.00854	0.00431 U	0.0222 U
Dieldrin	µg/L	WLCRPI04OF22B	total	3	0	0	--	--	--	--	--	0.00307 U	0.1 U	0.0255	0.025 U	0.0475 U
Dieldrin	µg/L	WLCRPI04OF22C	total	4	0	0	--	--	--	--	--	0.00295 U	0.05 U	0.00877	0.00431 U	0.0222 U
Total chlordanes	µg/L	WLCRPI04OF22B	total	1	0	0	--	--	--	--	--	0.05 UA	0.05 UA	0.025	0.025 UA	0.025 UA
Total chlordanes	µg/L	WLCRPI04OF22C	total	3	0	0	--	--	--	--	--	0.00472 UA	0.05 UA	0.0112	0.00625 UA	0.0231 U
DDx	µg/L	WLCRPI04OF22B	total	2	0	0	--	--	--	--	--	0.05 UA	0.1 UA	0.0375	0.0375 U	0.0488 U
DDx	µg/L	WLCRPI04OF22C	total	4	0	0	--	--	--	--	--	0.00472 UA	0.05 UA	0.00901	0.00435 U	0.0222 U
PAHs																
Total PAHs	µg/L	WLCGND05SEEP01	total	1	0	0	--	--	--	--	--	0.2 UA	0.2 UA	0.1	0.1 UA	0.1 UA
Total PAHs	µg/L	WLCGND05SEEP02	total	2	2	100	3.19 JA	4.53 JA	3.86	3.86 J	4.46 J	3.19 JA	4.53 JA	3.86	3.86 J	4.46 J
Total PAHs	µg/L	WLCRPI04OF22B	total	2	2	100	0.4 T	1.09 NJT	0.744	0.744 J	1.05 J	0.4 T	1.09 NJT	0.744	0.744 J	1.05 J
Total PAHs	µg/L	WLCRPI04OF22C	total	4	4	100	0.745 T	44.4 JT	23.2	23.8 J	42.5 J	0.745 T	44.4 JT	23.2	23.8 J	42.5 J

Table 5.5-2. Summary Statistics for Indicator Contaminants in Seeps.

							Detected Concentrations					Detected and Not Detected Concentrations				
Analyte	**Units**	**Seep ID**	**Fraction**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/L	WLCGND05SEEP01	total	2	0	0	--	--	--	--	--	0.5 U	0.5 U	0.25	0.25 U	0.25 U
Bis(2-ethylhexyl) phthalate	µg/L	WLCGND05SEEP02	total	2	2	100	0.527	1.65	1.09	1.09	1.59	0.527	1.65	1.09	1.09	1.59
Bis(2-ethylhexyl) phthalate	µg/L	WLCGND05SEEP03	total	2	1	50	2.74	2.74	2.74	2.74	2.74	0.5 U	2.74	1.5	1.5	2.62
Bis(2-ethylhexyl) phthalate	µg/L	WLCRPI04OF22B	total	2	0	0	--	--	--	--	--	0.644 U	10 U	2.66	2.66 U	4.77 U
Bis(2-ethylhexyl) phthalate	µg/L	WLCRPI04OF22C	total	3	0	0	--	--	--	--	--	0.624 U	10 U	3.44	5 U	5 U

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent concentration

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Black crappie (fillet)																
Conventionals																
Lipids	percent	4	4	100	0.99	1.8	FZ0306	1.4	1.4	1.77	0.99	1.8	FZ0306	1.4	1.4	1.77
Metals																
Arsenic	mg/kg-Wet	4	4	100	0.1 J	0.18 T	FZ0609	0.14	0.14	0.176	0.1 J	0.18 T	FZ0609	0.14	0.14	0.176
Chromium	mg/kg-Wet	4	2	50	0.14	0.28	FZ0306	0.21	0.21	0.273	0.06 U	0.28	FZ0306	0.12	0.085	0.259
Copper	mg/kg-Wet	4	4	100	0.166	0.184	FZ0306; FZ0609	0.178	0.181	0.184	0.166	0.184	FZ0306; FZ0609	0.178	0.181	0.184
Zinc	mg/kg-Wet	4	4	100	7.45	9.03	FZ0306	8.23	8.22	8.98	7.45	9.03	FZ0306	8.23	8.22	8.98
PCBs[c]																
Total PCBs	µg/kg-Wet	4	4	100	19.6 T	32 T	FZ0609	24.1	22.4	30.6	19.6 T	32 T	FZ0609	24.1	22.4	30.6
Pesticides																
Aldrin	µg/kg-Wet	4	0	0	--	--	--	--	--	--	1 U	1 U	FZ0306; FZ0609	0.5	0.5 U	0.5 U
Dieldrin	µg/kg-Wet	4	0	0	--	--	--	--	--	--	1 U	1 U	FZ0306; FZ0609	0.5	0.5 U	0.5 U
Total chlordanes	µg/kg-Wet	4	1	25	1.1 NJT	1.1 NJT	FZ0306	1.1	1.1 NJT	1.1 NJT	1.1 NJT	1.6 UT	FZ0609	0.813	0.775 U	1.06 J
DDx	µg/kg-Wet	4	4	100	8.8 JT	13.7 NJT	FZ0609	11.4	11.5 J	13.5 J	8.8 JT	13.7 NJT	FZ0609	11.4	11.5 J	13.5 J
Black crappie (whole body)																
Conventionals																
Lipids	percent	4	4	100	3.33 T	7.5 T	FZ0609	5.26	5.1	7.35	3.33 T	7.5 T	FZ0609	5.26	5.1	7.35
Metals																
Arsenic	mg/kg-Wet	4	4	100	0.185 T	0.42	FZ0609	0.279	0.255	0.401	0.185 T	0.42	FZ0609	0.279	0.255	0.401
Chromium	mg/kg-Wet	4	0	0	--	--	--	--	--	--	0.08 U	0.09 U	FZ0609	0.0413	0.04 U	0.0443 U
Copper	mg/kg-Wet	4	4	100	0.688	0.946	FZ0306	0.82	0.822	0.943	0.688	0.946	FZ0306	0.82	0.822	0.943
Zinc	mg/kg-Wet	4	4	100	14.2 T	16.8	FZ0609	15.4	15.3	16.6	14.2 T	16.8	FZ0609	15.4	15.3	16.6
PCBs[c]																
Total PCBs	µg/kg-Wet	4	4	100	103 JT	301 JT	FZ0609	164	126 J	278 J	103 JT	301 JT	FZ0609	164	126 J	278 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	4	4	100	7.67 T	16.1 T	FZ0306	10.7	9.45	15.3	7.67 T	16.1 T	FZ0306	10.7	9.45	15.3
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	4	4	100	1.1 JT	1.26 JT	FZ0306	1.18	1.18	1.25 J	1.1 JT	1.26 JT	FZ0306	1.18	1.18	1.25 J
Pesticides																
Aldrin	µg/kg-Wet	4	0	0	--	--	--	--	--	--	1 UJ	1.3 U	FZ0609	0.538	0.5 U	0.628 U
Dieldrin	µg/kg-Wet	4	1	25	2.5 NJ	2.5 NJ	FZ0609	2.5	2.5 NJ	2.5 NJ	1.8 U	14 UT	FZ0609	2.84	1.73 J	6.33 J
Total chlordanes	µg/kg-Wet	4	4	100	2.1 NJT	9.2 NJT	FZ0306	6.33	7 J	9.16 J	2.1 NJT	9.2 NJT	FZ0306	6.33	7 J	9.16 J
DDx	µg/kg-Wet	4	4	100	59.2 NJT	99.6 NJT	FZ0609	80.2	81 J	99.5 J	59.2 NJT	99.6 NJT	FZ0609	80.2	81 J	99.5 J
Brown bullhead (fillet without skin)																
Conventionals																
Lipids	percent	6	6	100	0.93	1.3	FZ0306	1.08	1.04	1.28	0.93	1.3	FZ0306	1.08	1.04	1.28
Metals																
Arsenic	mg/kg-Wet	6	6	100	0.02 J	0.02 J	FZ0306; FZ0609	0.02	0.02 J	0.02 J	0.02 J	0.02 J	FZ0306; FZ0609	0.02	0.02 J	0.02 J
Chromium	mg/kg-Wet	6	3	50	0.05 J	0.23	FZ0306	0.12	0.08 J	0.215 J	0.05 U	0.23	FZ0306	0.0733	0.04 J	0.193 J
Copper	mg/kg-Wet	6	6	100	0.203	0.292	FZ0306	0.251	0.252	0.283	0.203	0.292	FZ0306	0.251	0.252	0.283
Zinc	mg/kg-Wet	6	6	100	3.96 J	6.49 J	FZ0306	5.23	5.32 J	6.25 J	3.96 J	6.49 J	FZ0306	5.23	5.32 J	6.25 J
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	37 T	1300 JT	FZ0609	354	86.5	1120 J	37 T	1300 JT	FZ0609	354	86.5	1120 J
Pesticides																
Aldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	1 U	13 UT	FZ0609	1.75	0.5 U	5.38 U
Dieldrin	µg/kg-Wet	6	1	17	2.1 NJ	2.1 NJ	FZ0306	2.1	2.1 NJ	2.1 NJ	1 U	14 UT	FZ0609	2.1	1.25 U	5.78 J
Total chlordanes	µg/kg-Wet	6	4	67	1.2 NJT	1.6 NJT	FZ0306; FZ0609	1.43	1.45 J	1.6 J	1.2 NJT	20 UT	FZ0609	2.95	1.6 J	8 U
DDx	µg/kg-Wet	6	6	100	12 JT	26.5 JT	FZ0609	20.9	21.4 J	26.4 J	12 JT	26.5 JT	FZ0609	20.9	21.4 J	26.4 J
PAHs																
Total PAHs	µg/kg-Wet	6	2	33	110 JT	250 T	FZ0306	180	180 J	243 J	33 UT	250 T	FZ0306	79	40.5 U	215 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	6	1	17	100 T	100 T	FZ0306	100	100 T	100 T	100 UT	220 UT	FZ0609	68.3	50 U	108
Brown bullhead (whole body)																
Conventionals																
Lipids	percent	6	6	100	1.5 T	3.8	FZ0609	2.43	2.35	3.5	1.5 T	3.8	FZ0609	2.43	2.35	3.5

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Metals																
Arsenic	mg/kg-Wet	6	6	100	0.04 J	0.08 J	FZ0609	0.0558	0.055 J	0.075 J	0.04 J	0.08 J	FZ0609	0.0558	0.055 J	0.075 J
Chromium	mg/kg-Wet	6	6	100	0.39	1.32	FZ0306	0.73	0.565	1.26	0.39	1.32	FZ0306	0.73	0.565	1.26
Copper	mg/kg-Wet	6	6	100	0.586	0.798	FZ0609	0.69	0.691	0.792	0.586	0.798	FZ0609	0.69	0.691	0.792
Zinc	mg/kg-Wet	6	6	100	12.7	15.6	FZ0609	14.1	14.3	15.4	12.7	15.6	FZ0609	14.1	14.3	15.4
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	83.3 JT	1950 JT	FZ0609	511	251 J	1550 J	83.3 JT	1950 JT	FZ0609	511	251 J	1550 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	6	6	100	12.2 T	17.8 T	FZ0609	14.2	13.6	17.3	12.2 T	17.8 T	FZ0609	14.2	13.6	17.3
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	6	6	100	1.29 JT	2.12 JT	FZ0609	1.58	1.53	2.02 J	1.29 JT	2.12 JT	FZ0609	1.58	1.53	2.02 J
Pesticides																
Aldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	1 U	13 UT	FZ0609	1.75	0.5 U	5.38 U
Dieldrin	µg/kg-Wet	6	2	33	1.2 NJ	2.6 NJ	FZ0306	1.9	1.9 J	2.53 J	1.2 NJ	14 UT	FZ0609	2.48	1.6 J	5.9 J
Total chlordanes	µg/kg-Wet	6	4	67	1.8 NJT	67 T	FZ0306	20	5.5 J	58 J	1.8 NJT	67 T	FZ0306	15.7	5.85 J	52.8
DDx	µg/kg-Wet	6	6	100	37.5 JT	141 NJT	FZ0609	85.6	92.8 J	131 J	37.5 JT	141 NJT	FZ0609	85.6	92.8 J	131 J
PAHs																
Total PAHs	µg/kg-Wet	6	1	17	100 T	100 T	FZ0306	100	100 T	100 T	33 UT	100 T	FZ0306	32.8	19.8 U	81.1
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	6	1	17	2700 T	2700 T	FZ0306	2700	2700 T	2700 T	98 UT	2700 T	FZ0306	491	49.5 U	2040
Carp (fillet)																
Conventionals																
Lipids	percent	12	12	100	3.3 T	9.31	CP0408	5.49	5.19	8.59	3.3 T	9.31	CP0408	5.49	5.19	8.59
Metals																
Arsenic	mg/kg-Wet	12	12	100	0.04 J	0.16	FZ0306	0.0825	0.0725 J	0.138 J	0.04 J	0.16	FZ0306	0.0825	0.0725 J	0.138 J
Chromium	mg/kg-Wet	12	4	33	0.12 J	1.49	FZ0306	0.628	0.45	1.37	0.07 U	1.49	FZ0306	0.239	0.05 U	1.06
Copper	mg/kg-Wet	12	12	100	0.313	0.566	CP0812	0.423	0.425	0.528	0.313	0.566	CP0812	0.423	0.425	0.528
Zinc	mg/kg-Wet	12	12	100	17.4 J	31	CP0408	25	24.6 J	30.3 J	17.4 J	31	CP0408	25	24.6 J	30.3 J
Butyltins																
Tributyltin ion	µg/kg-Wet	6	5	83	3.7 J	11	CP0812	5.82	4 JT	10.1	1.8 U	11	CP0812	5	3.9 J	9.9
PCBs[c]																
Total PCBs	µg/kg-Wet	12	12	100	265 JT	19700 JT	CP0408	2230	566 J	9520 J	265 JT	19700 JT	CP0408	2230	566 J	9520 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	6	6	100	23.1 JT	43.8 JT	CP0408	32.8	31.9 J	43.4 J	23.1 JT	43.8 JT	CP0408	32.8	31.9 J	43.4 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	6	6	100	2.07 JT	4.37 JT	CP0408	3.16	3.08 J	4.33 J	2.07 JT	4.37 JT	CP0408	3.16	3.08 J	4.33 J
Pesticides																
Aldrin	µg/kg-Wet	12	6	50	0.0541 JT	0.119 J	CP0408	0.0946	0.103 J	0.118 J	0.0541 JT	13 UT	FZ0609	1.66	1.06 J	5.62 U
Dieldrin	µg/kg-Wet	12	6	50	1.29 T	2.3	CP0408	1.58	1.48	2.13	1.29 T	14 UT	FZ0609	2.64	2 UJ	5.85 U
Total chlordanes	µg/kg-Wet	12	7	58	4.3 NJT	12 T	CP0408	8.91	8.74 JT	11.9 J	4.3 NJT	20 UJT	FZ0609	7.9	8.57 J	11.7 J
DDx	µg/kg-Wet	12	12	100	47.3 JT	494 T	CP0408	166	155 J	360	47.3 JT	494 T	CP0408	166	155 J	360
PAHs																
Total PAHs	µg/kg-Wet	6	6	100	11 T	140 T	CP0408	52.3	29.5	128	11 T	140 T	CP0408	52.3	29.5	128
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	6	0	0	--	--	--	--	--	--	66 U	66 U	CP0408; CP0812	33	33 U	33 U
Carp (body without fillet)																
Conventionals																
Lipids	percent	6	6	100	8.86	12.8	CP0408	10.2	9.57	12.3	8.86	12.8	CP0408	10.2	9.57	12.3
Metals																
Arsenic	mg/kg-Wet	6	5	83	0.086 J	0.136 JT	CP0408	0.106	0.094 J	0.134 J	0.063 U	0.136 JT	CP0408	0.0936	0.091 J	0.134 J
Chromium	mg/kg-Wet	6	6	100	0.3	1.09 T	CP0408	0.748	0.838	1.04	0.3	1.09 T	CP0408	0.748	0.838	1.04
Copper	mg/kg-Wet	6	6	100	1.02	1.53 T	CP0408	1.31	1.31	1.51	1.02	1.53 T	CP0408	1.31	1.31	1.51
Zinc	mg/kg-Wet	6	6	100	89.9 T	147	CP0408	115	117	142	89.9 T	147	CP0408	115	117	142
Butyltins																
Tributyltin ion	µg/kg-Wet	6	6	100	4.3 J	9.8 T	CP0812	6.4	6.2 J	9.25	4.3 J	9.8 T	CP0812	6.4	6.2 J	9.25
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	405 JT	27100 JT	CP0408	5230	652 J	20800 J	405 JT	27100 JT	CP0408	5230	652 J	20800 J

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	6	6	100	41.8 JT	108 T	CP0408	72.7	64.4	105	41.8 JT	108 T	CP0408	72.7	64.4	105
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	6	6	100	3.51 JT	6.99 JT	CP0408	5.27	5.17 J	6.98 J	3.51 JT	6.99 JT	CP0408	5.27	5.17 J	6.98 J
Pesticides																
Aldrin	µg/kg-Wet	6	6	100	0.0839 J	0.185 J	CP0812	0.153	0.171 J	0.183 J	0.0839 J	0.185 J	CP0812	0.153	0.171 J	0.183 J
Dieldrin	µg/kg-Wet	6	6	100	2.14	3.22	CP0408	2.57	2.52	3.1	2.14	3.22	CP0408	2.57	2.52	3.1
Total chlordanes	µg/kg-Wet	6	6	100	13.5 JT	16.8 JT	CP0408	15.4	15.5 J	16.8 J	13.5 JT	16.8 JT	CP0408	15.4	15.5 J	16.8 J
DDx	µg/kg-Wet	6	6	100	83.4 JT	658 JT	CP0408	277	229 J	587 J	83.4 JT	658 JT	CP0408	277	229 J	587 J
PAHs																
Total PAHs	µg/kg-Wet	6	6	100	10 JT	170 A	CP0408	71.5	51.5 J	160 J	10 JT	170 A	CP0408	71.5	51.5 J	160 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	6	0	0	--	--	--	--	--	--	66 U	66 U	CP0408; CP0812	33	33 U	33 U
Carp (whole body)																
Conventionals																
Lipids	percent	6	6	100	5.6 T	13 T	FZ0609	7.88	7	11.8	5.6 T	13 T	FZ0609	7.88	7	11.8
Metals																
Arsenic	mg/kg-Wet	6	6	100	0.125 JT	0.22	FZ0306	0.166	0.15 J	0.218	0.125 JT	0.22	FZ0306	0.166	0.15 J	0.218
Chromium	mg/kg-Wet	6	6	100	0.305 T	2.02	FZ0306	1.09	1.07	1.86	0.305 T	2.02	FZ0306	1.09	1.07	1.86
Copper	mg/kg-Wet	6	6	100	1.04	1.42	FZ0306	1.16	1.1	1.39	1.04	1.42	FZ0306	1.16	1.1	1.39
Zinc	mg/kg-Wet	6	6	100	87.1	112	FZ0609	99.3	99.4	112	87.1	112	FZ0609	99.3	99.4	112
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	343 JT	8150 JT	FZ0306	1920	595 J	6460 J	343 JT	8150 JT	FZ0306	1920	595 J	6460 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	6	6	100	26.1 T	80.9 JT	FZ0609	59.1	69.6	80.6 J	26.1 T	80.9 JT	FZ0609	59.1	69.6	80.6 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	6	6	100	1.98 T	8.53 T	FZ0306	4.15	3.35 J	7.71	1.98 T	8.53 T	FZ0306	4.15	3.35 J	7.71
Pesticides																
Aldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	1 U	13 UT	FZ0306	2.74	2 U	6.11 U
Dieldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	1 UJ	14 UT	FZ0306	3.36	2.85 UJ	6.49 U
Total chlordanes	µg/kg-Wet	6	3	50	3.2 NJ	13.9 NJ	FZ0306	8.47	8.3 NT	13.3 J	3.2 NJT	20 UT	FZ0306	7.32	6.63	12.9 J
DDx	µg/kg-Wet	6	6	100	143 JT	431 JT	FZ0306	210	171 J	370 J	143 JT	431 JT	FZ0306	210	171 J	370 J
PAHs																
Total PAHs	µg/kg-Wet	6	2	33	111 T	222 JT	FZ0609	167	167 J	216 J	32 UT	222 JT	FZ0609	66.3	16.3 U	194 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	6	0	0	--	--	--	--	--	--	94 UT	99 UT	FZ0306	48.3	48.3 U	49.4 U
Chinook (stomach contents)																
PCBs[c]																
Total PCBs	µg/kg-Wet	5	5	100	53.8 JT	162 JT	T03	83.9	59.8 JT	147 J	53.8 JT	162 JT	T03	83.9	59.8 JT	147 J
Pesticides																
Aldrin	µg/kg-Wet	5	2	40	0.00576 J	0.0426 J	T02	0.0242	0.0242 J	0.0408 J	0.00576 J	0.0426 J	T02	0.0175	0.0167 U	0.0376 J
Dieldrin	µg/kg-Wet	5	5	100	0.471 J	2.92	T02	1.48	1.58	2.7	0.471 J	2.92	T02	1.48	1.58	2.7
Total chlordanes	µg/kg-Wet	5	5	100	1.08 JT	4.61 JT	T02	2.67	2.98 JT	4.36 J	1.08 JT	4.61 JT	T02	2.67	2.98 JT	4.36 J
DDx	µg/kg-Wet	5	5	100	8.88 JT	327 NJ	T02	107	12.7 JT	297 J	8.88 JT	327 NJT	T02	107	12.7 JT	297 J
PAHs																
Total PAHs	µg/kg-Wet	5	5	100	95.5 JT	2460 JT	T02	685	272 JT	2050 J	95.5 JT	2460 JT	T02	685	272 JT	2050 J
Chinook (whole body)																
Conventionals																
Lipids	percent	15	15	100	1.5	3.6	03R125	2.15	1.8	3.39	1.5	3.6	03R125	2.15	1.8	3.39
Metals																
Arsenic	mg/kg-Wet	15	15	100	0.0465	0.25	03R125	0.11	0.0663	0.215	0.0465	0.25	03R125	0.11	0.0663	0.215
Chromium	mg/kg-Wet	15	3	20	0.09 J	0.19	02R113	0.13	0.11	0.182	0.054 UT	0.19	02R113	0.0501	0.0296 U	0.134
Copper	mg/kg-Wet	15	15	100	0.755	2.15	02R102	1.13	1.07	1.93	0.755	2.15	02R102	1.13	1.07	1.93
Zinc	mg/kg-Wet	15	15	100	24	33.3	02R112; 02R113	29.5	29.6	33.3	24	33.3	02R112; 02R113	29.5	29.6	33.3
Butyltins																
Tributyltin ion	µg/kg-Wet	8	8	100	1.3 J	4.1 J	T02	2.51	2.05 J	4.1 J	1.3 J	4.1 J	T02	2.51	2.05 J	4.1 J

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
PCBs[c]																
Total PCBs	µg/kg-Wet	15	15	100	30 JT	277 JT	T01	111	97.1 T	255 J	30 JT	277 JT	T01	111	97.1 T	255 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	9	9	100	21.3 JT	42.4 JT	T02	35.1	36.1 JT	42 J	21.3 JT	42.4 JT	T02	35.1	36.1 JT	42 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	9	9	100	1.2 JT	4.37 JT	T02	2.1	1.74 JT	3.9 J	1.2 JT	4.37 JT	T02	2.1	1.74 JT	3.9 J
Pesticides																
Aldrin	µg/kg-Wet	15	0	0	--	--	--	--	--	--	0.16 U	1.2 U	T02	0.305	0.275 U	0.53 U
Dieldrin	µg/kg-Wet	15	6	40	0.23 J	2.6 N	03R125	1.56	1.65	2.48	0.22 U	2.7 U	02R112; 04R126	1.02	0.85 UT	2.25
Total chlordanes	µg/kg-Wet	15	12	80	0.59 NJ	7.8 NJ	03R125	3.2	2.54 J	7.69 J	0.59 NJT	19 UT	02R112; 02R113	4.12	3.92 JT	9.5 U
DDx	µg/kg-Wet	15	15	100	16.9 NJ	284 T	T02	77.4	32.5 NJT	276	16.9 NJT	284 T	T02	77.4	32.5 NJT	276
PAHs																
Total PAHs	µg/kg-Wet	15	10	67	9.96 JT	33 T	02R113	16.2	14.3 J	26.2 J	9.96 JT	41 UT	02R102	16.7	16 UT	24.3
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	11	0	0	--	--	--	--	--	--	95 UT	860 UT	04R126	156	55 U	395 U
Lamprey Ammocoetes and Macropthalmia																
Conventionals																
Lipids	percent	6	6	100	3.68	9.84	LTMC1	6.55	5.78	9.84	3.68	9.84	LTMC1	6.55	5.78	9.84
Metals																
Arsenic	mg/kg-Wet	4	4	100	0.05 J	0.19	LTAC2	0.118	0.115 J	0.184	0.05 J	0.19	LTAC2	0.118	0.115 J	0.184
Chromium	mg/kg-Wet	4	4	100	0.13 J	0.32	LTAC2	0.248	0.27	0.313	0.13 J	0.32	LTAC2	0.248	0.27	0.313
Copper	mg/kg-Wet	4	4	100	3.08	6.2	LTMC1	4.27	3.9	5.89	3.08	6.2	LTMC1	4.27	3.9	5.89
Zinc	mg/kg-Wet	4	4	100	19	26.7	LTA3M2	24.4	25.9	26.7	19	26.7	LTA3M2	24.4	25.9	26.7
Butyltins																
Tributyltin ion	µg/kg-Wet	1	1	100	4.1	4.1	LTAC2	4.1	4.1	4.1	4.1	4.1	LTAC2	4.1	4.1	4.1
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	80.6 JT	399 JT	LTAC2	242	241 J	395 J	80.6 JT	399 JT	LTAC2	242	241 J	395 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	6	6	100	69.1 JT	90.1 JT	LTAC2	78.9	78.7	87.8 J	69.1 JT	90.1 JT	LTAC2	78.9	78.7	87.8 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	6	6	100	2.36 JT	4.18 JT	LTA3M2	3.11	2.78 J	4.16 J	2.36 JT	4.18 JT	LTA3M2	3.11	2.78 J	4.16 J
Pesticides																
Aldrin	µg/kg-Wet	6	6	100	0.874	1.82	LT002	1.6	1.76	1.82	0.874	1.82	LT002	1.6	1.76	1.82
Dieldrin	µg/kg-Wet	6	6	100	0.89	6.38	LTMC1	3.24	2.55	6.15	0.89	6.38	LTMC1	3.24	2.55	6.15
Total chlordanes	µg/kg-Wet	6	6	100	12.5 JT	29.3 JT	LT002	20.1	19.2 J	28.8 J	12.5 JT	29.3 JT	LT002	20.1	19.2 J	28.8 J
DDx	µg/kg-Wet	6	6	100	42.3 T	121 T	LTMC1	79.1	79.7	111	42.3 T	121 T	LTMC1	79.1	79.7	111
PAHs																
Total PAHs	µg/kg-Wet	3	3	100	48 JT	270 JT	LTAC2	186	240 JT	267 J	48 JT	270 JT	LTAC2	186	240 JT	267 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	1	1	100	170 J	170 J	LTAC2	170	170 J	170 J	170 J	170 J	LTAC2	170	170 J	170 J
Largescale sucker (whole body)																
Conventionals																
Lipids	percent	6	6	100	5.4 T	8.7 T	03R014	7.56	7.85	8.68	5.4 T	8.7 T	03R014	7.56	7.85	8.68
Metals																
Arsenic	mg/kg-Wet	6	6	100	0.18	0.27	03R014; 05R006	0.233	0.228	0.27	0.18	0.27	03R014; 05R006	0.233	0.228	0.27
Chromium	mg/kg-Wet	6	6	100	0.38	2.77 T	08R010	1.12	0.69	2.52	0.38	2.77 T	08R010	1.12	0.69	2.52
Copper	mg/kg-Wet	6	6	100	0.735	1.1 T	08R010	0.901	0.907	1.05	0.735	1.1 T	08R010	0.901	0.907	1.05
Zinc	mg/kg-Wet	6	6	100	17.1	19.7 T	08R010	17.9	17.8	19.3	17.1	19.7 T	08R010	17.9	17.8	19.3
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	95 T	2020 JT	03R014	819	540	1870 J	95 T	2020 JT	03R014	819	540	1870 J
Pesticides																
Aldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	1 U	13 UT	07R009	2.5	2 U	5.38 U
Dieldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	1 U	14 UT	03R014; 07R009	3.83	3.05 U	7 U
Total chlordanes	µg/kg-Wet	6	2	33	8.6 NJ	9.6 NJ	03R014	9.1	9.1 J	9.55 J	7.1 UT	20 UT	07R009	6.99	7.05 J	9.9 J
DDx	µg/kg-Wet	6	6	100	143 JT	670 T	08R010	256	177 J	557 J	143 JT	670 T	08R010	256	177 J	557 J
PAHs																
Total PAHs	µg/kg-Wet	6	2	33	42 JT	147 JT	07R009	94.5	94.5 J	142 J	26 UT	147 JT	07R009	41.1	15.8 U	121 J

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	6	2	33	800 T	3000 JT	08R010	1900	1900 J	2890 J	78 UT	3000 JT	08R010	663	49 U	2450 J
Northern pikeminnow (whole body)																
Conventionals																
Lipids	percent	6	6	100	2.3 T	8.1 T	03R014	5.25	5.2	7.65	2.3 T	8.1 T	03R014	5.25	5.2	7.65
Metals																
Arsenic	mg/kg-Wet	6	6	100	0.19	0.36	03R014	0.26	0.225	0.36	0.19	0.36	03R014	0.26	0.225	0.36
Chromium	mg/kg-Wet	6	5	83	0.09 J	0.67	07R009	0.402	0.55	0.656	0.08 U	0.67	07R009	0.342	0.325 J	0.653
Copper	mg/kg-Wet	6	6	100	0.575 T	0.89	09R006	0.661	0.6	0.848	0.575 T	0.89	09R006	0.661	0.6	0.848
Zinc	mg/kg-Wet	6	6	100	16.4	20	08R010	18	17.9	19.9	16.4	20	08R010	18	17.9	19.9
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	370 T	1800 T	07R009	833	690	1600	370 T	1800 T	07R009	833	690	1600
Pesticides																
Aldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	4 UT	13 UT	07R009	4.23	4.93 U	6.13 U
Dieldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	4.9 UT	14 UT	03R014; 07R009	5.22	4.98 U	7 U
Total chlordanes	µg/kg-Wet	6	0	0	--	--	--	--	--	--	11 UT	19 UT	07R009	6.42	5.5 U	8.88 U
DDx	µg/kg-Wet	6	6	100	145 T	761 T	07R009	322	261	659	145 T	761 T	07R009	322	261	659
Peamouth (whole body)																
Conventionals																
Lipids	percent	4	4	100	6.93 T	10.7 T	05R006	8.93	9.05	10.6	6.93 T	10.7 T	05R006	8.93	9.05	10.6
Metals																
Arsenic	mg/kg-Wet	4	4	100	0.35	0.48	08R010	0.425	0.435	0.476	0.35	0.48	08R010	0.425	0.435	0.476
Chromium	mg/kg-Wet	4	3	75	0.2	0.49	03R014	0.3	0.21	0.462	0.09 U	0.49	03R014	0.236	0.205	0.448
Copper	mg/kg-Wet	4	4	100	0.73	1.61	03R014	1.21	1.25	1.59	0.73	1.61	03R014	1.21	1.25	1.59
Zinc	mg/kg-Wet	4	4	100	23.1	25.2	08R010	24.1	24.1	25.1	23.1	25.2	08R010	24.1	24.1	25.1
PCBs[c]																
Total PCBs	µg/kg-Wet	4	4	100	138 T	290 T	09R006	187	161	273	138 T	290 T	09R006	187	161	273
Pesticides																
Aldrin	µg/kg-Wet	4	0	0	--	--	--	--	--	--	1 UT	1.7 UT	08R010	0.613	0.55 U	0.813 U
Dieldrin	µg/kg-Wet	4	0	0	--	--	--	--	--	--	1.4 UT	3.3 UT	09R006	1.1	1.03 U	1.57 U
Total chlordanes	µg/kg-Wet	4	2	50	3.1 NT	3.4 NT	05R006	3.25	3.25	3.39	3.1 NT	11 UT	03R014	3.65	3.25	5.19
DDx	µg/kg-Wet	4	4	100	132 JT	215 T	09R006	160	146 J	205 J	132 JT	215 T	09R006	160	146 J	205 J
Sculpin (whole body)																
Conventionals																
Lipids	percent	38	38	100	2.2 T	6	03R001	4.13	4.12	5.5	2.2 T	6	03R001	4.13	4.12	5.5
Metals																
Arsenic	mg/kg-Wet	38	38	100	0.13	0.35	SP10W	0.22	0.22	0.315	0.13	0.35	SP10W	0.22	0.22	0.315
Chromium	mg/kg-Wet	38	22	58	0.1 J	0.6	SP09W	0.235	0.2	0.398	0.07 U	0.6	SP09W	0.153	0.105 J	0.358
Copper	mg/kg-Wet	38	38	100	0.929	7.16	SP10W	1.61	1.26	3.77	0.929	7.16	SP10W	1.61	1.26	3.77
Zinc	mg/kg-Wet	38	38	100	11.7	18	04R002; 09R001	15	15.2	17.6	11.7	18	04R002; 09R001	15	15.2	17.6
Butyltins																
Tributyltin ion	µg/kg-Wet	12	4	33	2.3 J	4 J	SP08E	2.9	2.65 J	3.82 J	1.8 U	4 J	SP08E	1.57	0.9 U	3.34 J
PCBs[c]																
Total PCBs	µg/kg-Wet	38	38	100	62 JT	8770 JT	SP11E	681	196 J	2590 J	62 JT	8770 JT	SP11E	681	196 J	2590 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	21	21	100	6.19 JT	388 T	07R006	50	15.6 JT	238 T	6.19 JT	388 T	07R006	50	15.6 JT	238 T
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	21	21	100	0.618 JT	31.8 T	07R006	3.13	1.29 JT	4.78 T	0.618 JT	31.8 T	07R006	3.13	1.29 JT	4.78 T
Pesticides																
Aldrin	µg/kg-Wet	38	10	26	0.00532 J	0.0348 J	SP08W	0.0155	0.0139 J	0.0297 J	0.00532 J	13 UT	03R034; 06R002	1.09	0.5 U	5.06 U
Dieldrin	µg/kg-Wet	38	26	68	0.867 J	24 JT	02R001	5.08	2.7 J	18 J	0.867 J	24 JT	02R001	4.91	2.8 J	15.6 J
Total chlordanes	µg/kg-Wet	38	26	68	2.5 NJT	16 NJT	07R006	8.91	9.02 J	13.8 J	2.5 NJT	20 UT	06R002	7.33	8.57 J	12.3 J
DDx	µg/kg-Wet	38	38	100	12.7 JT	3060 T	07R006	157	40.1	572 J	12.7 JT	3060 T	07R006	157	40.1	572 J
PAHs																
Total PAHs	µg/kg-Wet	38	22	58	7.8 JT	550 T	SP06W	58.6	32 J	128	7.8 JT	550 T	SP06W	41.6	21	62.3
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	38	7	18	73 J	28000 JT	08R003	5410	110 J	22400 J	66 U	28000 JT	08R003	1060	75 U	1750 J

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Smallmouth bass (fillet)																
Conventionals																
Lipids	percent	23	23	100	0.32	1.48	SB09E	1.05	1.05	1.38	0.32	1.48	SB09E	1.05	1.05	1.38
Metals																
Arsenic	mg/kg-Wet	23	23	100	0.14	0.34	SB02E	0.195	0.18	0.289	0.14	0.34	SB02E	0.195	0.18	0.289
Chromium	mg/kg-Wet	23	2	9	0.2 J	0.9	SB09W	0.55	0.55 J	0.865 J	0.06 U	0.9	SB09W	0.0896	0.05 U	0.185 J
Copper	mg/kg-Wet	23	23	100	0.187	1.12	05R006	0.395	0.344	0.89	0.187	1.12	05R006	0.395	0.344	0.89
Zinc	mg/kg-Wet	23	23	100	7.12	10.9 J	05R006	8.65	8.63 T	9.61 J	7.12	10.9 J	05R006	8.65	8.63 T	9.61 J
Butyltins																
Tributyltin ion	µg/kg-Wet	18	4	22	0.48 J	0.92 JT	SB04E	0.68	0.66 J	0.893 J	0.35 U	0.92 JT	SB04E	0.287	0.175 U	0.767 J
PCBs[c]																
Total PCBs	µg/kg-Wet	23	23	100	27 JT	1480 JT	SB011E	144	65.8 JT	238 J	27 JT	1480 JT	SB011E	144	65.8 JT	238 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	18	18	100	0.662 JT	56.9 JT	SB07W	4.76	1.4 J	12.3 J	0.662 JT	56.9 JT	SB07W	4.76	1.4 J	12.3 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	18	18	100	0.187 JT	8.74 JT	SB07W	0.928	0.369 J	3.27 J	0.187 JT	8.74 JT	SB07W	0.928	0.369 J	3.27 J
Pesticides																
Aldrin	µg/kg-Wet	23	6	26	0.005 J	0.011 J	SB09W	0.00664	0.00589 J	0.00998 J	0.00334 U	1 U	03R014; 05R006; 06R024; 08R032; 09R006	0.12	0.0206 U	0.5 U
Dieldrin	µg/kg-Wet	23	21	91	0.183	3.3 NJ	03R014	0.555	0.364	1.4 NJ	0.183	3.3 NJ	03R014	0.55	0.369	1.36 J
Total chlordanes	µg/kg-Wet	23	21	91	0.915 JT	4.1 NJT	03R014	1.75	1.51 JT	3 NJT	0.915 JT	4.1 NJT	03R014	1.69	1.51 JT	2.95 J
DDx	µg/kg-Wet	23	23	100	6.41 JT	181 T	SB07W	26	15.5 JT	47.7 J	6.41 JT	181 T	SB07W	26	15.5 JT	47.7 J
PAHs																
Total PAHs	µg/kg-Wet	18	18	100	0.58 JT	84 JT	SB08W	14.1	6.15 J	55.1 J	0.58 JT	84 JT	SB08W	14.1	6.15 J	55.1 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	18	3	17	69 J	130 J	SB09E	97.3	93 J	126 J	66 U	130 J	SB09E	43.7	33 U	98.6 J
Smallmouth bass (body without fillet)																
Conventionals																
Lipids	percent	18	18	100	5.35	8.93	SB09E	6.96	6.79	8.82	5.35	8.93	SB09E	6.96	6.79	8.82
Metals																
Arsenic	mg/kg-Wet	18	18	100	0.17	0.38	SB03W	0.252	0.24	0.346	0.17	0.38	SB03W	0.252	0.24	0.346
Chromium	mg/kg-Wet	18	8	44	0.2 J	0.2 J	SB010E; SB010W; SB03E; SB04W; SB07E; SB08E; SB08W; SB09W	0.2	0.2 J	0.2 J	0.1 U	0.2 U	SB010E; SB010W; SB02E; SB03E; SB04W; SB07E; SB08E; SB08W; SB09W	0.119	0.075 U	0.2 J
Copper	mg/kg-Wet	18	18	100	0.464	2.59	SB010E	1.15	0.948	2.17	0.464	2.59	SB010E	1.15	0.948	2.17
Zinc	mg/kg-Wet	18	18	100	11.5 T	15	SB08W	13.4	13.2	14.8	11.5 T	15	SB08W	13.4	13.2	14.8
Butyltins																
Tributyltin ion	µg/kg-Wet	18	0	0	--	--	--	--	--	--	1.8 U	6.4 U	SB08E	1.1	0.9 U	2.05 U
PCBs[c]																
Total PCBs	µg/kg-Wet	18	18	100	264 JT	8160 JT	SB011E	1300	677 J	3510 J	264 JT	8160 JT	SB011E	1300	677 J	3510 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	18	18	100	7.15 T	433 T	SB07W	40.5	17.3	105	7.15 T	433 T	SB07W	40.5	17.3	105
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	18	18	100	1.67 JT	64.9 JT	SB07W	7.45	3.12 J	27.5 J	1.67 JT	64.9 JT	SB07W	7.45	3.12 J	27.5 J
Pesticides																
Aldrin	µg/kg-Wet	18	13	72	0.0104 J	0.0566 J	SB09E	0.0282	0.025 JT	0.0537 J	0.0104 J	0.0566 J	SB09E	0.023	0.0209 J	0.0525 J
Dieldrin	µg/kg-Wet	18	18	100	1.76	4.17	SB09E	2.85	2.72	3.88	1.76	4.17	SB09E	2.85	2.72	3.88
Total chlordanes	µg/kg-Wet	18	18	100	9.57 JT	29.5 T	SB09W	15.5	14.8 J	20.2 J	9.57 JT	29.5 T	SB09W	15.5	14.8 J	20.2 J
DDx	µg/kg-Wet	18	18	100	43.1 JT	1840 T	SB07W	264	133	780	43.1 JT	1840 T	SB07W	264	133	780
PAHs																
Total PAHs	µg/kg-Wet	18	18	100	5.2 JT	230 T	SB06W	57.1	33.5 J	171 J	5.2 JT	230 T	SB06W	57.1	33.5 J	171 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	17	2	12	3700	4000	SB010E	3850	3850	3990	66 U	4000	SB010E	527	33 U	3760
Smallmouth bass (whole body)																
Conventionals																
Lipids	percent	14	14	100	1.5 T	7.2 T	04R023	5.44	5.75	7.07	1.5 T	7.2 T	04R023	5.44	5.75	7.07

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Metals																
Arsenic	mg/kg-Wet	14	14	100	0.17	0.39	03R014	0.264	0.26	0.358	0.17	0.39	03R014	0.264	0.26	0.358
Chromium	mg/kg-Wet	14	12	86	0.17	1.14	08R010	0.58	0.448	1.08	0.06 U	1.14	08R010	0.503	0.425	1.07
Copper	mg/kg-Wet	14	14	100	0.365	1.29	09R006	0.652	0.565	1.07	0.365	1.29	09R006	0.652	0.565	1.07
Zinc	mg/kg-Wet	14	14	100	13.4	16.3	03R014	14.7	14.5	16.1	13.4	16.3	03R014	14.7	14.5	16.1
PCBs[c]																
Total PCBs	µg/kg-Wet	14	14	100	344 JT	4530 JT	08R010	1120	606 J	3850 J	344 JT	4530 JT	08R010	1120	606 J	3850 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	14	14	100	4.74 T	48.7 T	07R009	19.6	14.6	47.9	4.74 T	48.7 T	07R009	19.6	14.6	47.9
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	14	14	100	1.29 JT	7.77 T	07R009	3.47	2.98 J	7.69 J	1.29 JT	7.77 T	07R009	3.47	2.98 J	7.69 J
Pesticides																
Aldrin	µg/kg-Wet	14	0	0	--	--	--	--	--	--	1 UT	13 UT	08R010	2.54	2 U	6.5 U
Dieldrin	µg/kg-Wet	14	1	7	7.3 JT	7.3 JT	08R032	7.3	7.3 JT	7.3 JT	4 UT	20 UT	08R010	6.35	7 U	10 U
Total chlordanes	µg/kg-Wet	14	2	14	5.4 NJT	5.6 NJT	07R009	5.5	5.5 J	5.59 J	5.4 NJT	32 UT	05R006	6.72	5.5 U	12.1 U
DDx	µg/kg-Wet	14	14	100	65 JT	408 T	07R009	205	178 J	379 J	65 JT	408 T	07R009	205	178 J	379 J
PAHs																
Total PAHs	µg/kg-Wet	14	7	50	31 JT	308 T	07R009	131	111 T	291	30 UT	308 T	07R009	73.3	23.5 J	272
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	14	2	14	32000 JT	87000 JT	04R023	59500	59500 J	84300 J	86 UT	87000 JT	04R023	8620	48.5 U	51300 J
Sturgeon (stomach contents)																
Conventionals																
Lipids	percent	3	3	100	0.37 T	1.7	STWB03	0.953	0.79	1.61	0.37 T	1.7	STWB03	0.953	0.79	1.61
Metals																
Arsenic	mg/kg-Wet	3	3	100	0.17 T	0.82	STWB03	0.447	0.35	0.773	0.17 T	0.82	STWB03	0.447	0.35	0.773
Chromium	mg/kg-Wet	3	3	100	0.15 JT	4.1	STWB03	1.58	0.5	3.74	0.15 JT	4.1	STWB03	1.58	0.5	3.74
Copper	mg/kg-Wet	3	3	100	6.73 J	11 J	STWB01	8.51	7.8 JT	10.7 J	6.73 J	11 J	STWB01	8.51	7.8 JT	10.7 J
Zinc	mg/kg-Wet	3	3	100	9.56 T	19.1	STWB01	15.8	18.8	19.1	9.56 T	19.1	STWB01	15.8	18.8	19.1
PCBs[c]																
Total PCBs	µg/kg-Wet	1	1	100	10.6 JT	10.6 JT	STWB04	10.6	10.6 JT	10.6 JT	10.6 JT	10.6 JT	STWB04	10.6	10.6 JT	10.6 JT
Pesticides																
Aldrin	µg/kg-Wet	1	1	100	0.00442 J	0.00442 J	STWB04	0.00442	0.00442 J	0.00442 J	0.00442 J	0.00442 J	STWB04	0.00442	0.00442 J	0.00442 J
Dieldrin	µg/kg-Wet	1	1	100	0.359	0.359	STWB04	0.359	0.359	0.359	0.359	0.359	STWB04	0.359	0.359	0.359
Total chlordanes	µg/kg-Wet	1	1	100	0.914 JT	0.914 JT	STWB04	0.914	0.914 JT	0.914 JT	0.914 JT	0.914 JT	STWB04	0.914	0.914 JT	0.914 JT
DDx	µg/kg-Wet	1	1	100	3.61 JT	3.61 JT	STWB04	3.61	3.61 JT	3.61 JT	3.61 JT	3.61 JT	STWB04	3.61	3.61 JT	3.61 JT
PAHs																
Total PAHs	µg/kg-Wet	3	3	100	3.6 JT	9000 T	STWB03	3010	38 JT	8100 J	3.6 JT	9000 T	STWB03	3010	38 JT	8100 J
Sturgeon (fillet without skin)																
Conventionals																
Lipids	percent	5	5	100	0.83	3.4	RM 3.5-9.2	2.03	1.6	3.32	0.83	3.4	RM 3.5-9.2	2.03	1.6	3.32
Metals																
Arsenic	mg/kg-Wet	5	5	100	0.157	0.538	RM 3.5-9.2	0.342	0.314	0.515	0.157	0.538	RM 3.5-9.2	0.342	0.314	0.515
Chromium	mg/kg-Wet	5	5	100	0.412	3.25	RM 3.5-9.2	1.55	1.17 T	3.07	0.412	3.25	RM 3.5-9.2	1.55	1.17 T	3.07
Copper	mg/kg-Wet	5	5	100	0.127	0.253	RM 3.5-9.2	0.189	0.169	0.249	0.127	0.253	RM 3.5-9.2	0.189	0.169	0.249
Zinc	mg/kg-Wet	5	5	100	2.08	2.93 T	RM 3.5-9.2	2.56	2.55	2.89	2.08	2.93 T	RM 3.5-9.2	2.56	2.55	2.89
PCBs[c]																
Total PCBs	µg/kg-Wet	5	5	100	84.7	964	RM 3.5-9.2	289	96.2	812	84.7	964	RM 3.5-9.2	289	96.2	812
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	5	5	100	1.64 T	23.2 T	RM 3.5-9.2	7.72	4.45 T	19.7	1.64 T	23.2 T	RM 3.5-9.2	7.72	4.45 T	19.7
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	5	5	100	0.135 T	1.33 T	RM 3.5-9.2	0.564	0.516 T	1.18	0.135 T	1.33 T	RM 3.5-9.2	0.564	0.516 T	1.18
Pesticides																
Aldrin	µg/kg-Wet	5	0	0	--	--	--	--	--	--	0.47 U	1 U	RM 3.5-9.2	0.424	0.455 UT	0.495 U
Dieldrin	µg/kg-Wet	5	2	40	0.67 J	1.4 J	RM 3.5-9.2	1.04	1.04 J	1.36 J	0.67 J	1.4 J	RM 3.5-9.2	0.7	0.5 U	1.25 J
Total chlordanes	µg/kg-Wet	5	4	80	2.5 JA	5.6 JA	RM 3.5-9.2	4.1	4.15 J	5.56 J	2.5 JA	5.6 JA	RM 3.5-9.2	3.58	3 JA	5.54 J
DDx	µg/kg-Wet	5	5	100	38 JT	125 JT	RM 3.5-9.2	77.7	64 JT	124 J	38 JT	125 JT	RM 3.5-9.2	77.7	64 JT	124 J

5.6-1. Summary Statistics for Indicator Contaminants in Fish Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
PAHs																
Total PAHs	µg/kg-Wet	5	3	60	4 JT	23.1 T	RM 3.5-9.2	11	5.9 JT	21.4 J	4 JT	23.1 T	RM 3.5-9.2	9.6	7.5 UT	20
Sturgeon (whole body)																
Conventionals																
Lipids	percent	15	15	100	2.59	8.45	STWB02	5.29	4.59	8.33	2.59	8.45	STWB02	5.29	4.59	8.33
Metals																
Arsenic	mg/kg-Wet	15	15	100	0.298 T	1.06	STWB03	0.594	0.56	0.913	0.298 T	1.06	STWB03	0.594	0.56	0.913
Chromium	mg/kg-Wet	15	2	13	0.2 J	40.2	STWB01	20.2	20.2 J	38.2 J	0.1 U	40.2	STWB01	2.74	0.05 U	12.2 J
Copper	mg/kg-Wet	15	15	100	0.544	0.959	STWB01	0.791	0.816	0.945	0.544	0.959	STWB01	0.791	0.816	0.945
Zinc	mg/kg-Wet	15	15	100	7.39	11.9	STWB02	9.53	9.61	11.8	7.39	11.9	STWB02	9.53	9.61	11.8
Butyltins																
Tributyltin ion	µg/kg-Wet	15	4	27	0.61 J	1.1	STWB05	0.775	0.695 J	1.04 J	0.35 U	1.8 U	STWB02; STWB04; STWB05	0.577	0.69 J	0.96
PCBs[c]																
Total PCBs	µg/kg-Wet	15	15	100	69.1 JT	325 JT	STWB04	114	97.4 NJT	186 J	69.1 JT	325 JT	STWB04	114	97.4 NJT	186 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	15	15	100	4.32 JT	13.9 JT	STWB02	8.62	8.21 JT	12.9 J	4.32 JT	13.9 JT	STWB02	8.62	8.21 JT	12.9 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	15	15	100	0.35 JT	1.33 JT	STWB02	0.849	0.945 JT	1.22 J	0.35 JT	1.33 JT	STWB02	0.849	0.945 JT	1.22 J
Pesticides																
Aldrin	µg/kg-Wet	15	13	87	0.0103 J	0.0554 J	STWB01	0.0306	0.0273 J	0.0546 J	0.0103 J	0.0554 J	STWB01	0.0283	0.0266 J	0.0545 J
Dieldrin	µg/kg-Wet	15	15	100	1.24	3.11	STWB04	1.96	1.89 T	2.87	1.24	3.11	STWB04	1.96	1.89 T	2.87
Total chlordanes	µg/kg-Wet	15	15	100	6.22 JT	20.4 T	STWB04	9.98	9.27 JT	14.7	6.22 JT	20.4 T	STWB04	9.98	9.27 JT	14.7
DDx	µg/kg-Wet	15	15	100	77.9 T	176 JT	STWB04	118	124 T	158 J	77.9 T	176 JT	STWB04	118	124 T	158 J
PAHs																
Total PAHs	µg/kg-Wet	15	15	100	1.1 T	61 T	STWB03	9.15	6.4 JT	28.1 J	1.1 T	61 T	STWB03	9.15	6.4 JT	28.1 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	15	4	27	67 J	300	STWB04	147	110 J	276 J	66 U	300	STWB04	63.3	33 U	188 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
RM - river mile
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalence

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

5.6-2. Summary Statistics for Indicator Contaminants in Fish Tissue From Below the Study Area - Downstream Reach (RM 0 – 1.9) and Multnomah Channel.

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Carp (fillet)																
Conventionals																
Lipids	percent	3	3	100	7.12	9.51	CP0004	8.19	7.95	9.35	7.12	9.51	CP0004	8.19	7.95	9.35
Metals																
Arsenic	mg/kg-Wet	3	3	100	0.06 J	0.21	CP0004	0.153	0.19	0.208	0.06 J	0.21	CP0004	0.153	0.19	0.208
Chromium	mg/kg-Wet	3	0	0	--	--	--	--	--	--	0.1 U	0.2 U	CP0004	0.0667	0.05 U	0.095 U
Copper	mg/kg-Wet	3	3	100	0.476	0.686	CP0004	0.602	0.643	0.682	0.476	0.686	CP0004	0.602	0.643	0.682
Zinc	mg/kg-Wet	3	3	100	24.8	30.6	CP0004	28.4	29.7	30.5	24.8	30.6	CP0004	28.4	29.7	30.5
Butyltins																
Tributyltin ion	µg/kg-Wet	3	3	100	2.6 J	7	CP0004	4.77	4.7	6.77	2.6 J	7	CP0004	4.77	4.7	6.77
PCBs[c]																
Total PCBs	µg/kg-Wet	3	3	100	210 JT	260 JT	CP0004	241	254 JT	259 J	210 JT	260 JT	CP0004	241	254 JT	259 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	3	3	100	16.6 JT	26.5 JT	CP0004	23.2	26.4 JT	26.5 J	16.6 JT	26.5 JT	CP0004	23.2	26.4 JT	26.5 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	3	3	100	1.88 JT	2.59 JT	CP0004	2.17	2.05 JT	2.54 J	1.88 JT	2.59 JT	CP0004	2.17	2.05 JT	2.54 J
Pesticides																
Aldrin	µg/kg-Wet	3	3	100	0.046 J	0.079 J	CP0004	0.0643	0.068 J	0.0779 J	0.046 J	0.079 J	CP0004	0.0643	0.068 J	0.0779 J
Dieldrin	µg/kg-Wet	3	3	100	1.66	2.03	CP0004	1.86	1.9	2.02	1.66	2.03	CP0004	1.86	1.9	2.02
Total chlordanes	µg/kg-Wet	3	3	100	7.87 JT	11.8 JT	CP0004	9.7	9.43 JT	11.6 J	7.87 JT	11.8 JT	CP0004	9.7	9.43 JT	11.6 J
DDx	µg/kg-Wet	3	3	100	70 JT	113 T	CP0004	88.4	82.3 T	110	70 JT	113 T	CP0004	88.4	82.3 T	110
PAHs																
Total PAHs	µg/kg-Wet	3	3	100	30 T	42 JT	CP0004	37.7	41 T	41.9 J	30 T	42 JT	CP0004	37.7	41 T	41.9 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	3	0	0	--	--	--	--	--	--	66 U	66 U	CP0004	33	33 U	33 U
Carp (body without fillet)																
Conventionals																
Lipids	percent	3	3	100	9.72	11.8	CP0004	11	11.4	11.8	9.72	11.8	CP0004	11	11.4	11.8
Metals																
Arsenic	mg/kg-Wet	3	3	100	0.088 J	0.234	CP0004	0.161	0.162	0.227	0.088 J	0.234	CP0004	0.161	0.162	0.227
Chromium	mg/kg-Wet	3	3	100	0.47	1.91	CP0004	1.1	0.91	1.81	0.47	1.91	CP0004	1.1	0.91	1.81
Copper	mg/kg-Wet	3	3	100	1.07	1.67	CP0004	1.34	1.28	1.63	1.07	1.67	CP0004	1.34	1.28	1.63
Zinc	mg/kg-Wet	3	3	100	88	111	CP0004	97.9	94.7	109	88	111	CP0004	97.9	94.7	109
Butyltins																
Tributyltin ion	µg/kg-Wet	3	3	100	2.8 J	8.4	CP0004	4.9	3.5 J	7.91 J	2.8 J	8.4	CP0004	4.9	3.5 J	7.91 J
PCBs[c]																
Total PCBs	µg/kg-Wet	3	3	100	322 JT	417 JT	CP0004	378	395 JT	415 J	322 JT	417 JT	CP0004	378	395 JT	415 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	3	3	100	31.3 T	49.8 T	CP0004	41.9	44.5 T	49.3	31.3 T	49.8 T	CP0004	41.9	44.5 T	49.3
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	3	3	100	2.76 T	3.47 JT	CP0004	3.12	3.12 JT	3.44 J	2.76 T	3.47 JT	CP0004	3.12	3.12 JT	3.44 J
Pesticides																
Aldrin	µg/kg-Wet	3	3	100	0.0634 J	0.125 J	CP0004	0.0975	0.104 J	0.123 J	0.0634 J	0.125 J	CP0004	0.0975	0.104 J	0.123 J
Dieldrin	µg/kg-Wet	3	3	100	2.24	2.95	CP0004	2.52	2.36	2.89	2.24	2.95	CP0004	2.52	2.36	2.89
Total chlordanes	µg/kg-Wet	3	3	100	10.9 JT	14.5 JT	CP0004	12.6	12.5 JT	14.3 J	10.9 JT	14.5 JT	CP0004	12.6	12.5 JT	14.3 J
DDx	µg/kg-Wet	3	3	100	101 T	149 T	CP0004	122	117 JT	146 J	101 T	149 T	CP0004	122	117 JT	146 J
PAHs																
Total PAHs	µg/kg-Wet	3	3	100	33 JT	50 T	CP0004	40.7	39 JT	48.9 J	33 JT	50 T	CP0004	40.7	39 JT	48.9 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	3	0	0	--	--	--	--	--	--	66 U	66 U	CP0004	33	33 U	33 U
Sculpin (whole body)																
Conventionals																
Lipids	percent	2	2	100	2.95	5.64	SP01W	4.3	4.3	5.51	2.95	5.64	SP01W	4.3	4.3	5.51
Metals																
Arsenic	mg/kg-Wet	2	2	100	0.33	0.33	SP01E; SP01W	0.33	0.33	0.33	0.33	0.33	SP01E; SP01W	0.33	0.33	0.33
Chromium	mg/kg-Wet	2	2	100	0.2 J	0.4	SP01E	0.3	0.3 J	0.39 J	0.2 J	0.4	SP01E	0.3	0.3 J	0.39 J
Copper	mg/kg-Wet	2	2	100	1.25	3.77	SP01E	2.51	2.51	3.64	1.25	3.77	SP01E	2.51	2.51	3.64
Zinc	mg/kg-Wet	2	2	100	13.1	16.8	SP01E	15	15	16.6	13.1	16.8	SP01E	15	15	16.6

5.6-2. Summary Statistics for Indicator Contaminants in Fish Tissue From Below the Study Area - Downstream Reach (RM 0 – 1.9) and Multnomah Channel.

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Butyltins																
Tributyltin ion	µg/kg-Wet	2	0	0	--	--	--	--	--	--	1.8 U	1.8 U	SP01E; SP01W	0.9	0.9 U	0.9 U
PCBs[c]																
Total PCBs	µg/kg-Wet	2	2	100	80.9 JT	87.7 JT	SP01E	84.3	84.3 J	87.4 J	80.9 JT	87.7 JT	SP01E	84.3	84.3 J	87.4 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	2	2	100	5.85 JT	8.09 JT	SP01W	6.97	6.97 J	7.98 J	5.85 JT	8.09 JT	SP01W	6.97	6.97 J	7.98 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	2	2	100	0.528 JT	0.946 JT	SP01W	0.737	0.737 J	0.925 J	0.528 JT	0.946 JT	SP01W	0.737	0.737 J	0.925 J
Pesticides																
Aldrin	µg/kg-Wet	2	1	50	0.00814 J	0.00814 J	SP01W	0.00814	0.00814 J	0.00814 J	0.00723 U	0.00814 J	SP01W	0.00588	0.00588 J	0.00791 J
Dieldrin	µg/kg-Wet	2	2	100	0.89 J	1.47	SP01W	1.18	1.18 J	1.44 J	0.89 J	1.47	SP01W	1.18	1.18 J	1.44 J
Total chlordanes	µg/kg-Wet	2	2	100	5.83 JT	7.38 JT	SP01W	6.61	6.61 J	7.3 J	5.83 JT	7.38 JT	SP01W	6.61	6.61 J	7.3 J
DDx	µg/kg-Wet	2	2	100	25 JT	37.8 T	SP01W	31.4	31.4 J	37.2 J	25 JT	37.8 T	SP01W	31.4	31.4 J	37.2 J
PAHs																
Total PAHs	µg/kg-Wet	2	2	100	13 T	18 T	SP01E	15.5	15.5	17.8	13 T	18 T	SP01E	15.5	15.5	17.8
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	2	0	0	--	--	--	--	--	--	66 U	66 U	SP01E; SP01W	33	33 U	33 U

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

No fish stomach contents data are available for this area.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
RM - river mile
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalence

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.6-3. Biota Samples Collected from Above the Study Area - the Downtown Reach (RM 11.8-15.3) and the Upriver Reach (RM 15.3-28.4) including above Willamette Falls.

Location	Number of Samples	Species	Tissue	Reach	Study Name
Fish Tissue Samples[a]					
28R001	3	Smallmouth bass	Whole body	Upriver	Round 1 tissue samples
28R001	1	Brown bullhead	Whole body	Upriver	Round 1 tissue samples
26R111	1	Chinook	Whole body	Upriver	Round 1a tissue samples
Willamette Falls	4	Lamprey	Whole body	Upriver	ODHS/EPA/ATSDR Fish Contaminant Study
SP12E	1	Sculpin	Whole body	Downtown Reach	Round 3B biota samples
SP12WA	1	Sculpin	Whole body	Downtown Reach	Round 3B biota samples
20R001	3	Smallmouth bass	Whole body	Upriver	Round 1 tissue samples
20R001	2	Brown bullhead	Whole body	Upriver	Round 1 tissue samples
T04	1	Chinook	Stomach contents	Upriver	Round 2A tissue
T04	3	Chinook	Whole body	Upriver	Round 2A tissue
LT023b, LT023c	4	Lamprey	Whole body	Upriver	Round 3 lamprey tissue composites
Clackamas Fish Hatchery	3	Chinook	Fillet	Upriver	ODHS/EPA/ATSDR Fish Contaminant Study
Clackamas Fish Hatchery	3	Chinook	Fillet without skin	Upriver	ODHS/EPA/ATSDR Fish Contaminant Study
Clackamas Fish Hatchery	4	Chinook	Whole body	Upriver	ODHS/EPA/ATSDR Fish Contaminant Study
Invertebrate Tissue Samples					
CA12E	1	Clam, lab	Body without shell	Downtown Reach	Round 3B biota samples
CA12W	1	Clam, lab	Body without shell	Downtown Reach	Round 3B biota samples
CA12E	1	Clam, lab	Depurated body without shell	Downtown Reach	Round 3B biota samples
CR12E	1	Crayfish	Whole body	Downtown Reach	Round 3B biota samples
CR12W	1	Crayfish	Whole body	Downtown Reach	Round 3B biota samples

Note:

[a] Two additional species collected by ODHS et al. (2003) are not included in discussions of the nature and extent of contamination because, although they were collected above Willamette Falls, they represent conditions outside of the upstream areas. These include:

- Four adult lamprey tissues collected from the Willamette Falls area
- Ten adult chinook samples from the Clackamas River hatchery, including 3 fillets with skin, 3 fillets without skin, and 4 whole bodies.

5.6-4. Summary Statistics for Indicator Contaminants in Fish Tissue, Downtown Reach (RM 11.8-15.3) and Upriver Reach (RM 15.3-28.4).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Brown bullhead (whole body)																
Conventionals																
Lipids	percent	3	3	100	2.1	2.6	20R001	2.27	2.1	2.55	2.1	2.6	20R001	2.27	2.1	2.55
Metals																
Arsenic	mg/kg-Wet	3	3	100	0.07 J	0.09 JT	20R001	0.08	0.08 J	0.089 J	0.07 J	0.09 JT	20R001	0.08	0.08 J	0.089 J
Chromium	mg/kg-Wet	3	3	100	0.485 T	2.04	28R001	1.08	0.7	1.91	0.485 T	2.04	28R001	1.08	0.7	1.91
Copper	mg/kg-Wet	3	3	100	0.625 T	0.89	28R001	0.722	0.65	0.866	0.625 T	0.89	28R001	0.722	0.65	0.866
Zinc	mg/kg-Wet	3	3	100	13.9 T	14.5	28R001	14.3	14.4	14.5	13.9 T	14.5	28R001	14.3	14.4	14.5
PCBs[c]																
Total PCBs	µg/kg-Wet	3	3	100	19.1 JT	56.3 JT	20R001	33.2	24.2 JT	53.1 J	19.1 JT	56.3 JT	20R001	33.2	24.2 JT	53.1 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	3	3	100	3.03 T	7.45 T	20R001	5.18	5.06 T	7.21	3.03 T	7.45 T	20R001	5.18	5.06 T	7.21
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	3	3	100	0.451 JT	2.9 JT	20R001	1.39	0.807 JT	2.69 J	0.451 JT	2.9 JT	20R001	1.39	0.807 JT	2.69 J
Pesticides																
Aldrin	µg/kg-Wet	3	0	0	--	--	--	--	--	--	1 U	1 U	20R001; 28R001	0.5	0.5 U	0.5 U
Dieldrin	µg/kg-Wet	3	2	67	1.2 NJ	1.2 NJ	20R001; 28R001	1.2	1.2 J	1.2 J	1 UJ	1.2 NJ	20R001; 28R001	0.967	1.2 NJ	1.2 J
Total chlordanes	µg/kg-Wet	3	3	100	1.1 NT	3.7 NJT	20R001	2.3	2.1 NT	3.54 J	1.1 NT	3.7 NJT	20R001	2.3	2.1 NT	3.54 J
DDx	µg/kg-Wet	3	3	100	18 NJT	52 NJT	20R001	30.1	20.4 NJT	48.8 J	18 NJT	52 NJT	20R001	30.1	20.4 NJT	48.8 J
PAHs																
Total PAHs	µg/kg-Wet	3	0	0	--	--	--	--	--	--	33 UT	93 UT	28R001	26.5	16.5 UT	43.5 U
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	3	1	33	3000 JT	3000 JT	20R001	3000	3000 JT	3000 JT	99 UJT	3000 JT	20R001	1030	49.5 UJT	2700 J
Chinook (stomach contents)																
PCBs[c]																
Total PCBs	µg/kg-Wet	1	1	100	10.6 JT	10.6 JT	T04	10.6	10.6 JT	10.6 JT	10.6 JT	10.6 JT	T04	10.6	10.6 JT	10.6 JT
Pesticides																
Aldrin	µg/kg-Wet	1	0	0	--	--	--	--	--	--	0.000169 U	0.000169 U	T04	0.0000845	0.0000845 U	0.0000845 U
Dieldrin	µg/kg-Wet	1	1	100	0.905	0.905	T04	0.905	0.905	0.905	0.905	0.905	T04	0.905	0.905	0.905
Total chlordanes	µg/kg-Wet	1	1	100	2.26 JT	2.26 JT	T04	2.26	2.26 JT	2.26 JT	2.26 JT	2.26 JT	T04	2.26	2.26 JT	2.26 JT
DDx	µg/kg-Wet	1	1	100	6.61 JT	6.61 JT	T04	6.61	6.61 JT	6.61 JT	6.61 JT	6.61 JT	T04	6.61	6.61 JT	6.61 JT
PAHs																
Total PAHs	µg/kg-Wet	1	1	100	87.4 JT	87.4 JT	T04	87.4	87.4 JT	87.4 JT	87.4 JT	87.4 JT	T04	87.4	87.4 JT	87.4 JT
Chinook (fillet without skin)																
PCBs[c]																
Total PCBs	µg/kg-Wet	3	3	100	6.89	12.4 T	Clackamas Fish Hatchery	10.1	11	12.3	6.89	12.4 T	Clackamas Fish Hatchery	10.1	11	12.3
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	3	3	100	0.652 T	1.09 T	Clackamas Fish Hatchery	0.941	1.08 T	1.09	0.652 T	1.09 T	Clackamas Fish Hatchery	0.941	1.08 T	1.09
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	3	3	100	0.0506 T	0.157 T	Clackamas Fish Hatchery	0.119	0.15 T	0.156	0.0506 T	0.157 T	Clackamas Fish Hatchery	0.119	0.15 T	0.156
Chinook (fillet)																
Conventionals																
Lipids	percent	3	3	100	7.1	9.7	Clackamas Fish Hatchery	8.83	9.7	9.7	7.1	9.7	Clackamas Fish Hatchery	8.83	9.7	9.7
Metals																
Arsenic	mg/kg-Wet	3	3	100	0.72	1.26	Clackamas Fish Hatchery	1.03	1.11	1.25	0.72	1.26	Clackamas Fish Hatchery	1.03	1.11	1.25
Chromium	mg/kg-Wet	3	3	100	0.282	0.33	Clackamas Fish Hatchery	0.308	0.313	0.328	0.282	0.33	Clackamas Fish Hatchery	0.308	0.313	0.328
Copper	mg/kg-Wet	3	3	100	0.507	0.532	Clackamas Fish Hatchery	0.516	0.51	0.53	0.507	0.532	Clackamas Fish Hatchery	0.516	0.51	0.53
Zinc	mg/kg-Wet	3	3	100	4.56	4.6	Clackamas Fish Hatchery	4.58	4.57	4.6	4.56	4.6	Clackamas Fish Hatchery	4.58	4.57	4.6
PCBs[c]																
Total PCBs	µg/kg-Wet	3	3	100	8.71	15.3	Clackamas Fish Hatchery	12.6	13.8	15.2	8.71	15.3	Clackamas Fish Hatchery	12.6	13.8	15.2
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	3	3	100	1.31 T	1.71 T	Clackamas Fish Hatchery	1.48	1.42 T	1.68	1.31 T	1.71 T	Clackamas Fish Hatchery	1.48	1.42 T	1.68
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	3	3	100	0.143 T	0.171 T	Clackamas Fish Hatchery	0.156	0.153 T	0.169	0.143 T	0.171 T	Clackamas Fish Hatchery	0.156	0.153 T	0.169
Pesticides																
Aldrin	µg/kg-Wet	3	0	0	--	--	--	--	--	--	0.91 U	0.92 U	Clackamas Fish Hatchery	0.457	0.455 U	0.46 U
Dieldrin	µg/kg-Wet	3	1	33	2 J	2 J	Clackamas Fish Hatchery	2	2 J	2 J	1.6 U	3.6 U	Clackamas Fish Hatchery	1.53	1.8 U	1.98 J
Total chlordanes	µg/kg-Wet	3	0	0	--	--	--	--	--	--	0.91 UA	5.8 UA	Clackamas Fish Hatchery	1.57	1.35 UA	2.75 U
DDx	µg/kg-Wet	3	2	67	10.9 JT	12 JT	Clackamas Fish Hatchery	11.5	11.5 J	11.9 J	3.6 UT	12 JT	Clackamas Fish Hatchery	8.23	10.9 JT	11.9 J

5.6-4. Summary Statistics for Indicator Contaminants in Fish Tissue, Downtown Reach (RM 11.8-15.3) and Upriver Reach (RM 15.3-28.4).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
PAHs																
Total PAHs	µg/kg-Wet	3	2	67	1.8 JT	5.4 T	Clackamas Fish Hatchery	3.6	3.6 J	5.22 J	1.8 JT	15 UT	Clackamas Fish Hatchery	4.9	5.4 T	7.29
Chinook (whole body)																
Conventionals																
Lipids	percent	8	8	100	1.8	11	Clackamas Fish Hatchery	5.65	5.5	10.4	1.8	11	Clackamas Fish Hatchery	5.65	5.5	10.4
Metals																
Arsenic	mg/kg-Wet	8	8	100	0.03 J	0.979 T	Clackamas Fish Hatchery	0.473	0.43	0.96	0.03 J	0.979 T	Clackamas Fish Hatchery	0.473	0.43	0.96
Chromium	mg/kg-Wet	8	4	50	0.182	0.402	Clackamas Fish Hatchery	0.308	0.325	0.4	0.0579 U	0.402	Clackamas Fish Hatchery	0.17	0.109	0.397
Copper	mg/kg-Wet	8	8	100	0.879 T	1.5 T	Clackamas Fish Hatchery	1.23	1.37	1.48	0.879 T	1.5 T	Clackamas Fish Hatchery	1.23	1.37	1.48
Zinc	mg/kg-Wet	8	8	100	22	37.5	Clackamas Fish Hatchery	28.7	28.9	36.3	22	37.5	Clackamas Fish Hatchery	28.7	28.9	36.3
Butyltins																
Tributyltin ion	µg/kg-Wet	3	3	100	0.37 J	0.45 J	T04	0.413	0.42 J	0.447 J	0.37 J	0.45 J	T04	0.413	0.42 J	0.447 J
PCBs[c]																
Total PCBs	µg/kg-Wet	8	8	100	12.8 JT	21.6 JT	T04	15.8	15.2 J	20 J	12.8 JT	21.6 JT	T04	15.8	15.2 J	20 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	7	7	100	1.32 T	6.18 JT	T04	3.26	1.84 T	5.92 J	1.32 T	6.18 JT	T04	3.26	1.84 T	5.92 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	7	7	100	0.102 T	1.12 JT	T04	0.395	0.258 T	0.936 J	0.102 T	1.12 JT	T04	0.395	0.258 T	0.936 J
Pesticides																
Aldrin	µg/kg-Wet	8	0	0	--	--	--	--	--	--	0.16 U	1 U	26R111	0.327	0.46 U	0.493 U
Dieldrin	µg/kg-Wet	8	7	88	0.65 J	1.6 T	Clackamas Fish Hatchery	1.12	1.1 J	1.57 J	0.65 J	1.6 T	Clackamas Fish Hatchery	1.04	0.97 J	1.57 J
Total chlordanes	µg/kg-Wet	8	4	50	1.2 JA	3.02 NJT	T04	2.12	2.13 J	2.89 J	0.96 UA	3.9 UA	Clackamas Fish Hatchery	1.6	1.68 U	2.73 J
DDx	µg/kg-Wet	8	8	100	5.4 JT	12.2 NJT	T04	8.19	8.2 J	11.2 J	5.4 JT	12.2 NJT	T04	8.19	8.2 J	11.2 J
PAHs																
Total PAHs	µg/kg-Wet	8	6	75	5.2 T	10.1 JT	T04	6.72	6.55 J	9.25 J	5.2 T	27 UT	26R111	7.73	6.65 J	12.3 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	4	2	50	140 J	140 J	T04	140	140 J	140 J	81 UT	140 J	T04	95.1	100 J	140 J
Lamprey Ammocoetes and Macropthalmia																
Conventionals																
Lipids	percent	8	8	100	3.14	17	Willamette Falls	9.73	11	16.3	3.14	17	Willamette Falls	9.73	11	16.3
Metals																
Arsenic	mg/kg-Wet	8	8	100	0.08 J	0.274	Willamette Falls	0.191	0.2	0.269	0.08 J	0.274	Willamette Falls	0.191	0.2	0.269
Chromium	mg/kg-Wet	8	7	88	0.19	0.447	Willamette Falls	0.294	0.29	0.426	0.1 U	0.447	Willamette Falls	0.263	0.275	0.422
Copper	mg/kg-Wet	8	8	100	3.92	4.8	LT023c; Willamette Falls	4.44	4.45	4.8	3.92	4.8	LT023c; Willamette Falls	4.44	4.45	4.8
Zinc	mg/kg-Wet	8	8	100	18	29.1	LT023c	23.3	22.9	29	18	29.1	LT023c	23.3	22.9	29
PCBs[c]																
Total PCBs	µg/kg-Wet	8	8	100	31.3 JT	52.8 JT	LT023c	41.2	42.1	51.3 J	31.3 JT	52.8 JT	LT023c	41.2	42.1	51.3 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	8	8	100	5.6 T	63 T	LT023c	29.6	22.3	61.1 J	5.6 T	63 T	LT023c	29.6	22.3	61.1 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	8	8	100	0.218 T	3.1 JT	LT023c	1.13	0.729 J	2.74 J	0.218 T	3.1 JT	LT023c	1.13	0.729 J	2.74 J
Pesticides																
Aldrin	µg/kg-Wet	8	4	50	0.65	2.72	LT023c	1.86	2.03	2.62	0.65	2.72	LT023c	1.15	0.558 J	2.49
Dieldrin	µg/kg-Wet	8	4	50	0.698	5.36	LT023c	2.01	0.986	4.71	0.698	6.2 UJ	Willamette Falls	2.38	2.6 UJ	4.57 J
Total chlordanes	µg/kg-Wet	8	4	50	8.71 JT	25.2 T	LT023c	15.4	13.8 J	23.5 J	6.5 UJA	25.2 T	LT023c	9.41	6.26 J	21.3 J
DDx	µg/kg-Wet	8	4	50	36.8 T	77.1 T	LT023c	54.1	51.2	73.5	23 UJT	77.1 T	LT023c	33.4	25.4 J	68.7
PAHs																
Total PAHs	µg/kg-Wet	8	7	88	3.6 JT	57.7 JT	Willamette Falls	34.1	34 JT	56.4 J	3.6 JT	57.7 JT	Willamette Falls	31	32.5 J	56.2 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	4	4	100	120 J	160 J	LT023c	138	135 J	157 J	120 J	160 J	LT023c	138	135 J	157 J
Sculpin (whole body)																
Conventionals																
Lipids	percent	2	2	100	3.03 T	3.79	SP12E	3.41	3.41	3.75	3.03 T	3.79	SP12E	3.41	3.41	3.75
Metals																
Arsenic	mg/kg-Wet	2	2	100	0.2	0.2	SP12E; SP12WA	0.2	0.2	0.2	0.2	0.2	SP12E; SP12WA	0.2	0.2	0.2
Chromium	mg/kg-Wet	2	2	100	0.15 JT	0.3	SP12E	0.225	0.225 J	0.293 J	0.15 JT	0.3	SP12E	0.225	0.225 J	0.293 J
Copper	mg/kg-Wet	2	2	100	0.856 T	2.98	SP12E	1.92	1.92	2.87	0.856 T	2.98	SP12E	1.92	1.92	2.87
Zinc	mg/kg-Wet	2	2	100	15	15.3 T	SP12WA	15.2	15.2	15.3	15	15.3 T	SP12WA	15.2	15.2	15.3
Butyltins																
Tributyltin ion	µg/kg-Wet	2	1	50	6.2 T	6.2 T	SP12WA	6.2	6.2 T	6.2 T	1.8 U	6.2 T	SP12WA	3.55	3.55	5.94

5.6-4. Summary Statistics for Indicator Contaminants in Fish Tissue, Downtown Reach (RM 11.8-15.3) and Upriver Reach (RM 15.3-28.4).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
PCBs[c]																
Total PCBs	µg/kg-Wet	2	2	100	55.8 JT	277 JT	SP12E	166	166 J	266 J	55.8 JT	277 JT	SP12E	166	166 J	266 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	2	2	100	5.27 JT	8.1 JT	SP12WA	6.69	6.69 J	7.96 J	5.27 JT	8.1 JT	SP12WA	6.69	6.69 J	7.96 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	2	2	100	0.617 JT	0.856 JT	SP12WA	0.737	0.737 J	0.844 J	0.617 JT	0.856 JT	SP12WA	0.737	0.737 J	0.844 J
Pesticides																
Aldrin	µg/kg-Wet	2	1	50	0.0101 JT	0.0101 JT	SP12WA	0.0101	0.0101 JT	0.0101 JT	0.00614 U	0.0101 JT	SP12WA	0.00659	0.00659 J	0.00975 J
Dieldrin	µg/kg-Wet	2	2	100	1.11 T	1.26	SP12E	1.19	1.19	1.25	1.11 T	1.26	SP12E	1.19	1.19	1.25
Total chlordanes	µg/kg-Wet	2	2	100	6.28 JT	8.23 JT	SP12E	7.26	7.26 J	8.13 J	6.28 JT	8.23 JT	SP12E	7.26	7.26 J	8.13 J
DDx	µg/kg-Wet	2	2	100	13.5 JT	15 JT	SP12E	14.3	14.3 J	14.9 J	13.5 JT	15 JT	SP12E	14.3	14.3 J	14.9 J
PAHs																
Total PAHs	µg/kg-Wet	2	2	100	9.2 JT	31 JT	SP12WA	20.1	20.1 J	29.9 J	9.2 JT	31 JT	SP12WA	20.1	20.1 J	29.9 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	2	0	0	--	--	--	--	--	--	66 U	66 U	SP12E; SP12WA	33	33 U	33 U
Smallmouth bass (whole body)																
Conventionals																
Lipids	percent	6	6	100	4.1	6.9	20R001	5.37	5.3	6.7	4.1	6.9	20R001	5.37	5.3	6.7
Metals																
Arsenic	mg/kg-Wet	6	6	100	0.1 J	0.36	20R001	0.233	0.235	0.353	0.1 J	0.36	20R001	0.233	0.235	0.353
Chromium	mg/kg-Wet	6	6	100	0.16	2.79	20R001	1.3	1.23	2.65	0.16	2.79	20R001	1.3	1.23	2.65
Copper	mg/kg-Wet	6	6	100	0.37	0.54	20R001	0.452	0.445	0.533	0.37	0.54	20R001	0.452	0.445	0.533
Zinc	mg/kg-Wet	6	6	100	12.8	16.8	28R001	14.7	14.7	16.4	12.8	16.8	28R001	14.7	14.7	16.4
PCBs[c]																
Total PCBs	µg/kg-Wet	6	6	100	78.1 JT	317 JT	20R001	169	117 J	307 J	78.1 JT	317 JT	20R001	169	117 J	307 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	6	6	100	3.99 T	10.5 T	20R001	6.66	5.55	10.3	3.99 T	10.5 T	20R001	6.66	5.55	10.3
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	6	6	100	0.905 JT	2.45 JT	20R001	1.46	1.38 J	2.26 J	0.905 JT	2.45 JT	20R001	1.46	1.38 J	2.26 J
Pesticides																
Aldrin	µg/kg-Wet	6	0	0	--	--	--	--	--	--	1 U	3 U	20R001	0.683	0.5 U	1.28 U
Dieldrin	µg/kg-Wet	6	6	100	1.9 NJ	4.5 NJ	20R001	2.83	2.5 J	4.28 J	1.9 NJ	4.5 NJ	20R001	2.83	2.5 J	4.28 J
Total chlordanes	µg/kg-Wet	6	6	100	4.5 NJT	15 NJT	20R001	8.13	6.25 J	14 J	4.5 NJT	15 NJT	20R001	8.13	6.25 J	14 J
DDx	µg/kg-Wet	6	6	100	56.9 NJT	120 NJT	20R001	84.8	83.4 J	116 J	56.9 NJT	120 NJT	20R001	84.8	83.4 J	116 J
PAHs																
Total PAHs	µg/kg-Wet	6	0	0	--	--	--	--	--	--	33 UT	93 UT	28R001	27.9	25.8 U	44 U
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	6	1	17	4800 T	4800 T	20R001	4800	4800 T	4800 T	99 UJT	4800 T	20R001	898	108 UJ	3670 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
RM - river mile
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalence

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

5.6-5. Summary Statistics for Indicator Contaminants in Invertebrate Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Clam (Corbicula spp. – body without shell)																
Conventionals																
Lipids	percent	41	41	100	0.837 T	4.63	FC028	2.22	2.16	3.38	0.837 T	4.63	FC028	2.22	2.16	3.38
Metals																
Arsenic	mg/kg-Wet	37	37	100	0.654	1.25	FC002	0.905	0.909	1.06	0.654	1.25	FC002	0.905	0.909	1.06
Chromium	mg/kg-Wet	37	37	100	0.4	1.05 T	FC0061	0.619	0.62	0.924	0.4	1.05 T	FC0061	0.619	0.62	0.924
Copper	mg/kg-Wet	37	37	100	5.99	13.5	FC023	9.17	9.26	11.6	5.99	13.5	FC023	9.17	9.26	11.6
Zinc	mg/kg-Wet	37	37	100	19.6	54	FC023	33.6	32.5	47.1	19.6	54	FC023	33.6	32.5	47.1
Butyltins																
Tributyltin ion	µg/kg-Wet	33	21	64	2.5	530	FC023	35.3	6.7	63	1.8 U	530	FC023	23.1	4	45
PCBs[c]																
Total PCBs	µg/kg-Wet	40	40	100	50.1 JT	2650 JT	FC016	237	105 J	530	50.1 JT	2650 JT	FC016	237	105 J	530
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	35	35	100	25.3 JT	189 T	FC019	76.1	56.1 JT	175	25.3 JT	189 T	FC019	76.1	56.1 JT	175
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	35	35	100	0.12 JT	5.45 JT	FC018	0.865	0.506 JT	3.37 J	0.12 JT	5.45 JT	FC018	0.865	0.506 JT	3.37 J
Pesticides																
Aldrin	µg/kg-Wet	40	36	90	0.126 J	5.07	FC028	0.384	0.234 J	0.431	0.0901 U	5.07	FC028	0.386	0.245 J	0.529
Dieldrin	µg/kg-Wet	40	37	92	0.338 J	2.62	FC028	0.85	0.801	1.21	0.338 J	2.62	FC028	0.824	0.749	1.2
Total chlordanes	µg/kg-Wet	40	40	100	1.1 NJT	16 JT	FC028	3.85	3.27 J	6.49 J	1.1 NJT	16 JT	FC028	3.85	3.27 J	6.49 J
DDx	µg/kg-Wet	40	40	100	7.44 JT	463 JT	07R006	52	25	187	7.44 JT	463 JT	07R006	52	25	187
PAHs																
Total PAHs	µg/kg-Wet	38	38	100	23 JT	4980 T	FC015	508	204 J	1720	23 JT	4980 T	FC015	508	204 J	1720
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	37	6	16	77 J	150 J	CA05W	112	110 J	148 J	53 U	340 UT	07R006	53.1	33 U	142 J
Clam (Corbicula spp. – depurated w/o shell)																
Conventionals																
Lipids	percent	3	3	100	1	2.14	CA02W	1.7	1.96	2.12	1	2.14	CA02W	1.7	1.96	2.12
Metals																
Arsenic	mg/kg-Wet	3	3	100	0.798	1.35	CA02W	0.989	0.819	1.3	0.798	1.35	CA02W	0.989	0.819	1.3
Chromium	mg/kg-Wet	3	3	100	0.4	0.5	CA02W; CA10W	0.467	0.5	0.5	0.4	0.5	CA02W; CA10W	0.467	0.5	0.5
Copper	mg/kg-Wet	3	3	100	6.85	9.03	CA02W	7.64	7.05	8.83	6.85	9.03	CA02W	7.64	7.05	8.83
Zinc	mg/kg-Wet	3	3	100	19.3	27.9	CA10W	23.2	22.4	27.4	19.3	27.9	CA10W	23.2	22.4	27.4
Butyltins																
Tributyltin ion	µg/kg-Wet	2	0	0	--	--	--	--	--	--	4.1 U	14 U	CA02W	4.53	4.53 U	6.75 U
PCBs[c]																
Total PCBs	µg/kg-Wet	3	3	100	82.6 JT	480 T	CA11E	239	155 T	448	82.6 JT	480 T	CA11E	239	155 T	448
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	3	3	100	24.3 JT	42.5 JT	CA10W	32.5	30.8 T	41.3 J	24.3 JT	42.5 JT	CA10W	32.5	30.8 T	41.3 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	3	3	100	0.139 JT	0.367 JT	CA02W	0.244	0.227 JT	0.353 J	0.139 JT	0.367 JT	CA02W	0.244	0.227 JT	0.353 J
Pesticides																
Aldrin	µg/kg-Wet	3	2	67	0.173 J	0.278 J	CA02W	0.226	0.226 J	0.273 J	0.0679 U	0.278 J	CA02W	0.162	0.173 J	0.268 J
Dieldrin	µg/kg-Wet	3	3	100	0.339 J	0.593 J	CA02W	0.507	0.589 J	0.593 J	0.339 J	0.593 J	CA02W	0.507	0.589 J	0.593 J
Total chlordanes	µg/kg-Wet	3	3	100	1.35 JT	3.11 JT	CA02W	2.31	2.46 JT	3.05 J	1.35 JT	3.11 JT	CA02W	2.31	2.46 JT	3.05 J
DDx	µg/kg-Wet	3	3	100	6.04 JT	27.8 T	CA02W	15.1	11.4 JT	26.2 J	6.04 JT	27.8 T	CA02W	15.1	11.4 JT	26.2 J
PAHs																
Total PAHs	µg/kg-Wet	3	3	100	30 JT	220 JT	CA02W	93.3	30 JT	201 J	30 JT	220 JT	CA02W	93.3	30 JT	201 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	2	0	0	--	--	--	--	--	--	66 U	74 U	CA02W	35	35 U	36.8 U
Crayfish (whole body)																
Conventionals																
Lipids	percent	32	32	100	0.16	1.3	08R001	0.779	0.785	1.15	0.16	1.3	08R001	0.779	0.785	1.15
Metals																
Arsenic	mg/kg-Wet	32	31	97	0.235 T	0.5 J	07R004	0.346	0.35 J	0.43 J	0.235 T	0.5 J	07R004	0.34	0.35 J	0.428 J
Chromium	mg/kg-Wet	32	32	100	0.09 J	0.9	02R001; 05R003; 06R001;	0.443	0.4	0.9	0.09 J	0.9	02R001; 05R003; 06R001;	0.443	0.4	0.9
Copper	mg/kg-Wet	32	32	100	10.4	20.2 T	CR11E	14.6	14.8 J	17.7	10.4	20.2 T	CR11E	14.6	14.8 J	17.7
Zinc	mg/kg-Wet	32	32	100	13.7 J	20.3 J	06R004	17	17	19.8	13.7 J	20.3 J	06R004	17	17	19.8

5.6-5. Summary Statistics for Indicator Contaminants in Invertebrate Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Butyltins																
Tributyltin ion	µg/kg-Wet	5	3	60	0.56 J	2.3	CR06W	1.19	0.7 J	2.14 J	0.35 U	2.3	CR06W	0.782	0.56 J	1.98 J
PCBs[c]																
Total PCBs	µg/kg-Wet	32	22	69	10.1 JT	1190 JT	CR11E	99.7	41.7 J	201 J	1.7 UT	1190 JT	CR11E	69.2	27.9 J	139 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	15	15	100	12.1 JT	281 T	07R006	59.2	42 JT	164	12.1 JT	281 T	07R006	59.2	42 JT	164
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	15	15	100	0.203 JT	18.2 T	07R006	1.91	0.61 JT	6.76	0.203 JT	18.2 T	07R006	1.91	0.61 JT	6.76
Pesticides																
Aldrin	µg/kg-Wet	32	1	3	0.037 J	0.037 J	CR08W	0.037	0.037 J	0.037 J	0.00171 UT	2 U	07R003	0.439	0.5 U	0.5 U
Dieldrin	µg/kg-Wet	32	5	16	0.00943 JT	0.0471 J	CR08W	0.0202	0.0149 J	0.0407 J	0.00943 JT	2 UJ	07R003	0.441	0.5 U	0.5 U
Total chlordanes	µg/kg-Wet	32	10	31	0.164 JT	2.7 NJT	04R004	0.947	0.78 J	2.34 J	0.164 JT	2.7 NJT	04R004	0.715	0.5 UJ	1.57 J
DDx	µg/kg-Wet	32	32	100	1.12 JT	84.9 NJT	07R006	10.2	6.95 J	25.9 J	1.12 JT	84.9 NJT	07R006	10.2	6.95 J	25.9 J
PAHs																
Total PAHs	µg/kg-Wet	32	8	25	1.2 JT	477 JT	06R004	106	48.4 J	370 J	1.2 JT	477 JT	06R004	48.6	30.5 U	130 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	32	0	0	--	--	--	--	--	--	66 U	270 UJT	07R006	60	50 UJ	107 U
Epibenthic invertebrates (whole body)																
Metals																
Arsenic	mg/kg-Wet	2	2	100	0.349	0.45	MIT001	0.4	0.4	0.445	0.349	0.45	MIT001	0.4	0.4	0.445
Chromium	mg/kg-Wet	2	2	100	0.64	1.73	MIT009	1.19	1.19	1.68	0.64	1.73	MIT009	1.19	1.19	1.68
Copper	mg/kg-Wet	2	2	100	3.01 J	6 J	MIT001	4.51	4.51 J	5.85 J	3.01 J	6 J	MIT001	4.51	4.51 J	5.85 J
Zinc	mg/kg-Wet	2	2	100	12.6 J	24.8 J	MIT009	18.7	18.7 J	24.2 J	12.6 J	24.8 J	MIT009	18.7	18.7 J	24.2 J
PCBs[c]																
Total PCBs	µg/kg-Wet	7	7	100	33.1 JT	498 T	MIT004	112	45.6 T	372	33.1 JT	498 T	MIT004	112	45.6 T	372
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	7	7	100	49.1 T	213 T	MIT009	119	108 T	205 J	49.1 T	213 T	MIT009	119	108 T	205 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	7	7	100	0.275 JT	3.34 JT	MIT356	0.88	0.449 JT	2.56 J	0.275 JT	3.34 JT	MIT356	0.88	0.449 JT	2.56 J
Pesticides																
Aldrin	µg/kg-Wet	7	6	86	0.00926 J	0.0872	MIT810	0.0464	0.0382 J	0.0861	0.00926 J	0.0872	MIT810	0.0407	0.025 J	0.0859
Dieldrin	µg/kg-Wet	7	7	100	0.098	0.396	MIT356	0.238	0.228	0.386	0.098	0.396	MIT356	0.238	0.228	0.386
Total chlordanes	µg/kg-Wet	7	7	100	0.313 JT	2.06 JT	MIT356	1.1	0.852 JT	1.96 J	0.313 JT	2.06 JT	MIT356	1.1	0.852 JT	1.96 J
DDx	µg/kg-Wet	7	7	100	2.67 T	94.8 T	MIT356	18.4	4.73 JT	69.9	2.67 T	94.8 T	MIT356	18.4	4.73 JT	69.9
Lab-exposed clam (Corbicula fluminea – body without shell)																
Conventionals																
Lipids	percent	34	34	100	0.527	2.29	BT024	1.01	0.874	2.01	0.527	2.29	BT024	1.01	0.874	2.01
Metals																
Arsenic	mg/kg-Wet	34	34	100	0.303 JT	0.548	BT023	0.426	0.417 J	0.543	0.303 JT	0.548	BT023	0.426	0.417 J	0.543
Chromium	mg/kg-Wet	34	34	100	0.14	0.49	BT033	0.223	0.21	0.379	0.14	0.49	BT033	0.223	0.21	0.379
Copper	mg/kg-Wet	34	34	100	2.64 T	5.94 J	BT023	3.82	3.74 J	4.67 J	2.64 T	5.94 J	BT023	3.82	3.74 J	4.67 J
Zinc	mg/kg-Wet	34	34	100	10.8 T	16.8	BT030	13.6	13.8	15.9	10.8 T	16.8	BT030	13.6	13.8	15.9
Butyltins																
Tributyltin ion	µg/kg-Wet	34	9	26	1.1	680	BT023	84.1	4.6	422	0.89 U	680	BT023	22.8	0.85 U	22.3
PCBs[c]																
Total PCBs	µg/kg-Wet	34	34	100	19.1 JT	189 T	BT028	43.8	28.4 J	112 J	19.1 JT	189 T	BT028	43.8	28.4 J	112 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	34	34	100	4.48 JT	696 JT	BT017	43.1	12.5 J	111 J	4.48 JT	696 JT	BT017	43.1	12.5 J	111 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	34	34	100	0.00911 JT	40.5 JT	BT017	1.44	0.124 J	1.46 J	0.00911 JT	40.5 JT	BT017	1.44	0.124 J	1.46 J
Pesticides																
Aldrin	µg/kg-Wet	34	27	79	0.0119 J	2.14	BT028	0.105	0.0232 J	0.0567 J	0.0119 J	2.14	BT028	0.0856	0.02 J	0.053 J
Dieldrin	µg/kg-Wet	34	34	100	0.139 J	4.14	BT028	0.363	0.193	0.659	0.139 J	4.14	BT028	0.363	0.193	0.659
Total chlordanes	µg/kg-Wet	34	34	100	1.61 JT	7.7 JT	BT017	3	2.43 J	6.21 J	1.61 JT	7.7 JT	BT017	3	2.43 J	6.21 J
DDx	µg/kg-Wet	34	34	100	1.13 JT	1040 T	BT018	37	1.97 J	52.2 J	1.13 JT	1040 T	BT018	37	1.97 J	52.2 J
PAHs																
Total PAHs	µg/kg-Wet	34	34	100	18.2 JT	1320 T	BT012	141	45.1 J	790 J	18.2 JT	1320 T	BT012	141	45.1 J	790 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	34	26	76	53 J	8600	BT028	416	83.5 J	155 J	53 U	8600	BT028	324	74.5 J	147 J

5.6-5. Summary Statistics for Indicator Contaminants in Invertebrate Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Lab-exposed worm (Lumbriculus variegatus – whole body)																
Conventionals																
Lipids	percent	34	34	100	1.35	3.46	BT023	2.39	2.36	2.93	1.35	3.46	BT023	2.39	2.36	2.93
Metals																
Arsenic	mg/kg-Wet	34	34	100	0.285	3.04	BT019	1.21	1.17	2	0.285	3.04	BT019	1.21	1.17	2
Chromium	mg/kg-Wet	34	34	100	0.14	0.89	BT025	0.514	0.495	0.794	0.14	0.89	BT025	0.514	0.495	0.794
Copper	mg/kg-Wet	34	34	100	1.83 T	20.2	BT023	2.93	2.32	3.36	1.83 T	20.2	BT023	2.93	2.32	3.36
Zinc	mg/kg-Wet	34	34	100	18.2 T	31.5	BT007	26.2	25.9	30.8	18.2 T	31.5	BT007	26.2	25.9	30.8
Butyltins																
Tributyltin ion	µg/kg-Wet	34	14	41	2.1	1700	BT023	131	4.4	627	0.44 U	1700	BT023	54.5	1.2 U	31.5
PCBs[c]																
Total PCBs	µg/kg-Wet	34	34	100	44.8 JT	4310 JT	BT028	628	170 J	3300	44.8 JT	4310 JT	BT028	628	170 J	3300
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	34	34	100	51 JT	6440 T	BT017	369	118	588	51 JT	6440 T	BT017	369	118	588
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	34	34	100	0.743 JT	448 JT	BT017	17	2.32 J	18.6 J	0.743 JT	448 JT	BT017	17	2.32 J	18.6 J
Pesticides																
Aldrin	µg/kg-Wet	34	33	97	0.043 J	37	BT028	1.55	0.429 J	0.941	0.043 J	37	BT028	1.51	0.428 J	0.935
Dieldrin	µg/kg-Wet	34	34	100	0.127 J	26.7	BT028	1.2	0.367	1.06	0.127 J	26.7	BT028	1.2	0.367	1.06
Total chlordanes	µg/kg-Wet	34	34	100	2.43 JT	71.9 T	BT028	6.65	3.55 J	13.3 J	2.43 JT	71.9 T	BT028	6.65	3.55 J	13.3 J
DDx	µg/kg-Wet	34	34	100	14.5 JT	1490 T	BT017	124	40.9 J	542 J	14.5 JT	1490 T	BT017	124	40.9 J	542 J
PAHs																
Total PAHs	µg/kg-Wet	34	34	100	83 T	37300 T	BT014	3200	612 J	19700	83 T	37300 T	BT014	3200	612 J	19700
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	34	19	56	69 J	220 J	BT010; BT023	142	130 J	220 J	53 U	220 J	BT010; BT023	93.6	100 J	207 J
Mussel (body without shell)																
Conventionals																
Lipids	percent	7	7	100	0.18	0.64	FM025	0.401	0.4	0.601	0.18	0.64	FM025	0.401	0.4	0.601
Metals																
Arsenic	mg/kg-Wet	7	7	100	0.224	0.616	FM021	0.385	0.35	0.563	0.224	0.616	FM021	0.385	0.35	0.563
Chromium	mg/kg-Wet	7	3	43	0.21	0.28	FM006	0.248	0.255 JT	0.278 J	0.13 U	0.34 U	FM025	0.183	0.17 U	0.273 J
Copper	mg/kg-Wet	7	7	100	1.01	1.82	FM006	1.39	1.37 T	1.78	1.01	1.82	FM006	1.39	1.37 T	1.78
Zinc	mg/kg-Wet	7	7	100	15.7	41.5	FM021	27	27.4	39.1	15.7	41.5	FM021	27	27.4	39.1
Butyltins																
Tributyltin ion	µg/kg-Wet	7	7	100	2.2 J	16 J	FM006	5.8	4.1 J	13 J	2.2 J	16 J	FM006	5.8	4.1 J	13 J
PCBs[c]																
Total PCBs	µg/kg-Wet	7	7	100	5.75 JT	108 JT	FM006	25.7	12.5 JT	82.2 J	5.75 JT	108 JT	FM006	25.7	12.5 JT	82.2 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	7	7	100	14.4 JT	66.2 JT	FM006	38.7	40.1 T	63.1 J	14.4 JT	66.2 JT	FM006	38.7	40.1 T	63.1 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	7	7	100	0.0704 JT	0.446 JT	FM006	0.231	0.176 JT	0.428 J	0.0704 JT	0.446 JT	FM006	0.231	0.176 JT	0.428 J
Pesticides																
Aldrin	µg/kg-Wet	7	4	57	0.007 J	0.067 J	FM025	0.023	0.009 J	0.0585 J	0.005 UJ	0.067 J	FM025	0.0143	0.007 J	0.0499 J
Dieldrin	µg/kg-Wet	7	7	100	0.0742 J	0.186 J	FM025	0.136	0.143 J	0.177 J	0.0742 J	0.186 J	FM025	0.136	0.143 J	0.177 J
Total chlordanes	µg/kg-Wet	7	7	100	0.191 JT	0.866 JT	FM025	0.451	0.434 JT	0.763 J	0.191 JT	0.866 JT	FM025	0.451	0.434 JT	0.763 J
DDx	µg/kg-Wet	7	7	100	0.979 JT	4.44 JT	FM025	2.47	2.62 JT	4.05 J	0.979 JT	4.44 JT	FM025	2.47	2.62 JT	4.05 J

5.6-5. Summary Statistics for Indicator Contaminants in Invertebrate Tissue, Study Area (RM 1.9-11.8).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
PAHs																
Total PAHs	µg/kg-Wet	7	7	100	16 JT	150 JT	FM006	44	24 JT	116 J	16 JT	150 JT	FM006	44	24 JT	116 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	7	4	57	54 J	120 J	FM006	90.5	94 J	117 J	49 UJ	120 J	FM006	65.7	54 J	114 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
RM - river mile
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalence

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

5.6-6. Summary Statistics for Indicator Contaminants in Invertebrate Tissue from Below the Study Area - Downstream Reach (RM 0 – 1.9) and Multnomah Channel.

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Clam (Corbicula spp. – body without shell)																
Conventionals																
Lipids	percent	2	2	100	1.57	2.06 T	CA01E	1.82	1.82	2.04	1.57	2.06 T	CA01E	1.82	1.82	2.04
Metals																
Arsenic	mg/kg-Wet	2	2	100	1.03	1.07 T	CA01E	1.05	1.05	1.07	1.03	1.07 T	CA01E	1.05	1.05	1.07
Chromium	mg/kg-Wet	2	2	100	0.5 T	0.62	FC003	0.56	0.56	0.614	0.5 T	0.62	FC003	0.56	0.56	0.614
Copper	mg/kg-Wet	2	2	100	8.23 T	9.35	FC003	8.79	8.79	9.29	8.23 T	9.35	FC003	8.79	8.79	9.29
Zinc	mg/kg-Wet	2	2	100	25.4 T	30.5	FC003	28	28	30.2	25.4 T	30.5	FC003	28	28	30.2
Butyltins																
Tributyltin ion	µg/kg-Wet	2	1	50	4.7	4.7	FC003	4.7	4.7	4.7	3.5 UT	4.7	FC003	3.23	3.23	4.55
PCBs[c]																
Total PCBs	µg/kg-Wet	2	2	100	70.4 JT	127 T	CA01E	98.7	98.7 J	124 J	70.4 JT	127 T	CA01E	98.7	98.7 J	124 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	2	2	100	33.2 JT	39 T	FC003	36.1	36.1 J	38.7 J	33.2 JT	39 T	FC003	36.1	36.1 J	38.7 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	2	2	100	0.0963 JT	0.379 JT	CA01E	0.238	0.238 J	0.365 J	0.0963 JT	0.379 JT	CA01E	0.238	0.238 J	0.365 J
Pesticides																
Aldrin	µg/kg-Wet	2	2	100	0.144 J	0.23 JT	CA01E	0.187	0.187 J	0.226 J	0.144 J	0.23 JT	CA01E	0.187	0.187 J	0.226 J
Dieldrin	µg/kg-Wet	2	2	100	0.591 JT	0.609	FC003	0.6	0.6 J	0.608 J	0.591 JT	0.609	FC003	0.6	0.6 J	0.608 J
Total chlordanes	µg/kg-Wet	2	2	100	2.41 JT	3.02 JT	CA01E	2.72	2.72 J	2.99 J	2.41 JT	3.02 JT	CA01E	2.72	2.72 J	2.99 J
DDx	µg/kg-Wet	2	2	100	22.8 T	28.5 T	CA01E	25.7	25.7	28.2	22.8 T	28.5 T	CA01E	25.7	25.7	28.2
PAHs																
Total PAHs	µg/kg-Wet	2	2	100	95 JT	551 T	FC003	323	323 J	528 J	95 JT	551 T	FC003	323	323 J	528 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	2	0	0	--	--	--	--	--	--	53 U	66 UT	CA01E	29.8	29.8 U	32.7 U
Clam (Corbicula spp. – depurated w/o shell)																
Conventionals																
Lipids	percent	1	1	100	1.62	1.62	CA01E	1.62	1.62	1.62	1.62	1.62	CA01E	1.62	1.62	1.62
Metals																
Arsenic	mg/kg-Wet	1	1	100	1.02	1.02	CA01E	1.02	1.02	1.02	1.02	1.02	CA01E	1.02	1.02	1.02
Chromium	mg/kg-Wet	1	1	100	0.4	0.4	CA01E	0.4	0.4	0.4	0.4	0.4	CA01E	0.4	0.4	0.4
Copper	mg/kg-Wet	1	1	100	7.59	7.59	CA01E	7.59	7.59	7.59	7.59	7.59	CA01E	7.59	7.59	7.59
Zinc	mg/kg-Wet	1	1	100	21.3	21.3	CA01E	21.3	21.3	21.3	21.3	21.3	CA01E	21.3	21.3	21.3
Butyltins																
Tributyltin ion	µg/kg-Wet	1	0	0	--	--	--	--	--	--	4.1 U	4.1 U	CA01E	2.05	2.05 U	2.05 U
PCBs[c]																
Total PCBs	µg/kg-Wet	1	1	100	110 JT	110 JT	CA01E	110	110 JT	110 JT	110 JT	110 JT	CA01E	110	110 JT	110 JT
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	1	1	100	29.3 JT	29.3 JT	CA01E	29.3	29.3 JT	29.3 JT	29.3 JT	29.3 JT	CA01E	29.3	29.3 JT	29.3 JT
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	1	1	100	0.192 JT	0.192 JT	CA01E	0.192	0.192 JT	0.192 JT	0.192 JT	0.192 JT	CA01E	0.192	0.192 JT	0.192 JT
Pesticides																
Aldrin	µg/kg-Wet	1	1	100	0.187 J	0.187 J	CA01E	0.187	0.187 J	0.187 J	0.187 J	0.187 J	CA01E	0.187	0.187 J	0.187 J
Dieldrin	µg/kg-Wet	1	1	100	0.504 J	0.504 J	CA01E	0.504	0.504 J	0.504 J	0.504 J	0.504 J	CA01E	0.504	0.504 J	0.504 J
Total chlordanes	µg/kg-Wet	1	1	100	2.46 JT	2.46 JT	CA01E	2.46	2.46 JT	2.46 JT	2.46 JT	2.46 JT	CA01E	2.46	2.46 JT	2.46 JT
DDx	µg/kg-Wet	1	1	100	23.1 T	23.1 T	CA01E	23.1	23.1 T	23.1 T	23.1 T	23.1 T	CA01E	23.1	23.1 T	23.1 T
PAHs																
Total PAHs	µg/kg-Wet	1	1	100	76 JT	76 JT	CA01E	76	76 JT	76 JT	76 JT	76 JT	CA01E	76	76 JT	76 JT
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	1	1	100	89 J	89 J	CA01E	89	89 J	89 J	89 J	89 J	CA01E	89	89 J	89 J
Crayfish (whole body)																
Conventionals																
Lipids	percent	2	2	100	1.06	1.08	CR01EA	1.07	1.07	1.08	1.06	1.08	CR01EA	1.07	1.07	1.08
Metals																
Arsenic	mg/kg-Wet	2	2	100	0.34	0.4 T	CR01W	0.37	0.37	0.397	0.34	0.4 T	CR01W	0.37	0.37	0.397
Chromium	mg/kg-Wet	2	2	100	0.2 J	0.4 T	CR01W	0.3	0.3 J	0.39 J	0.2 J	0.4 T	CR01W	0.3	0.3 J	0.39 J
Copper	mg/kg-Wet	2	2	100	14.3 T	15.5	CR01EA	14.9	14.9	15.4	14.3 T	15.5	CR01EA	14.9	14.9	15.4
Zinc	mg/kg-Wet	2	2	100	15.3	15.9 T	CR01W	15.6	15.6	15.9	15.3	15.9 T	CR01W	15.6	15.6	15.9

5.6-6. Summary Statistics for Indicator Contaminants in Invertebrate Tissue from Below the Study Area - Downstream Reach (RM 0 – 1.9) and Multnomah Channel.

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Butyltins																
Tributyltin ion	µg/kg-Wet	2	1	50	1.3 J	1.3 J	CR01EA	1.3	1.3 J	1.3 J	0.35 U	1.3 J	CR01EA	0.738	0.738 J	1.24 J
PCBs[c]																
Total PCBs	µg/kg-Wet	2	2	100	7.14 JT	7.16 JT	CR01EA	7.15	7.15 J	7.16 J	7.14 JT	7.16 JT	CR01EA	7.15	7.15 J	7.16 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	2	2	100	11.3 T	12.4 T	CR01W	11.9	11.9	12.3	11.3 T	12.4 T	CR01W	11.9	11.9	12.3
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	2	2	100	0.21 JT	0.321 JT	CR01W	0.266	0.266 J	0.315 J	0.21 JT	0.321 JT	CR01W	0.266	0.266 J	0.315 J
Pesticides																
Aldrin	µg/kg-Wet	2	0	0	--	--	--	--	--	--	0.00184 U	0.00199 U	CR01W	0.000958	0.000958 U	0.000991 U
Dieldrin	µg/kg-Wet	2	1	50	0.0134 J	0.0134 J	CR01W	0.0134	0.0134 J	0.0134 J	0.0134 J	0.0141 U	CR01EA	0.0102	0.0102 J	0.0131 J
Total chlordanes	µg/kg-Wet	2	2	100	0.2 JT	0.207 JT	CR01W	0.204	0.204 J	0.207 J	0.2 JT	0.207 JT	CR01W	0.204	0.204 J	0.207 J
DDx	µg/kg-Wet	2	2	100	2.62 JT	3.17 JT	CR01EA	2.9	2.9 J	3.14 J	2.62 JT	3.17 JT	CR01EA	2.9	2.9 J	3.14 J
PAHs																
Total PAHs	µg/kg-Wet	2	2	100	0.99 JT	3.5 JT	CR01EA	2.25	2.25 J	3.37 J	0.99 JT	3.5 JT	CR01EA	2.25	2.25 J	3.37 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	2	0	0	--	--	--	--	--	--	66 U	66 U	CR01EA; CR01W	33	33 U	33 U
Lab-exposed clam (Corbicula fluminea – body without shell)																
Conventionals																
Lipids	percent	1	1	100	0.77	0.77	BT003	0.77	0.77	0.77	0.77	0.77	BT003	0.77	0.77	0.77
Metals																
Arsenic	mg/kg-Wet	1	1	100	0.411	0.411	BT003	0.411	0.411	0.411	0.411	0.411	BT003	0.411	0.411	0.411
Chromium	mg/kg-Wet	1	1	100	0.17	0.17	BT003	0.17	0.17	0.17	0.17	0.17	BT003	0.17	0.17	0.17
Copper	mg/kg-Wet	1	1	100	3.67 J	3.67 J	BT003	3.67	3.67 J	3.67 J	3.67 J	3.67 J	BT003	3.67	3.67 J	3.67 J
Zinc	mg/kg-Wet	1	1	100	12.2	12.2	BT003	12.2	12.2	12.2	12.2	12.2	BT003	12.2	12.2	12.2
Butyltins																
Tributyltin ion	µg/kg-Wet	1	0	0	--	--	--	--	--	--	1 U	1 U	BT003	0.5	0.5 U	0.5 U
PCBs[c]																
Total PCBs	µg/kg-Wet	1	1	100	19.1 JT	19.1 JT	BT003	19.1	19.1 JT	19.1 JT	19.1 JT	19.1 JT	BT003	19.1	19.1 JT	19.1 JT
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	1	1	100	4.83 T	4.83 T	BT003	4.83	4.83 T	4.83 T	4.83 T	4.83 T	BT003	4.83	4.83 T	4.83 T
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	1	1	100	0.000714 T	0.000714 T	BT003	0.000714	0.000714 T	0.000714 T	0.000714 T	0.000714 T	BT003	0.000714	0.000714 T	0.000714 T
Pesticides																
Aldrin	µg/kg-Wet	1	1	100	0.0118 J	0.0118 J	BT003	0.0118	0.0118 J	0.0118 J	0.0118 J	0.0118 J	BT003	0.0118	0.0118 J	0.0118 J
Dieldrin	µg/kg-Wet	1	1	100	0.155 J	0.155 J	BT003	0.155	0.155 J	0.155 J	0.155 J	0.155 J	BT003	0.155	0.155 J	0.155 J
Total chlordanes	µg/kg-Wet	1	1	100	1.92 JT	1.92 JT	BT003	1.92	1.92 JT	1.92 JT	1.92 JT	1.92 JT	BT003	1.92	1.92 JT	1.92 JT
DDx	µg/kg-Wet	1	1	100	1.23 JT	1.23 JT	BT003	1.23	1.23 JT	1.23 JT	1.23 JT	1.23 JT	BT003	1.23	1.23 JT	1.23 JT
PAHs																
Total PAHs	µg/kg-Wet	1	1	100	27.5 JT	27.5 JT	BT003	27.5	27.5 JT	27.5 JT	27.5 JT	27.5 JT	BT003	27.5	27.5 JT	27.5 JT
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	1	1	100	120 J	120 J	BT003	120	120 J	120 J	120 J	120 J	BT003	120	120 J	120 J
Lab-exposed worm (Lumbriculus variegatus – whole body)																
Conventionals																
Lipids	percent	1	1	100	2.07	2.07	BT003	2.07	2.07	2.07	2.07	2.07	BT003	2.07	2.07	2.07
Metals																
Arsenic	mg/kg-Wet	1	1	100	0.469	0.469	BT003	0.469	0.469	0.469	0.469	0.469	BT003	0.469	0.469	0.469
Chromium	mg/kg-Wet	1	1	100	0.35	0.35	BT003	0.35	0.35	0.35	0.35	0.35	BT003	0.35	0.35	0.35
Copper	mg/kg-Wet	1	1	100	2.88	2.88	BT003	2.88	2.88	2.88	2.88	2.88	BT003	2.88	2.88	2.88
Zinc	mg/kg-Wet	1	1	100	26.1	26.1	BT003	26.1	26.1	26.1	26.1	26.1	BT003	26.1	26.1	26.1
Butyltins																
Tributyltin ion	µg/kg-Wet	1	1	100	2.6	2.6	BT003	2.6	2.6	2.6	2.6	2.6	BT003	2.6	2.6	2.6
PCBs[c]																
Total PCBs	µg/kg-Wet	1	1	100	48.9 T	48.9 T	BT003	48.9	48.9 T	48.9 T	48.9 T	48.9 T	BT003	48.9	48.9 T	48.9 T
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	1	1	100	68.1 JT	68.1 JT	BT003	68.1	68.1 JT	68.1 JT	68.1 JT	68.1 JT	BT003	68.1	68.1 JT	68.1 JT
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	1	1	100	1.24 JT	1.24 JT	BT003	1.24	1.24 JT	1.24 JT	1.24 JT	1.24 JT	BT003	1.24	1.24 JT	1.24 JT

5.6-6. Summary Statistics for Indicator Contaminants in Invertebrate Tissue from Below the Study Area - Downstream Reach (RM 0 – 1.9) and Multnomah Channel.

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Pesticides																
Aldrin	µg/kg-Wet	1	1	100	0.073 J	0.073 J	BT003	0.073	0.073 J	0.073 J	0.073 J	0.073 J	BT003	0.073	0.073 J	0.073 J
Dieldrin	µg/kg-Wet	1	1	100	0.499	0.499	BT003	0.499	0.499	0.499	0.499	0.499	BT003	0.499	0.499	0.499
Total chlordanes	µg/kg-Wet	1	1	100	1.89 JT	1.89 JT	BT003	1.89	1.89 JT	1.89 JT	1.89 JT	1.89 JT	BT003	1.89	1.89 JT	1.89 JT
DDx	µg/kg-Wet	1	1	100	24.4 JT	24.4 JT	BT003	24.4	24.4 JT	24.4 JT	24.4 JT	24.4 JT	BT003	24.4	24.4 JT	24.4 JT
PAHs																
Total PAHs	µg/kg-Wet	1	1	100	517 JT	517 JT	BT003	517	517 JT	517 JT	517 JT	517 JT	BT003	517	517 JT	517 JT
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	1	1	100	130 J	130 J	BT003	130	130 J	130 J	130 J	130 J	BT003	130	130 J	130 J

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
RM - river mile
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalence

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

5.6-7. Summary Statistics for Indicator Contaminants in Invertebrate Tissue, Downtown Reach (RM 11.8-15.3) and Upriver Reach (RM 15.3-28.4).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Clam (Corbicula spp. – body without shell)																
Conventionals																
Lipids	percent	2	2	100	1.78	2.06	CA12E	1.92	1.92	2.05	1.78	2.06	CA12E	1.92	1.92	2.05
Metals																
Arsenic	mg/kg-Wet	2	2	100	0.615	0.799	CA12E	0.707	0.707	0.79	0.615	0.799	CA12E	0.707	0.707	0.79
Chromium	mg/kg-Wet	2	2	100	0.5	0.7	CA12E	0.6	0.6	0.69	0.5	0.7	CA12E	0.6	0.6	0.69
Copper	mg/kg-Wet	2	2	100	4.57	6.97	CA12E	5.77	5.77	6.85	4.57	6.97	CA12E	5.77	5.77	6.85
Zinc	mg/kg-Wet	2	2	100	27.8	30.4	CA12E	29.1	29.1	30.3	27.8	30.4	CA12E	29.1	29.1	30.3
Butyltins																
Tributyltin ion	µg/kg-Wet	2	0	0	--	--	--	--	--	--	3.8 U	4 U	CA12E	1.95	1.95 U	2 U
PCBs[c]																
Total PCBs	µg/kg-Wet	2	2	100	39.1 JT	141 JT	CA12E	90.1	90.1 J	136 J	39.1 JT	141 JT	CA12E	90.1	90.1 J	136 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	2	2	100	33.4 JT	36.6 JT	CA12E	35	35 J	36.4 J	33.4 JT	36.6 JT	CA12E	35	35 J	36.4 J
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	2	2	100	0.215 JT	0.318 JT	CA12E	0.267	0.267 J	0.313 J	0.215 JT	0.318 JT	CA12E	0.267	0.267 J	0.313 J
Pesticides																
Aldrin	µg/kg-Wet	2	2	100	0.11 J	0.13 J	CA12W	0.12	0.12 J	0.129 J	0.11 J	0.13 J	CA12W	0.12	0.12 J	0.129 J
Dieldrin	µg/kg-Wet	2	2	100	0.495 J	0.61 J	CA12E	0.553	0.553 J	0.604 J	0.495 J	0.61 J	CA12E	0.553	0.553 J	0.604 J
Total chlordanes	µg/kg-Wet	2	2	100	1.99 JT	2.52 JT	CA12E	2.26	2.26 J	2.49 J	1.99 JT	2.52 JT	CA12E	2.26	2.26 J	2.49 J
DDx	µg/kg-Wet	2	2	100	8.65 JT	9.35 JT	CA12E	9	9 J	9.32 J	8.65 JT	9.35 JT	CA12E	9	9 J	9.32 J
PAHs																
Total PAHs	µg/kg-Wet	2	2	100	22 JT	110 JT	CA12E	66	66 J	106 J	22 JT	110 JT	CA12E	66	66 J	106 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	2	1	50	150 J	150 J	CA12E	150	150 J	150 J	66 U	150 J	CA12E	91.5	91.5 J	144 J
Clam (Corbicula spp. – depurated w/o shell)																
Conventionals																
Lipids	percent	1	1	100	1.43	1.43	CA12E	1.43	1.43	1.43	1.43	1.43	CA12E	1.43	1.43	1.43
Metals																
Arsenic	mg/kg-Wet	1	1	100	0.76	0.76	CA12E	0.76	0.76	0.76	0.76	0.76	CA12E	0.76	0.76	0.76
Chromium	mg/kg-Wet	1	1	100	0.5	0.5	CA12E	0.5	0.5	0.5	0.5	0.5	CA12E	0.5	0.5	0.5
Copper	mg/kg-Wet	1	1	100	7.62	7.62	CA12E	7.62	7.62	7.62	7.62	7.62	CA12E	7.62	7.62	7.62
Zinc	mg/kg-Wet	1	1	100	23.7	23.7	CA12E	23.7	23.7	23.7	23.7	23.7	CA12E	23.7	23.7	23.7
Butyltins																
Tributyltin ion	µg/kg-Wet	1	0	0	--	--	--	--	--	--	4 U	4 U	CA12E	2	2 U	2 U
PCBs[c]																
Total PCBs	µg/kg-Wet	1	1	100	87.2 JT	87.2 JT	CA12E	87.2	87.2 JT	87.2 JT	87.2 JT	87.2 JT	CA12E	87.2	87.2 JT	87.2 JT
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	1	1	100	25.9 JT	25.9 JT	CA12E	25.9	25.9 JT	25.9 JT	25.9 JT	25.9 JT	CA12E	25.9	25.9 JT	25.9 JT
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	1	1	100	0.22 JT	0.22 JT	CA12E	0.22	0.22 JT	0.22 JT	0.22 JT	0.22 JT	CA12E	0.22	0.22 JT	0.22 JT
Pesticides																
Aldrin	µg/kg-Wet	1	0	0	--	--	--	--	--	--	0.0766 U	0.0766 U	CA12E	0.0383	0.0383 U	0.0383 U
Dieldrin	µg/kg-Wet	1	1	100	0.425 J	0.425 J	CA12E	0.425	0.425 J	0.425 J	0.425 J	0.425 J	CA12E	0.425	0.425 J	0.425 J
Total chlordanes	µg/kg-Wet	1	1	100	1.9 JT	1.9 JT	CA12E	1.9	1.9 JT	1.9 JT	1.9 JT	1.9 JT	CA12E	1.9	1.9 JT	1.9 JT
DDx	µg/kg-Wet	1	1	100	7.01 JT	7.01 JT	CA12E	7.01	7.01 JT	7.01 JT	7.01 JT	7.01 JT	CA12E	7.01	7.01 JT	7.01 JT
PAHs																
Total PAHs	µg/kg-Wet	1	1	100	23 JT	23 JT	CA12E	23	23 JT	23 JT	23 JT	23 JT	CA12E	23	23 JT	23 JT
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	1	1	100	190 J	190 J	CA12E	190	190 J	190 J	190 J	190 J	CA12E	190	190 J	190 J
Crayfish (whole body)																
Conventionals																
Lipids	percent	2	2	100	1.02	1.12	CR12E	1.07	1.07	1.12	1.02	1.12	CR12E	1.07	1.07	1.12
Metals																
Arsenic	mg/kg-Wet	2	2	100	0.29	0.29	CR12E; CR12W	0.29	0.29	0.29	0.29	0.29	CR12E; CR12W	0.29	0.29	0.29
Chromium	mg/kg-Wet	2	2	100	0.3 J	0.4	CR12E	0.35	0.35 J	0.395 J	0.3 J	0.4	CR12E	0.35	0.35 J	0.395 J
Copper	mg/kg-Wet	2	2	100	17	18	CR12W	17.5	17.5	18	17	18	CR12W	17.5	17.5	18
Zinc	mg/kg-Wet	2	2	100	18.9	19.4	CR12W	19.2	19.2	19.4	18.9	19.4	CR12W	19.2	19.2	19.4

5.6-7. Summary Statistics for Indicator Contaminants in Invertebrate Tissue, Downtown Reach (RM 11.8-15.3) and Upriver Reach (RM 15.3-28.4).

					Detected Concentrations						Detected and Not Detected Concentrations					
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Maximum Location(s)**	**Mean**	**Median[b]**	**95th Percentile[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Maximum Location(s)**	**Mean (half DL)**	**Median (half DL)[b]**	**95th Percentile (half DL)[b]**
Butyltins																
Tributyltin ion	µg/kg-Wet	2	1	50	1.6	1.6	CR12W	1.6	1.6	1.6	0.35 U	1.6	CR12W	0.888	0.888	1.53
PCBs[c]																
Total PCBs	µg/kg-Wet	2	2	100	7.41 JT	19.4 JT	CR12E	13.4	13.4 J	18.8 J	7.41 JT	19.4 JT	CR12E	13.4	13.4 J	18.8 J
PCDD/Fs Homologs																
Total PCDD/Fs	pg/g-Wet	2	2	100	9.46 T	14 T	CR12E	11.7	11.7	13.8	9.46 T	14 T	CR12E	11.7	11.7	13.8
PCDD/Fs																
TCDD TEQ (ND = 0)	pg/g-Wet	2	2	100	0.283 JT	0.485 JT	CR12E	0.384	0.384 J	0.475 J	0.283 JT	0.485 JT	CR12E	0.384	0.384 J	0.475 J
Pesticides																
Aldrin	µg/kg-Wet	2	0	0	--	--	--	--	--	--	0.00205 U	0.00337 U	CR12W	0.00136	0.00136 U	0.00165 U
Dieldrin	µg/kg-Wet	2	2	100	0.0105 J	0.0164 J	CR12W	0.0135	0.0135 J	0.0161 J	0.0105 J	0.0164 J	CR12W	0.0135	0.0135 J	0.0161 J
Total chlordanes	µg/kg-Wet	2	2	100	0.226 JT	0.382 JT	CR12E	0.304	0.304 J	0.374 J	0.226 JT	0.382 JT	CR12E	0.304	0.304 J	0.374 J
DDx	µg/kg-Wet	2	2	100	1.75 JT	2.47 JT	CR12E	2.11	2.11 J	2.43 J	1.75 JT	2.47 JT	CR12E	2.11	2.11 J	2.43 J
PAHs																
Total PAHs	µg/kg-Wet	2	2	100	1.3 JT	1.7 JT	CR12E	1.5	1.5 J	1.68 J	1.3 JT	1.7 JT	CR12E	1.5	1.5 J	1.68 J
Phthalates																
Bis(2-ethylhexyl) phthalate	µg/kg-Wet	2	0	0	--	--	--	--	--	--	84 U	120 U	CR12W	51	51 U	59.1 U

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

[c] Total PCBs are total PCB congeners whenever available and total Aroclors if not.

-- data not available.
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
ND - not detected
RM - river mile
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxicity equivalence

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
Reason codes for descriptors:
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 5.6-8. Biota Composite Samples Not Part of the Study Area Data Set.

River Mile	Species	Tissue	Sample ID
RM 1–2	Clam	Body without shell	LW3-CA01E-C01
RM 1–2	Clam	Depurated body without shell	LW3-CA01E-C00D
RM 1–2	Crayfish	Whole body	LW3-CR01E-ALT-C00
RM 1–2	Crayfish	Whole body	LW3-CR01W-C00
RM 1–2	Sculpin	Whole body	LW3-SP01E-C00
RM 1–2	Sculpin	Whole body	LW3-SP01W-C00
RM 11.8–12.2	Clam	Body without shell	LW3-CA12W-C00
RM 11.8–12.2	Clam	Body without shell	LW3-CA12E-C00
RM 11.8–12.2	Clam	Depurated body without shell	LW3-CA12E-C00D
RM 11.8–12.2	Crayfish	Whole body	LW3-CR12W-C00
RM 11.8–12.2	Crayfish	Whole body	LW3-CR12E-C00
RM 11.8–12.2	Sculpin	Whole body	LW3-SP12W-ALT-C01
RM 11.8–12.2	Sculpin	Whole body	LW3-SP12E-C00
Multnomah Channel	Clam	Body without shell	LW2-BTFC003
Multnomah Channel	Clam, lab	Body without shell	LW2-BTLC003
Multnomah Channel	*Lumbriculus variegatus*	Whole body	LW2-BTLW003

Table 6.0-1. Indicator Contaminant Lists for External Loading Analyses.

Analyte	Upstream Surface Water Loading	Stormwater Loading	Atmospheric Deposition Loading	Upland Groundwater Plume Loading	Advective Loading from Sediment (Surface and Subsurface)
Metals					
Arsenic	X	X	X	X	X
Barium				X	
Cadmium				X	
Chromium	X	X	X		
Copper	X	X	X	X	X
Lead	X	X	X	X	X
Manganese				X	
Mercury	X	X	X	X	X
Nickel	X	X	X	X	
Zinc	X	X	X	X	
Butyltins					
Tributyltin ion	X		X		X
PCBs					
PCB077	X	X	X		X
PCB081	X	X	X		X
PCB105	X	X	X		X
PCB118 [a]	X	X	X		X
PCB126	X	X	X		X
PCB156 & PCB157 [b]	X	X	X		
PCB169	X	X	X		X
Total PCB Congeners	X				
Total PCBs [c]	X	X	X		X
PCB TEQ (ND=0) [d]	X	X	X		
PCDD/Fs					
Total PCDD/Fs	X		X		X
TCDD TEQ (ND=0) [d]	X		X		
DDx Pesticides					
4,4'-DDD	X	X	X	X	X
4,4'-DDT	X	X	X	X	X
Total DDE	X	X	X	X	X
Total DDD	X	X	X	X	X
Total DDT	X	X	X	X	X
DDx	X	X	X	X	X
Non-DDx Pesticides					
Total chlordanes [e]	X	X	X		X
γ-Hexachlorocyclohexane (Lindane)	X	X	X		X
Aldrin	X	X	X		X
Dieldrin	X	X	X		X
Polycyclic Aromatic Hydrocarbons					
Naphthalene	X	X	X	X	X
Benzo(a)pyrene	X	X	X	X	X
Total cPAHs [f]	X	X	X	X	X
Total cPAHs BaPEq[g]	X	X	X	X	X
Total HPAHs				X	
Total LPAHs				X	
Total PAHs	X	X	X	X	X

Table 6.0-1. Indicator Contaminant Lists for External Loading Analyses.

Analyte	Upstream Surface Water Loading	Stormwater Loading	Atmospheric Deposition Loading	Upland Groundwater Plume Loading	Advective Loading from Sediment (Surface and Subsurface)
Semivolatile Organic Compounds					
Bis(2-ethylhexyl)phthalate	X	X			X
1,2-Dichlorobenzene				X	
Pentachlorophenol	X [h]		X		
Hexachlorobenzene	X	X	X		
Volatile Organic Compounds					
1,2-Dichloroethane				X	
1,1,2-Trichloroethane				X	
1,2,4-Trimethylbenzene				X	
Benzene				X	
Carbon disulfide				X	
Chlorobenzene				X	
Chloroethane				X	
Chloroform				X	
cis-1,2-Dichloroethene				X	
Methylene Chloride				X	
Ethylbenzene				X	
Toluene				X	
Trichloroethene				X	
Vinyl Chloride				X	
Total Xylenes				X	
Petroleum					
Total Petroleum Hydrocarbons (Gasoline)					
Total Petroleum Hydrocarbons (Diesel)			X		
Total Petroleum Hydrocarbons (Residual)			X		
Total Petroleum Hydrocarbons			X		

Notes:

[a] PCB118 includes PCB106 for co-eluted samples.

[b] PCB156 & PCB157 summations were used in loading calculations for samples which were not co-eluted.

[c] Total PCB loads were generated using PCB congener data; PCB Aroclor data were used where congener data were not available.

[d] Toxic equivalency factors (TEFs) for dioxin-like compounds, mammalian WHO 2005 TEFs.

[e] Total chlordanes includes the sum of: α–chlordane, γ–chlordane, oxychlordane, cis–nonachlor, trans–nonachlor.

[f] Total cPAHs includes the sum of: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene.

[g] cPAH BaPEq

Analyte	PEF	CAS
Benzo(a)anthracene	0.1	56-55-3
Benzo(a)pyrene	1	50-32-8
Benzo(b)fluoranthene	0.1	205-99-2
Benzo(k)fluoranthene	0.01	207-08-9
Chrysene	0.001	218-01-9
Dibenzo(a,h)anthracene	1	53-70-3
Indeno(1,2,3-cd)pyrene	0.1	193-39-5

[h] Due to low detection frequency, pentachlorophenol loads were not calculated for surface water.

BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TEF - toxicity equivalency factor
TEQ - toxic equivalent concentration
WHO - World Health Organization

Table 6.1-1. Surface Water Upstream (RM 11.8) Estimated Annual Loading Summary.

	Total Annual Upstream Loading [a]		
Analyte	**Upper Loading Estimate (kg/yr)**	**Central Loading Estimate (kg/yr)**	**Lower Loading Estimate (kg/yr)**
Metals			
Arsenic	14400	9490	4110
Chromium	33500	21100	11500
Copper	68100	46500	27200
Lead	15600	9380	4060
Mercury	875	232	0
Nickel	41300	26100	6280
Zinc	159000	92400	35400
Butyltins			
Tributyltin Ion	76.8	11	0
PCBs			
PCB077	0.01587	0.00931	0.00519
PCB081	0.000141	0.0000360	0
PCB105	0.0808	0.0525	0.0252
PCB118	0.213	0.135	0.0607
PCB126	0.000732	0.000275	0
PCB156 & PCB157	0.03037	0.0173	0.00596
PCB169	0.00041	0.0000721	0
Total PCB Congeners	7.39	4.71	2.94
PCB TEQ (ND=0)	0.0000847	0.0000376	0.0000035
PCDD/Fs			
Total PCDD/Fs	0.913	0.599	0.204
TCDD TEQ (ND=0)	0.00239	0.00145	0.000575
Pesticides			
4,4'-DDD	1.82	1.06	0.58
4,4'-DDT	5.12	3.25	1.04
Total DDE	3.37	2.5	0.83
Total DDD	2.29	1.33	0.763
Total DDT	5.49	3.7	1.31
DDx	10	7.53	3.01
Total chlordanes	1.62	1.22	0.686
γ-Hexachlorocyclohexane (Lindane	0.771	0.577	0.286
Aldrin	0.0896	0.0664	0.0441
Dieldrin	5.97	3.49	1.5
PAHs			
Naphthalene	262	96.6	0
Benzo(a)pyrene	10.8	5.09	0
Total cPAHs	60.1	35.9	8.28
cPAH BaPEq	13.8	6.87	0.7
Total PAHs	662	380	159
SVOCs			
Bis(2-ethylhexyl)phthalate	16700	7540	0
Hexachlorobenzene	1.7	1.02	0.574

Notes:

[a] Upstream loading estimates were generated based on the combined data sets from surface water sampling transects located at RM 11 and 16.

BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
SVOC - semivolatile organic compound
TEQ - toxic equivalent concentration

Table 6.1-2. Annual Total Estimated Stormwater Loads.

	Composite Water Study Area FT01-FT44				Sediment Study Area FT01-FT44			
Analyte	**Geomean Loading Estimate (kg/yr)**	**Basin Weighted Mean Loading Estimate (kg/yr)**	**Upper Loading Estimate (kg/yr)**	**Lower Loading Estimate (kg/yr)**	**Geomean Loading Estimate (kg/yr)**	**Basin Weighted Mean Loading Estimate (kg/yr)**	**Upper Loading Estimate (kg/yr)**	**Lower Loading Estimate (kg/yr)**
Metals								
Arsenic	1.08E+01	2.91E+01	4.98E+01	3.67E+00	4.20E+00	6.77E+00	1.61E+01	1.57E+00
Chromium	7.44E+01	8.30E+01	1.18E+02	5.43E+01	4.65E+01	4.19E+01	8.77E+01	3.75E+01
Copper	2.82E+02	3.73E+02	5.21E+02	1.68E+02	2.98E+02	3.10E+02	4.01E+02	2.77E+02
Lead	2.26E+02	3.24E+02	5.04E+02	1.42E+02	1.13E+02	1.17E+02	2.72E+02	7.10E+01
Mercury	4.40E-01	5.00E-01	7.75E-01	3.29E-01	9.34E-02	1.12E-01	1.49E-01	7.35E-02
Nickel	5.06E+01	6.19E+01	9.02E+01	3.09E+01	1.77E+01	1.62E+01	4.19E+01	1.03E+01
Zinc	2.18E+03	2.66E+03	3.63E+03	1.44E+03	4.80E+02	5.97E+02	7.61E+02	3.15E+02
PCBs								
PCB077	2.51E-03	4.08E-03	8.64E-03	1.76E-03	7.04E-04	8.97E-04	1.78E-03	4.62E-04
PCB081	1.08E-04	1.28E-04	2.19E-04	8.89E-05	9.45E-05	1.28E-04	2.21E-04	7.10E-05
PCB105	1.93E-02	2.91E-02	6.48E-02	1.43E-02	5.63E-03	7.28E-03	1.31E-02	4.18E-03
PCB118	4.52E-02	6.83E-02	1.40E-01	3.38E-02	1.16E-02	1.57E-02	3.03E-02	8.32E-03
PCB126	3.92E-04	5.74E-04	1.71E-03	2.35E-04	1.10E-04	1.28E-04	3.37E-04	7.49E-05
PCB156 & PCB157	7.63E-03	1.13E-02	2.52E-02	5.55E-03	1.92E-03	2.48E-03	5.05E-03	1.40E-03
PCB169	4.75E-05	5.42E-05	2.45E-04	3.14E-05	6.53E-06	6.69E-06	2.42E-05	3.93E-06
Total PCBs	1.36E+00	2.03E+00	4.07E+00	1.02E+00	3.37E-01	4.34E-01	7.59E-01	2.45E-01
PCB TEQ	2.91E-05	5.49E-05	1.67E-04	2.06E-05	8.22E-06	1.31E-05	3.52E-05	5.54E-06
Pesticides								
4,4'-DDD	4.07E-02	4.17E-02	4.70E-02	3.76E-02	3.37E-02	3.46E-02	4.30E-02	3.23E-02
4,4'-DDT	1.60E-01	1.66E-01	1.82E-01	1.47E-01	1.40E-01	1.44E-01	2.15E-01	1.29E-01
Total DDE	9.08E-02	9.34E-02	1.02E-01	8.64E-02	8.69E-02	8.73E-02	9.73E-02	8.44E-02
Total DDD	5.77E-02	6.39E-02	8.36E-02	5.05E-02	5.00E-02	5.00E-02	6.23E-02	4.68E-02
Total DDT	2.24E-01	2.38E-01	2.62E-01	2.09E-01	2.19E-01	2.29E-01	3.70E-01	2.04E-01
DDx	3.84E-01	3.95E-01	4.20E-01	3.59E-01	3.59E-01	3.66E-01	5.11E-01	3.38E-01
Total Chlordanes	3.85E-02	4.08E-02	5.64E-02	2.15E-02	8.50E-03	1.28E-02	1.66E-02	5.93E-03
γ-Hexachlorocyclohexane (Lindane)	1.16E-02	1.26E-02	2.09E-02	6.15E-03	1.57E-03	2.01E-03	6.22E-03	5.63E-04
Hexachlorobenzene	4.59E-03	1.12E-01	4.39E-01	2.91E-04	1.39E-03	1.53E-03	4.44E-03	5.54E-04
Aldrin	6.93E-03	6.90E-03	1.32E-02	3.89E-03	1.67E-03	2.18E-03	9.52E-03	1.03E-03
Dieldrin	1.23E-02	1.46E-02	2.18E-02	8.87E-03	7.61E-03	7.60E-03	1.06E-02	6.75E-03

Table 6.1-2. Annual Total Estimated Stormwater Loads.

	Composite Water Study Area FT01-FT44				Sediment Study Area FT01-FT44			
Analyte	**Geomean Loading Estimate (kg/yr)**	**Basin Weighted Mean Loading Estimate (kg/yr)**	**Upper Loading Estimate (kg/yr)**	**Lower Loading Estimate (kg/yr)**	**Geomean Loading Estimate (kg/yr)**	**Basin Weighted Mean Loading Estimate (kg/yr)**	**Upper Loading Estimate (kg/yr)**	**Lower Loading Estimate (kg/yr)**
PAHs								
Naphthalene	3.12E-01	5.71E-01	8.56E-01	1.37E-01	3.69E-02	1.42E-01	1.41E+00	1.80E-02
Benzo(a)pyrene	5.80E-01	7.53E-01	1.53E+00	3.86E-01	7.17E-01	8.66E-01	1.86E+00	4.90E-01
Total cPAHs BaPEq	9.47E-01	1.25E+00	2.50E+00	6.21E-01	1.06E+00	1.34E+00	2.86E+00	7.27E-01
Total PAHs	1.24E+01	1.51E+01	3.23E+01	6.52E+00	1.27E+01	1.52E+01	1.43E+02	5.82E+00
Phthalates								
Bis(2-ethylhexyl)phthalate	1.68E+01	2.08E+01	2.79E+01	1.10E+01	5.26E+00	5.30E+00	2.61E+01	2.63E+00

Notes:

The values presented in these tables represent calculations made for the 2009 Draft RI report and may not reflect final stormwater loading and fate and transport modeling methodologies.

BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
EPA - U.S. Environmental Protection Agency
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - toxic equivalent concentration

Table 6.1-3a. Percentage of Stormwater Composite Water Loading by Land Use and Non-Representative Location.

	Representative Land Use Types						Non-Representative Outfalls												
Analyte	**Heavy Industrial**	**Light Industrial**	**Parks/Open Space**	**Residential/Commercial**	**Major Transportation**	**Total of Representative Land Uses**	**Basin L**	**Basin R**	**OF22B**	**WR107**	**WR123**	**WR14**	**WR142/145**	**WR147**	**WR161**	**WR22**	**WR384**	**WR96**	**Total of Non-Representative Outfalls**
Metals																			
Arsenic	63.73%	11.12%	3.35%	4.67%	5.09%	87.96%												12.04%	12.04%
Chromium	32.57%	10.76%	3.98%	4.49%	5.49%	57.30%		4.62%			0.20%					23.46%	14.42%		42.70%
Copper	49.61%	7.79%	1.07%	4.91%	6.93%	70.30%		1.91%					8.26%	2.95%	4.35%		12.22%		29.70%
Lead	37.57%	11.82%	0.62%	4.51%	3.66%	58.17%		7.91%	1.91%					1.57%			30.45%		41.83%
Mercury	29.44%	10.00%	5.89%	6.20%	1.64%	53.18%		1.66%	3.38%								36.49%	5.30%	46.82%
Nickel	61.31%	8.96%	4.93%	5.25%	5.66%	86.11%		2.31%									11.58%		13.89%
Zinc	55.07%	8.71%	0.67%	3.72%	4.39%	72.56%		3.84%					13.15%		2.12%		8.33%		27.44%
PCBs																			
PCB077	30.12%	3.55%	0.18%	1.03%	1.62%	36.49%											63.51%		63.51%
PCB081	16.19%	5.42%	1.59%	8.47%	2.23%	33.90%											66.10%		66.10%
PCB105	26.70%	2.01%	0.10%	0.68%	0.95%	30.44%											69.56%		69.56%
PCB118	25.84%	2.02%	0.11%	0.69%	0.95%	29.61%											70.39%		70.39%
PCB126	42.32%	5.40%	1.29%	3.14%	1.30%	53.45%											46.55%		46.55%
PCB156 & 157	28.49%	2.00%	0.11%	0.69%	0.87%	32.16%											67.84%		67.84%
PCB169	56.87%	12.14%	6.09%	21.24%	3.66%	100.00%													0.00%
Total PCBs	25.45%	2.47%	0.04%	0.60%	1.03%	29.59%											70.41%		70.41%
PCB TEQ	28.31%	3.64%	0.00%	0.12%	1.44%	33.51%											66.49%		66.49%
Pesticides																			
4,4'-DDD	23.64%	0.35%	0.02%	0.53%	0.21%	24.75%			9.46%									65.79%	75.25%
4,4'-DDT	19.92%	0.21%	0.03%	1.46%	0.15%	21.78%												78.22%	78.22%
Total DDE	7.08%	0.44%	0.08%	0.91%	0.16%	8.66%			1.84%									89.51%	91.34%
Total DDD	20.71%	0.43%	0.01%	0.80%	0.15%	22.11%			6.78%									71.11%	77.89%
Total DDT	9.38%	0.16%	0.03%	1.15%	0.11%	10.83%			0.27%									88.90%	89.17%
DDx	13.11%	0.16%	0.04%	1.02%	0.04%	14.36%			1.43%									84.21%	85.64%
Total chlordanes	86.30%	2.04%	0.02%	1.48%	0.99%	90.83%			7.52%					1.66%					9.17%
γ-Hexachlorocyclohexane (Lindane)	95.53%	3.23%	0.02%	1.06%	0.16%	100.00%													0.00%
Hexachlorobenzene	86.88%	4.27%	0.05%	7.66%	1.13%	100.00%													0.00%
Aldrin	86.56%	2.20%	0.06%	0.76%	0.34%	89.92%			10.08%										10.08%
Dieldrin	44.99%	2.18%	0.06%	2.57%	0.70%	50.50%			49.50%										49.50%
PAHs																			
Naphthalene	58.14%	20.44%	5.55%	5.03%	10.85%	100.00%													0.00%
Benzo(a)pyrene	38.70%	12.95%	0.67%	2.52%	8.52%	63.36%	15.16%			1.67%		0.35%					19.45%		36.64%
Total cPAHs BaPEq	35.17%	13.18%	0.30%	2.20%	8.60%	59.46%	14.84%			1.56%		0.45%					23.70%		40.54%
Total PAHs	48.98%	12.72%	0.17%	2.12%	8.23%	72.21%	7.38%										20.40%		27.79%
Phthalates																			
Bis(2-ethylhexyl) phthalate	52.26%	23.09%	3.16%	17.28%	0.00%	95.79%	1.69%						2.53%						4.21%

Notes:

Percentages are based on the geomean of the site averaged loads in kilograms.

BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - toxic equivalent concentration

Table 6.1-3b. Percentage of Stormwater Sediment Loading by Land Use and Non-Representative Location.

	Representative Land Use Types						Non-Representative Outfalls												
Analyte	Heavy Industrial	Light Industrial	Parks/Open Space	Residential/Commercial	Major Transportation	Total of Representative Land Uses	Basin L	Basin R	OF22B	WR107	WR123	WR14	WR142/145	WR147	WR161	WR22	WR384	WR96	Total of Non-Representative Outfalls
Metals																			
Arsenic	84.72%	6.20%	1.24%	4.36%	3.48%	100.00%													0.00%
Chromium	27.88%	20.19%	1.34%	3.97%	4.92%	58.30%					0.16%					37.09%	4.45%		41.70%
Copper	11.08%	1.51%	0.14%	1.08%	2.15%	15.96%									82.11%		1.93%		84.04%
Lead	44.27%	33.12%	0.27%	4.82%	4.27%	86.74%											13.26%		13.26%
Mercury	45.02%	10.24%	1.19%	6.62%	2.83%	65.90%											34.10%		34.10%
Nickel	70.56%	10.50%	1.78%	5.51%	8.09%	96.45%											3.55%		3.55%
Zinc	57.34%	6.68%	0.35%	4.49%	7.21%	76.07%									17.44%		6.49%		23.93%
PCBs																			
PCB077	38.54%	3.47%	0.03%	1.86%	3.24%	47.14%											52.86%		52.86%
PCB081	27.31%	2.20%	0.23%	1.06%	1.52%	32.31%											67.69%		67.69%
PCB105	29.88%	2.63%	0.07%	2.29%	1.79%	36.65%											63.35%		63.35%
PCB118	33.85%	2.83%	0.08%	2.70%	2.03%	41.48%											58.52%		58.52%
PCB126	47.62%	4.35%	0.16%	2.23%	2.58%	56.95%											43.05%		43.05%
PCB156 & 157	34.86%	2.59%	0.05%	2.14%	1.97%	41.60%											58.40%		58.40%
PCB169	72.77%	10.90%	8.11%	2.94%	5.28%	100.00%													0.00%
Total PCBs	33.65%	2.82%	0.04%	1.89%	2.29%	40.69%											59.31%		59.31%
PCB TEQ	30.33%	1.93%	0.00%	3.07%	3.54%	38.88%											61.12%		61.12%
Pesticides																			
4,4'-DDD	7.45%	0.43%	0.02%	0.64%	0.26%	8.79%			11.57%									79.64%	91.21%
4,4'-DDT	7.78%	0.24%	0.04%	1.68%	0.17%	9.91%												90.09%	90.09%
Total DDE	2.86%	0.46%	0.08%	0.95%	0.17%	4.51%			1.95%									93.54%	95.49%
Total DDD	8.26%	0.50%	0.01%	0.92%	0.17%	9.87%			7.93%									82.21%	90.13%
Total DDT	7.11%	0.17%	0.03%	1.18%	0.11%	8.59%			0.30%									91.11%	91.41%
DDx	6.84%	0.17%	0.04%	1.09%	0.04%	8.17%			1.58%									90.25%	91.83%
Total chlordanes	31.40%	9.23%	0.08%	6.72%	4.49%	51.92%			36.66%					11.42%					48.08%
γ-Hexachlorocyclohexane (Lindane	67.03%	23.82%	0.14%	7.82%	1.19%	100.00%													0.00%
Hexachlorobenzene	56.57%	14.15%	0.18%	25.35%	3.75%	100.00%													0.00%
Aldrin	42.15%	9.09%	0.25%	3.14%	1.42%	56.05%			43.95%										43.95%
Dieldrin	10.34%	3.53%	0.09%	4.17%	1.14%	19.27%			80.73%										80.73%
PAHs																			
Naphthalene	49.49%	20.07%	0.21%	4.37%	25.86%	100.00%													0.00%
Benzo(a)pyrene	32.19%	13.90%	0.14%	4.67%	4.11%	55.01%	26.83%			4.49%		0.57%					13.11%		44.99%
Total cPAHs BaPEq	27.89%	15.49%	0.12%	4.59%	3.80%	51.89%	26.73%			4.29%		0.69%					16.39%		48.11%
Total PAHs	57.42%	9.91%	0.08%	2.62%	3.84%	73.87%	13.48%										12.65%		26.13%
Phthalates																			
Bis(2-ethylhexyl) phthalate	49.79%	22.85%	0.01%	6.29%	15.67%	94.60%	5.40%												5.40%

Notes:

Percentage are based on the geomean of the site averaged loads in kilograms.

BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - toxic equivalent concentration

Table 6.1-4. Direct Permitted Dischargers Estimated Annual Loading.[a]

		Study Area All Direct Discharges		
		RM 1.8 - 11.8		
Analyte	**Units**	**Upper**	**Central**	**Lower**
Cyanide	kg/yr	0.0423	0.0423	0.0423
Arsenic (Pentavalent)	kg/yr	0.0550	0.0550	0.0550
Arsenic (Trivalent)	kg/yr	0.0633	0.0381	0.0129
Cadmium	kg/yr	0.420	0.420	0.420
Chromium (hexavalent)	kg/yr	0	0	0
Chromium (total)	kg/yr	0.513	0.465	0.417
Copper	kg/yr	96.6	64.5	32.4
Lead	kg/yr	123	78.9	34.8
Mercury	kg/yr	0.000275	0.000275	0.000275
Zinc	kg/yr	549	449	350
DDT	kg/yr	0	0	0
Benzo(a)pyrene	kg/yr	0.0532	0.0532	0.0532
Total PAHs	kg/yr	1.24	1.24	1.24
1,1,2-Trichloroethane	kg/yr	0	0	0
Benzene	kg/yr	3.19	3.19	3.19
Chloroethane	kg/yr	0	0	0
Chloroform	kg/yr	0	0	0
Trichloroethene	kg/yr	0	0	0
Vinyl Chloride	kg/yr	0	0	0
Total Petroleum Hydrocarbons	kg/yr	15.9	15.9	15.9

Notes:

[a] The following NPDES-permitted sites were not included in this loading analysis:

(1) Ash Grove, RM 2.8, NPDES OR0001601 IW-B16, OR-SIS 3690 (no discharge reported)

(2) Columbia River Sand and Gravel (Linnton Sand Distribution), RM 4.7, NPDES OR0039896 IW-B16, OR-SIS 50872 (no chemical data reported)

(3) Vigor Industrial LLC, RM 8.3, NPDES OR0022942 IW-B15, OR-DEQ 316 (no discharge reported)

(4) Metropolitan Condomium Complex, RM 11.5, NPDES OR0038229 IW-B16, OR-SIS 92369 (no discharge reported)

NPDES - National Pollutant Discharge Elimination System
PAH - polycyclic aromatic hydrocarbon
RM - river mile

Table 6.1-5. Annual Load Estimates for Atmospheric Deposition to the Study Area River Surface.

	Total Deposition (kg/yr)		
Analyte	**Lower**	**Central**	**Upper**
Metals			
Arsenic	2.62E-02	7.32E+00	2.10E+02
Chromium	3.06E-02	6.10E+00	1.43E+02
Copper	1.06E-01	3.06E+01	5.59E+02
Lead	2.27E-01	1.69E+01	7.49E+02
Mercury	1.08E-01	2.89E+01	8.84E+01
Nickel	1.98E-02	8.79E+00	2.85E+02
Zinc	2.94E-01	7.88E+01	1.05E+03
PCBs			
Total PCBs	5.28E-01	6.25E-01	7.23E-01
PCB TEQ (ND=0)	2.77E-06	8.53E-06	1.43E-05
PCDD/Fs			
TCDD TEQ (ND=0)	1.66E-05	3.20E-05	4.57E-05
DDx Pesticides			
4,4'-DDE	8.73E-02	1.27E-01	1.65E-01
4,4'-DDT	2.91E-02	4.02E-02	4.85E-02
DDx [a]	6.79E-03	1.67E-01	2.13E-01
PAHs			
Naphthalene	2.08E-01	2.83E+00	3.21E+01
Benzo(a)pyrene	2.08E-01	8.10E-01	3.47E+00
Total cPAHs	--	3.65E+00	--
cPAH BaPEq [b]	--	8.10E-01	--
Total PAHs [c]	--	7.18E+00	1.17E+01
Petroleum			
Diesel-Range Hydrocarbons	2.87E+03	3.60E+03	4.34E+03
Semivolatile Organic Compounds			
Hexachlorobenzene	--	1.29E-01	--
Pesticides (non-DDx)			
Total Chlordanes	--	1.00E-02	--
Aldrin	--	3.19E-04	--
Dieldrin	--	2.63E-03	--

Notes:

[a] Central and upper DDx estimates calculated as the sum of the 4,4'-DDE and 4,4'-DDT loads.

[b] The benzo(a)pyrene loading estimate is reported here due to the lack of site-specific dry deposition estimate for BaPEq.

[c] Central estimates for total PAH atmospheric loads are based on the sum of the 13 site PAHs which were included in the NJADN data set, while the upper estimates are based on the sum all 36 PAHs included in the NJADN data set. The NJADN data set does not include the following individual PAHs generally used in summation of total PAHs for the LWG project: naphthalene, 2-methylnaphthalene, acenaphthene, and acenaphthylene.

-- Estimate not available
BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
LWG - Lower Willamette Group
NJADN - New Jersey Atmospheric Deposition Network
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TEQ - toxic equivalent concentration

Table 6.1-6. Estimated Upland Groundwater Plume Loading to the Water Column for the Study Area (kg/yr).

	Filtered [a]			Unfiltered [b]		
Analyte	**Upper Loading Estimate**	**Central Loading Estimate**	**Lower Loading Estimate**	**Upper Loading Estimate**	**Central Loading Estimate**	**Lower Loading Estimate**
Metals						
Arsenic	38.4	27.0	18.2	43.3	30.3	19.9
Barium	432	243	137	803	492	285
Cadmium	0.511	0.227	0.105	1.06	0.621	0.357
Copper	1.06	0.665	0.420	78.6	57.2	37.2
Lead	0.401	0.260	0.184	44.5	31.3	19.9
Manganese	12722	7962	4580	13775	8528	4759
Mercury	0.042	0.024	0.010	0.159	0.101	0.058
Nickel	16.3	10.0	5.8	52.0	34.3	20.0
Zinc	15.6	6.52	2.84	285	201	128
DDx Pesticides						
4,4'-DDD	6.80E-04	2.00E-04	1.51E-05	6.11E-02	1.89E-02	1.64E-03
4,4'-DDT	1.71E-05	1.71E-05	1.71E-05	9.28E-02	2.67E-02	1.48E-03
Total DDE	6.93E-06	6.93E-06	6.93E-06	9.49E-03	3.63E-03	4.27E-04
Total DDD	4.05E-02	2.05E-02	3.24E-03	1.39E-01	5.17E-02	6.14E-03
Total DDT	2.01E-03	1.05E-03	1.83E-04	9.87E-02	2.89E-02	1.73E-03
DDx	4.25E-02	2.16E-02	3.44E-03	2.47E-01	8.43E-02	8.31E-03
PAHs						
Naphthalene	192	125	57.3	1035	772	473
Benzo(a)pyrene	0.014	0.009	0.004	5.49	3.57	1.70
Total cPAHs	0.127	0.083	0.040	27.2	17.6	8.20
Total HPAHs	1.89	1.35	0.830	72.6	47.5	22.9
Total LPAHs	243	164	83.6	1160	863	528
Total PAHs	245	166	84.7	1234	911	551
cPAH BaPEq	0.020	0.013	0.0062	7.37	4.79	2.27
SVOCs						
1,2-Dichlorobenzene	n/a	n/a	n/a	67.5	35.5	6.45
VOCs						
1,2-Dichloroethane	n/a	n/a	n/a	4.02	1.25	0.153
1,1,2-Trichloroethane	n/a	n/a	n/a	1.88	0.588	0.076
1,2,4-Trimethylbenzene	n/a	n/a	n/a	6.49	4.48	2.43
Benzene	n/a	n/a	n/a	80.8	51.7	18.0
Carbon disulfide	n/a	n/a	n/a	1.38	0.691	0.686
Chlorobenzene	n/a	n/a	n/a	140	67.2	32.8
Chloroethane	n/a	n/a	n/a	1.73	1.70	1.68
Chloroform	n/a	n/a	n/a	2770	3.28	0.279
cis-1,2-Dichloroethene [c]	n/a	n/a	n/a	384	347	305
Methylene chloride	n/a	n/a	n/a	2679	821	86.4
Ethylbenzene	n/a	n/a	n/a	13.6	9.00	3.70
Toluene	n/a	n/a	n/a	5.70	3.74	2.03
Trichloroethene [c]	n/a	n/a	n/a	280	4.45	1.051
Vinyl chloride [c]	n/a	n/a	n/a	57.3	50.1	42.7
Total xylenes	n/a	n/a	n/a	15.6	9.63	2.95

Table 6.1-6. Estimated Upland Groundwater Plume Loading to the Water Column for the Study Area (kg/yr).

	Filtered [a]			Unfiltered [b]		
Analyte	**Upper Loading Estimate**	**Central Loading Estimate**	**Lower Loading Estimate**	**Upper Loading Estimate**	**Central Loading Estimate**	**Lower Loading Estimate**

Notes:

[a] Filtered loads were calculated using analytical data collected with filtered Push Probe (Trident or GeoProbe) samplers and with peeper samplers. Due to sample volume limitations, filtered Push Probe samples were not collected at all sample locations. To calculate loading rate estimates at these sample locations, the average of the filtered push-probe contaminant concentrations within the same flow zone were used.

[b] Unfiltered loads were calculated using analytical data collected with unfiltered Push Probe (Trident or GeoProbe) samplers and with peeper samplers.

[c] Station GP-67 is located in Area 2 of the Siltronic site, which is understood to be an area impacted by a direct discharge of trichloroethene. Concentrations of trichloroethene and related degradation-chain chemicals (cis-1,2-Dichloroethene and vinyl chloride) measured at GP-67 are not representative of the upland groundwater plume; therefore, GP-67 was not included in loading calculations for these three contaminants for the Siltronic site or the entire Study Area. For comparison purposes, entire Study Area loads were also calculated for these three contaminants including station GP-67. These comparative loading results are as follows:

cis-1,2-Dichloroethene - central: 3.47E+02 kg/yr, lower: 3.05E+02, upper: 3.84E+02
Trichloroethene - central: 2.34E+02 kg/yr, lower: 1.88E+02, upper: 2.80E+02
Vinyl chloride - central: 5.01E+01 kg/yr, lower: 4.27E+01, upper: 5.73E+01

DDx - 2,4'- and 4,4'-DDD, DDE, and DDT

n/a - Indicates that filtered data were not available. Per sampling protocols, filtered samples were not collected for VOCs or naphthalene.

BaPEq - benzo(a)pyrene equivalent

cPAH - carcinogenic polycyclic aromatic hydrocarbon

PAH - polycyclic aromatic hydrocarbon

SVOC - semivolatile organic compound

VOC - volatile organic compound

Table 6.1-7. Estimated Upland Groundwater Plume Loading to the Water Column, by Upland Site.

			ARCO		Arkema		ExxonMobil		Gasco		Gunderson	
Analyte	**Load Estimate**	**Units**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**
Metals												
Arsenic	Central	kg/yr	5.04E-01	5.67E-01	3.40E-01	3.74E-01	6.48E-01	6.54E-01	1.11E+00	3.34E+00	3.08E-01	3.17E-01
Arsenic	Lower	kg/yr	4.41E-01	4.93E-01	5.32E-02	5.37E-02	3.27E-01	3.30E-01	3.26E-01	1.12E+00	2.10E-01	2.19E-01
Arsenic	Upper	kg/yr	7.58E-01	8.64E-01	1.09E+00	1.21E+00	1.09E+00	1.10E+00	1.88E+00	5.58E+00	9.46E-01	9.55E-01
Barium	Central	kg/yr	3.84E+00	7.87E+00	4.31E+01	5.08E+01	3.89E+00	6.20E+00	2.27E+01	1.06E+02	7.43E+00	8.57E+00
Barium	Lower	kg/yr	3.30E+00	7.07E+00	1.01E+01	1.06E+01	2.21E+00	3.12E+00	6.67E+00	3.91E+01	4.67E+00	5.80E+00
Barium	Upper	kg/yr	6.00E+00	1.11E+01	1.28E+02	1.54E+02	6.32E+00	1.05E+01	3.85E+01	1.78E+02	2.54E+01	2.65E+01
Cadmium	Central	kg/yr	2.92E-04	8.95E-03	9.40E-02	9.38E-02	1.75E-03	5.49E-03	1.81E-03	1.01E-01	6.73E-03	8.33E-03
Cadmium	Lower	kg/yr	2.30E-04	8.44E-03	9.86E-03	9.84E-03	9.62E-04	2.00E-03	5.41E-04	4.19E-02	4.09E-03	5.68E-03
Cadmium	Upper	kg/yr	5.38E-04	1.10E-02	3.07E-01	3.06E-01	2.88E-03	9.92E-03	3.07E-03	1.70E-01	2.40E-02	2.55E-02
Copper	Central	kg/yr	9.68E-03	1.14E+00	8.36E-02	8.36E-02	4.82E-03	2.98E-01	7.08E-02	1.79E+01	0.00E+00	1.97E-01
Copper	Lower	kg/yr	4.84E-03	1.04E+00	8.80E-03	8.80E-03	1.74E-03	7.50E-02	2.08E-02	6.82E+00	0.00E+00	1.97E-01
Copper	Upper	kg/yr	2.90E-02	1.52E+00	2.73E-01	2.73E-01	8.82E-03	5.74E-01	1.20E-01	3.00E+01	0.00E+00	1.97E-01
Lead	Central	kg/yr	3.01E-02	1.20E+00	1.28E-02	3.11E-01	8.23E-03	3.80E-01	4.41E-02	1.01E+01	0.00E+00	2.36E-01
Lead	Lower	kg/yr	1.51E-02	1.04E+00	1.20E-03	1.95E-02	2.18E-03	1.22E-01	1.29E-02	3.87E+00	0.00E+00	2.36E-01
Lead	Upper	kg/yr	9.03E-02	1.84E+00	4.25E-02	1.07E+00	1.58E-02	7.07E-01	7.46E-02	1.70E+01	0.00E+00	2.36E-01
Manganese	Central	kg/yr	1.31E+02	1.48E+02	4.35E+02	4.54E+02	1.43E+02	1.51E+02	8.78E+02	1.31E+03	1.58E+02	1.67E+02
Manganese	Lower	kg/yr	1.17E+02	1.29E+02	1.04E+02	1.04E+02	6.92E+01	7.43E+01	2.59E+02	4.17E+02	1.03E+02	1.12E+02
Manganese	Upper	kg/yr	1.88E+02	2.24E+02	1.28E+03	1.36E+03	2.42E+02	2.56E+02	1.49E+03	2.22E+03	5.12E+02	5.21E+02
Mercury	Central	kg/yr	0.00E+00	1.15E-03	3.31E-03	6.44E-03	0.00E+00	7.04E-04	1.42E-02	3.71E-02	0.00E+00	0.00E+00
Mercury	Lower	kg/yr	0.00E+00	1.03E-03	2.14E-04	3.88E-04	0.00E+00	1.17E-04	4.12E-03	1.68E-02	0.00E+00	0.00E+00
Mercury	Upper	kg/yr	0.00E+00	1.62E-03	1.14E-02	2.22E-02	0.00E+00	1.41E-03	2.39E-02	6.31E-02	0.00E+00	0.00E+00
Nickel	Central	kg/yr	1.44E-01	5.57E-01	1.04E+00	1.22E+00	1.25E-01	2.40E-01	1.25E+00	1.17E+01	1.57E-01	2.41E-01
Nickel	Lower	kg/yr	1.25E-01	5.19E-01	1.65E-01	1.73E-01	6.39E-02	8.85E-02	3.64E-01	4.33E+00	1.08E-01	1.92E-01
Nickel	Upper	kg/yr	2.22E-01	7.08E-01	3.28E+00	3.94E+00	2.12E-01	4.37E-01	2.11E+00	1.96E+01	4.80E-01	5.64E-01
Zinc	Central	kg/yr	1.56E+00	3.89E+00	1.74E+00	2.03E+00	2.15E-01	1.13E+00	1.19E+00	6.82E+01	2.12E-01	1.39E+00
Zinc	Lower	kg/yr	8.57E-01	3.03E+00	2.21E-01	2.44E-01	1.12E-01	3.08E-01	3.54E-01	2.73E+01	1.18E-01	1.30E+00
Zinc	Upper	kg/yr	4.36E+00	7.32E+00	5.60E+00	6.57E+00	3.61E-01	2.16E+00	2.02E+00	1.15E+02	8.24E-01	2.00E+00
Pesticides												
4,4'-DDD	Central	kg/yr	--	--	2.00E-04	1.70E-02	--	--	--	--	--	--
4,4'-DDD	Lower	kg/yr	--	--	1.51E-05	1.32E-03	--	--	--	--	--	--
4,4'-DDD	Upper	kg/yr	--	--	6.80E-04	5.73E-02	--	--	--	--	--	--
4,4'-DDT	Central	kg/yr	--	--	1.71E-05	2.67E-02	--	--	--	--	--	--
4,4'-DDT	Lower	kg/yr	--	--	1.71E-05	1.48E-03	--	--	--	--	--	--
4,4'-DDT	Upper	kg/yr	--	--	1.71E-05	9.28E-02	--	--	--	--	--	--
Total DDE	Central	kg/yr	--	--	6.93E-06	1.65E-03	--	--	--	--	--	--
Total DDE	Lower	kg/yr	--	--	6.93E-06	1.07E-04	--	--	--	--	--	--
Total DDE	Upper	kg/yr	--	--	6.93E-06	5.67E-03	--	--	--	--	--	--
Total DDD	Central	kg/yr	--	--	6.43E-04	2.73E-02	--	--	--	--	--	--
Total DDD	Lower	kg/yr	--	--	4.16E-05	2.20E-03	--	--	--	--	--	--
Total DDD	Upper	kg/yr	--	--	2.21E-03	9.19E-02	--	--	--	--	--	--
Total DDT	Central	kg/yr	--	--	1.71E-05	2.77E-02	--	--	--	--	--	--
Total DDT	Lower	kg/yr	--	--	1.71E-05	1.52E-03	--	--	--	--	--	--
Total DDT	Upper	kg/yr	--	--	1.71E-05	9.62E-02	--	--	--	--	--	--
DDx	Central	kg/yr	--	--	6.67E-04	5.66E-02	--	--	--	--	--	--
DDx	Lower	kg/yr	--	--	6.56E-05	3.83E-03	--	--	--	--	--	--
DDx	Upper	kg/yr	--	--	2.23E-03	1.94E-01	--	--	--	--	--	--
PAHs												
Naphthalene	Central	kg/yr	3.14E-03	8.59E-03	1.45E-01	1.45E-01	1.56E-03	5.70E-03	9.05E+01	2.18E+02	--	--
Naphthalene	Lower	kg/yr	2.99E-03	7.95E-03	7.46E-03	7.45E-03	9.21E-04	2.99E-03	2.68E+01	2.22E+01	--	--
Naphthalene	Upper	kg/yr	3.77E-03	1.12E-02	5.07E-01	5.07E-01	2.54E-03	9.60E-03	1.53E+02	3.91E+02	--	--
Benzo(a)pyrene	Central	kg/yr	1.48E-05	1.20E-03	--	--	0.00E+00	3.42E-03	6.75E-03	2.65E+00	--	--
Benzo(a)pyrene	Lower	kg/yr	7.42E-06	1.11E-03	--	--	0.00E+00	1.82E-03	2.04E-03	9.43E-01	--	--
Benzo(a)pyrene	Upper	kg/yr	4.45E-05	1.57E-03	--	--	0.00E+00	5.54E-03	1.15E-02	4.42E+00	--	--
Total cPAHs	Central	kg/yr	1.57E-04	4.22E-03	--	--	1.16E-03	1.91E-02	5.69E-02	1.33E+01	--	--
Total cPAHs	Lower	kg/yr	7.84E-05	3.64E-03	--	--	7.12E-04	1.00E-02	1.71E-02	4.76E+00	--	--
Total cPAHs	Upper	kg/yr	4.70E-04	6.55E-03	--	--	1.84E-03	3.11E-02	9.66E-02	2.23E+01	--	--

Table 6.1-7. Estimated Upland Groundwater Plume Loading to the Water Column, by Upland Site.

			ARCO		Arkema		ExxonMobil		Gasco		Gunderson	
Analyte	**Load Estimate**	**Units**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**
cPAH BaPEq	Central	kg/yr	2.26E-05	1.71E-03	--	--	6.14E-05	4.50E-03	9.31E-03	3.56E+00	--	--
cPAH BaPEq	Lower	kg/yr	1.13E-05	1.57E-03	--	--	3.76E-05	2.39E-03	2.81E-03	1.27E+00	--	--
cPAH BaPEq	Upper	kg/yr	6.78E-05	2.30E-03	--	--	9.77E-05	7.30E-03	1.58E-02	5.94E+00	--	--
Total HPAHs	Central	kg/yr	7.79E-03	2.37E-02	--	--	1.99E-02	1.19E-01	6.26E-01	3.38E+01	--	--
Total HPAHs	Lower	kg/yr	4.38E-03	2.01E-02	--	--	1.37E-02	7.58E-02	1.89E-01	1.16E+01	--	--
Total HPAHs	Upper	kg/yr	2.14E-02	3.84E-02	--	--	2.90E-02	1.79E-01	1.06E+00	5.68E+01	--	--
Total LPAHs	Central	kg/yr	6.28E-02	8.79E-02	--	--	2.68E-01	5.41E-01	1.05E+02	2.56E+02	--	--
Total LPAHs	Lower	kg/yr	4.27E-02	6.75E-02	--	--	1.76E-01	3.65E-01	3.10E+01	3.05E+01	--	--
Total LPAHs	Upper	kg/yr	1.43E-01	1.69E-01	--	--	4.04E-01	8.11E-01	1.77E+02	4.56E+02	--	--
Total PAHs	Central	kg/yr	7.06E-02	1.11E-01	--	--	2.88E-01	6.61E-01	1.06E+02	2.90E+02	--	--
Total PAHs	Lower	kg/yr	4.71E-02	8.75E-02	--	--	1.90E-01	4.41E-01	3.13E+01	4.22E+01	--	--
Total PAHs	Upper	kg/yr	1.65E-01	2.07E-01	--	--	4.34E-01	9.91E-01	1.79E+02	5.13E+02	--	--
SVOCs												
1,2-Dichlorobenzene	Central	kg/yr	n/a	1.79E-03	n/a	1.96E-03	n/a	0.00E+00	n/a	2.06E-02	n/a	0.00E+00
1,2-Dichlorobenzene	Lower	kg/yr	n/a	8.96E-04	n/a	1.33E-04	n/a	0.00E+00	n/a	7.26E-03	n/a	0.00E+00
1,2-Dichlorobenzene	Upper	kg/yr	n/a	5.38E-03	n/a	6.73E-03	n/a	0.00E+00	n/a	3.39E-02	n/a	0.00E+00
VOCs												
1,2-Dichloroethane	Central	kg/yr	n/a	5.48E-04	n/a	1.22E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	2.37E-02
1,2-Dichloroethane	Lower	kg/yr	n/a	2.74E-04	n/a	1.29E-01	n/a	0.00E+00	n/a	0.00E+00	n/a	2.37E-02
1,2-Dichloroethane	Upper	kg/yr	n/a	1.64E-03	n/a	3.99E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	2.37E-02
1,1,2-Trichloroethane	Central	kg/yr	n/a	0.00E+00	n/a	5.68E-01	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00
1,1,2-Trichloroethane	Lower	kg/yr	n/a	0.00E+00	n/a	5.98E-02	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00
1,1,2-Trichloroethane	Upper	kg/yr	n/a	0.00E+00	n/a	1.85E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00
1,2,4-Trimethylbenzene	Central	kg/yr	n/a	--	n/a	--	n/a	--	n/a	2.72E+00	n/a	--
1,2,4-Trimethylbenzene	Lower	kg/yr	n/a	--	n/a	--	n/a	--	n/a	9.60E-01	n/a	--
1,2,4-Trimethylbenzene	Upper	kg/yr	n/a	--	n/a	--	n/a	--	n/a	4.48E+00	n/a	--
Benzene	Central	kg/yr	n/a	0.00E+00	n/a	3.62E+00	n/a	0.00E+00	n/a	3.27E+01	n/a	2.64E-03
Benzene	Lower	kg/yr	n/a	0.00E+00	n/a	3.54E+00	n/a	0.00E+00	n/a	1.82E+00	n/a	2.64E-03
Benzene	Upper	kg/yr	n/a	0.00E+00	n/a	3.82E+00	n/a	0.00E+00	n/a	5.92E+01	n/a	2.64E-03
Carbon disulfide	Central	kg/yr	n/a	0.00E+00	n/a	3.60E-03	n/a	0.00E+00	n/a	6.79E-01	n/a	0.00E+00
Carbon disulfide	Lower	kg/yr	n/a	0.00E+00	n/a	5.79E-04	n/a	0.00E+00	n/a	6.79E-01	n/a	0.00E+00
Carbon disulfide	Upper	kg/yr	n/a	0.00E+00	n/a	1.14E-02	n/a	0.00E+00	n/a	1.36E+00	n/a	0.00E+00
Chlorobenzene	Central	kg/yr	n/a	0.00E+00	n/a	5.35E+01	n/a	0.00E+00	n/a	8.04E-02	n/a	4.80E-03
Chlorobenzene	Lower	kg/yr	n/a	0.00E+00	n/a	2.93E+01	n/a	0.00E+00	n/a	2.33E-02	n/a	4.80E-03
Chlorobenzene	Upper	kg/yr	n/a	0.00E+00	n/a	1.15E+02	n/a	0.00E+00	n/a	1.35E-01	n/a	4.80E-03
Chloroethane	Central	kg/yr	n/a	0.00E+00	n/a	6.84E-03	n/a	0.00E+00	n/a	0.00E+00	n/a	1.63E+00
Chloroethane	Lower	kg/yr	n/a	0.00E+00	n/a	7.20E-04	n/a	0.00E+00	n/a	0.00E+00	n/a	1.63E+00
Chloroethane	Upper	kg/yr	n/a	0.00E+00	n/a	2.23E-02	n/a	0.00E+00	n/a	0.00E+00	n/a	1.63E+00
Chloroform	Central	kg/yr	n/a	0.00E+00	n/a	3.28E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00
Chloroform	Lower	kg/yr	n/a	0.00E+00	n/a	2.79E-01	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00
Chloroform	Upper	kg/yr	n/a	0.00E+00	n/a	2.77E+03	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00
cis-1,2-Dichloroethene c	Central	kg/yr	n/a	0.00E+00	n/a	8.79E-02	n/a	2.40E-03	n/a	2.75E-02	n/a	3.33E-03
cis-1,2-Dichloroethene c	Lower	kg/yr	n/a	0.00E+00	n/a	8.37E-03	n/a	4.00E-04	n/a	9.72E-03	n/a	3.33E-03
cis-1,2-Dichloroethene c	Upper	kg/yr	n/a	0.00E+00	n/a	2.91E-01	n/a	4.80E-03	n/a	4.54E-02	n/a	3.33E-03
Methylene Chloride	Central	kg/yr	n/a	0.00E+00	n/a	8.21E+02	n/a	0.00E+00	n/a	4.69E-04	n/a	0.00E+00
Methylene Chloride	Lower	kg/yr	n/a	0.00E+00	n/a	8.64E+01	n/a	0.00E+00	n/a	4.69E-04	n/a	0.00E+00
Methylene Chloride	Upper	kg/yr	n/a	0.00E+00	n/a	2.68E+03	n/a	0.00E+00	n/a	9.37E-04	n/a	0.00E+00
Ethylbenzene	Central	kg/yr	n/a	0.00E+00	n/a	2.37E-02	n/a	0.00E+00	n/a	4.94E+00	n/a	8.81E-03
Ethylbenzene	Lower	kg/yr	n/a	0.00E+00	n/a	1.59E-03	n/a	0.00E+00	n/a	3.78E-01	n/a	8.81E-03
Ethylbenzene	Upper	kg/yr	n/a	0.00E+00	n/a	8.15E-02	n/a	0.00E+00	n/a	8.91E+00	n/a	8.81E-03
Toluene	Central	kg/yr	n/a	6.21E-03	n/a	1.97E-01	n/a	8.96E-03	n/a	1.66E+00	n/a	2.29E-02
Toluene	Lower	kg/yr	n/a	3.10E-03	n/a	1.81E-02	n/a	5.33E-03	n/a	4.29E-01	n/a	2.05E-02
Toluene	Upper	kg/yr	n/a	1.86E-02	n/a	6.56E-01	n/a	1.43E-02	n/a	2.86E+00	n/a	3.82E-02
Trichloroethene [c]	Central	kg/yr	n/a	5.73E-04	n/a	3.71E+00	n/a	0.00E+00	n/a	2.70E-03	n/a	0.00E+00
Trichloroethene [c]	Lower	kg/yr	n/a	2.87E-04	n/a	3.90E-01	n/a	0.00E+00	n/a	9.53E-04	n/a	0.00E+00
Trichloroethene [c]	Upper	kg/yr	n/a	1.72E-03	n/a	1.21E+01	n/a	0.00E+00	n/a	4.45E-03	n/a	0.00E+00

Table 6.1-7. Estimated Upland Groundwater Plume Loading to the Water Column, by Upland Site.

			ARCO		Arkema		ExxonMobil		Gasco		Gunderson	
Analyte	**Load Estimate**	**Units**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**
Vinyl chloride [c]	Central	kg/yr	n/a	0.00E+00	n/a	4.48E-01	n/a	0.00E+00	n/a	6.27E-03	n/a	2.59E-02
Vinyl chloride [c]	Lower	kg/yr	n/a	0.00E+00	n/a	4.67E-02	n/a	0.00E+00	n/a	2.21E-03	n/a	2.57E-02
Vinyl chloride [c]	Upper	kg/yr	n/a	0.00E+00	n/a	1.46E+00	n/a	0.00E+00	n/a	1.03E-02	n/a	2.71E-02
Total Xylenes	Central	kg/yr	n/a	3.01E-03	n/a	1.22E-01	n/a	3.04E-03	n/a	6.39E+00	n/a	2.95E-02
Total Xylenes	Lower	kg/yr	n/a	1.51E-03	n/a	7.65E-03	n/a	1.20E-03	n/a	3.69E-01	n/a	2.95E-02
Total Xylenes	Upper	kg/yr	n/a	9.04E-03	n/a	4.20E-01	n/a	5.46E-03	n/a	1.16E+01	n/a	2.95E-02

Table 6.1-7. Estimated Upland Groundwater Plume Loading to the Water Column, by Upland Site.

			Kinder Morgan		Rhone Poulenc		Siltronic		Willbridge		Entire Study Area	
Analyte	**Load Estimate**	**Units**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**
Metals												
Arsenic	Central	kg/yr	1.27E-01	1.26E-01	3.23E+00	3.63E+00	3.14E+00	3.78E+00	1.76E+01	1.75E+01	2.70E+01	3.03E+01
Arsenic	Lower	kg/yr	1.16E-01	1.16E-01	1.36E+00	1.60E+00	2.69E+00	3.43E+00	1.27E+01	1.26E+01	1.82E+01	1.99E+01
Arsenic	Upper	kg/yr	2.38E-01	2.38E-01	5.69E+00	6.30E+00	3.55E+00	4.10E+00	2.31E+01	2.29E+01	3.84E+01	4.33E+01
Barium	Central	kg/yr	8.06E-01	9.53E-01	7.24E+01	1.02E+02	3.71E+01	1.38E+02	5.18E+01	7.22E+01	2.43E+02	4.92E+02
Barium	Lower	kg/yr	6.75E-01	8.22E-01	3.81E+01	5.08E+01	3.25E+01	1.15E+02	3.86E+01	5.24E+01	1.37E+02	2.85E+02
Barium	Upper	kg/yr	2.21E+00	2.36E+00	1.17E+02	1.65E+02	4.14E+01	1.57E+02	6.81E+01	9.76E+01	4.32E+02	8.03E+02
Cadmium	Central	kg/yr	2.08E-03	3.12E-03	8.59E-02	1.46E-01	9.49E-03	2.09E-01	2.54E-02	4.56E-02	2.27E-01	6.21E-01
Cadmium	Lower	kg/yr	1.37E-03	2.42E-03	6.16E-02	8.29E-02	8.76E-03	1.73E-01	1.74E-02	3.11E-02	1.05E-01	3.57E-01
Cadmium	Upper	kg/yr	9.60E-03	1.06E-02	1.21E-01	2.23E-01	1.02E-02	2.40E-01	3.36E-02	6.17E-02	5.11E-01	1.06E+00
Copper	Central	kg/yr	1.36E-03	1.90E-02	4.09E-01	5.82E+00	2.67E-02	2.82E+01	5.96E-02	3.54E+00	6.65E-01	5.72E+01
Copper	Lower	kg/yr	1.36E-03	1.90E-02	3.18E-01	3.53E+00	2.37E-02	2.31E+01	4.04E-02	2.41E+00	4.20E-01	3.72E+01
Copper	Upper	kg/yr	1.36E-03	1.90E-02	5.11E-01	8.36E+00	2.94E-02	3.27E+01	8.56E-02	4.97E+00	1.06E+00	7.86E+01
Lead	Central	kg/yr	5.30E-04	1.81E-02	1.36E-01	4.49E+00	1.65E-02	1.36E+01	1.21E-02	1.06E+00	2.60E-01	3.13E+01
Lead	Lower	kg/yr	5.30E-04	1.81E-02	1.30E-01	2.77E+00	1.46E-02	1.11E+01	8.23E-03	7.17E-01	1.84E-01	1.99E+01
Lead	Upper	kg/yr	5.30E-04	1.81E-02	1.42E-01	6.39E+00	1.81E-02	1.57E+01	1.67E-02	1.51E+00	4.01E-01	4.45E+01
Manganese	Central	kg/yr	6.40E+01	7.17E+01	1.80E+03	1.97E+03	1.76E+03	1.62E+03	2.59E+03	2.63E+03	7.96E+03	8.53E+03
Manganese	Lower	kg/yr	5.86E+01	6.63E+01	4.40E+02	5.11E+02	1.50E+03	1.39E+03	1.93E+03	1.95E+03	4.58E+03	4.76E+03
Manganese	Upper	kg/yr	1.22E+02	1.29E+02	3.49E+03	3.77E+03	1.99E+03	1.84E+03	3.41E+03	3.47E+03	1.27E+04	1.38E+04
Mercury	Central	kg/yr	0.00E+00	0.00E+00	0.00E+00	7.75E-03	6.31E-03	4.78E-02	0.00E+00	0.00E+00	2.38E-02	1.01E-01
Mercury	Lower	kg/yr	0.00E+00	0.00E+00	0.00E+00	1.25E-03	5.49E-03	3.89E-02	0.00E+00	0.00E+00	9.82E-03	5.85E-02
Mercury	Upper	kg/yr	0.00E+00	0.00E+00	0.00E+00	1.49E-02	7.03E-03	5.56E-02	0.00E+00	0.00E+00	4.23E-02	1.59E-01
Nickel	Central	kg/yr	2.47E-02	3.39E-02	2.31E+00	4.62E+00	1.11E+00	1.07E+01	3.81E+00	5.01E+00	9.97E+00	3.43E+01
Nickel	Lower	kg/yr	1.76E-02	2.68E-02	1.24E+00	2.26E+00	9.66E-01	8.82E+00	2.76E+00	3.57E+00	5.81E+00	2.00E+01
Nickel	Upper	kg/yr	1.00E-01	1.09E-01	3.69E+00	7.46E+00	1.24E+00	1.24E+01	5.01E+00	6.80E+00	1.63E+01	5.20E+01
Zinc	Central	kg/yr	1.16E-01	1.12E-01	0.00E+00	1.43E+01	4.48E-01	1.03E+02	1.04E+00	6.79E+00	6.52E+00	2.01E+02
Zinc	Lower	kg/yr	7.37E-02	7.01E-02	0.00E+00	6.80E+00	3.98E-01	8.47E+01	7.12E-01	4.60E+00	2.84E+00	1.28E+02
Zinc	Upper	kg/yr	5.64E-01	5.61E-01	0.00E+00	2.26E+01	4.92E-01	1.20E+02	1.40E+00	9.62E+00	1.56E+01	2.85E+02
Pesticides												
4,4'-DDD	Central	kg/yr	--	--	0.00E+00	1.98E-03	--	--	--	--	2.00E-04	1.89E-02
4,4'-DDD	Lower	kg/yr	--	--	0.00E+00	3.20E-04	--	--	--	--	1.51E-05	1.64E-03
4,4'-DDD	Upper	kg/yr	--	--	0.00E+00	3.83E-03	--	--	--	--	6.80E-04	6.11E-02
4,4'-DDT	Central	kg/yr	--	--	0.00E+00	0.00E+00	--	--	--	--	1.71E-05	2.67E-02
4,4'-DDT	Lower	kg/yr	--	--	0.00E+00	0.00E+00	--	--	--	--	1.71E-05	1.48E-03
4,4'-DDT	Upper	kg/yr	--	--	0.00E+00	0.00E+00	--	--	--	--	1.71E-05	9.28E-02
Total DDE	Central	kg/yr	--	--	0.00E+00	1.98E-03	--	--	--	--	6.93E-06	3.63E-03
Total DDE	Lower	kg/yr	--	--	0.00E+00	3.20E-04	--	--	--	--	6.93E-06	4.27E-04
Total DDE	Upper	kg/yr	--	--	0.00E+00	3.83E-03	--	--	--	--	6.93E-06	9.49E-03
Total DDD	Central	kg/yr	--	--	1.98E-02	2.45E-02	--	--	--	--	2.05E-02	5.17E-02
Total DDD	Lower	kg/yr	--	--	3.20E-03	3.95E-03	--	--	--	--	3.24E-03	6.14E-03
Total DDD	Upper	kg/yr	--	--	3.83E-02	4.72E-02	--	--	--	--	4.05E-02	1.39E-01
Total DDT	Central	kg/yr	--	--	1.03E-03	1.30E-03	--	--	--	--	1.05E-03	2.89E-02
Total DDT	Lower	kg/yr	--	--	1.66E-04	2.09E-04	--	--	--	--	1.83E-04	1.73E-03
Total DDT	Upper	kg/yr	--	--	1.99E-03	2.50E-03	--	--	--	--	2.01E-03	9.87E-02
DDx	Central	kg/yr	--	--	2.09E-02	2.78E-02	--	--	--	--	2.16E-02	8.43E-02
DDx	Lower	kg/yr	--	--	3.37E-03	4.48E-03	--	--	--	--	3.44E-03	8.31E-03
DDx	Upper	kg/yr	--	--	4.03E-02	5.36E-02	--	--	--	--	4.25E-02	2.47E-01
PAHs												
Naphthalene	Central	kg/yr	0.00E+00	0.00E+00	1.03E-01	1.03E-01	3.42E+01	5.53E+02	1.60E-02	1.60E-02	1.25E+02	7.72E+02
Naphthalene	Lower	kg/yr	0.00E+00	0.00E+00	7.05E-02	7.05E-02	3.04E+01	4.50E+02	1.29E-02	1.29E-02	5.73E+01	4.73E+02
Naphthalene	Upper	kg/yr	0.00E+00	0.00E+00	1.40E-01	1.40E-01	3.76E+01	6.43E+02	2.17E-02	2.17E-02	1.92E+02	1.03E+03
Benzo(a)pyrene	Central	kg/yr	0.00E+00	0.00E+00	--	--	2.60E-03	9.18E-01	0.00E+00	0.00E+00	9.36E-03	3.57E+00
Benzo(a)pyrene	Lower	kg/yr	0.00E+00	0.00E+00	--	--	2.30E-03	7.50E-01	0.00E+00	0.00E+00	4.34E-03	1.70E+00
Benzo(a)pyrene	Upper	kg/yr	0.00E+00	0.00E+00	--	--	2.86E-03	1.07E+00	0.00E+00	0.00E+00	1.44E-02	5.49E+00
Total cPAHs	Central	kg/yr	1.19E-05	6.56E-04	--	--	2.51E-02	4.20E+00	0.00E+00	0.00E+00	8.34E-02	1.76E+01
Total cPAHs	Lower	kg/yr	7.41E-06	6.51E-04	--	--	2.20E-02	3.43E+00	0.00E+00	0.00E+00	3.99E-02	8.20E+00
Total cPAHs	Upper	kg/yr	5.93E-05	7.03E-04	--	--	2.79E-02	4.88E+00	0.00E+00	0.00E+00	1.27E-01	2.72E+01

Table 6.1-7. Estimated Upland Groundwater Plume Loading to the Water Column, by Upland Site.

			Kinder Morgan		Rhone Poulenc		Siltronic		Willbridge		Entire Study Area	
Analyte	**Load Estimate**	**Units**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**
cPAH BaPEq	Central	kg/yr	5.67E-06	3.22E-05	--	--	3.74E-03	1.22E+00	0.00E+00	0.00E+00	1.31E-02	4.79E+00
cPAH BaPEq	Lower	kg/yr	3.55E-06	3.01E-05	--	--	3.30E-03	9.97E-01	0.00E+00	0.00E+00	6.16E-03	2.27E+00
cPAH BaPEq	Upper	kg/yr	2.84E-05	5.49E-05	--	--	4.12E-03	1.42E+00	0.00E+00	0.00E+00	2.01E-02	7.37E+00
Total HPAHs	Central	kg/yr	3.20E-03	1.57E-02	--	--	6.78E-01	1.35E+01	1.72E-02	3.02E-02	1.35E+00	4.75E+01
Total HPAHs	Lower	kg/yr	2.60E-03	1.51E-02	--	--	6.06E-01	1.12E+01	1.43E-02	2.32E-02	8.30E-01	2.29E+01
Total HPAHs	Upper	kg/yr	9.66E-03	2.21E-02	--	--	7.43E-01	1.55E+01	2.26E-02	3.97E-02	1.89E+00	7.26E+01
Total LPAHs	Central	kg/yr	5.37E-02	7.65E-02	--	--	5.86E+01	6.06E+02	2.95E-01	3.54E-01	1.64E+02	8.63E+02
Total LPAHs	Lower	kg/yr	5.05E-02	7.32E-02	--	--	5.21E+01	4.97E+02	2.36E-01	2.76E-01	8.36E+01	5.28E+02
Total LPAHs	Upper	kg/yr	8.86E-02	1.11E-01	--	--	6.43E+01	7.02E+02	3.94E-01	4.71E-01	2.43E+02	1.16E+03
Total PAHs	Central	kg/yr	5.72E-02	9.20E-02	--	--	5.94E+01	6.20E+02	3.13E-01	3.85E-01	1.66E+02	9.11E+02
Total PAHs	Lower	kg/yr	5.34E-02	8.82E-02	--	--	5.29E+01	5.08E+02	2.50E-01	3.00E-01	8.47E+01	5.51E+02
Total PAHs	Upper	kg/yr	9.85E-02	1.33E-01	--	--	6.52E+01	7.19E+02	4.16E-01	5.11E-01	2.45E+02	1.23E+03
SVOCs												
1,2-Dichlorobenzene	Central	kg/yr	n/a	0.00E+00	n/a	3.55E+01	n/a	2.06E-03	n/a	0.00E+00	n/a	3.55E+01
1,2-Dichlorobenzene	Lower	kg/yr	n/a	0.00E+00	n/a	6.44E+00	n/a	1.68E-03	n/a	0.00E+00	n/a	6.45E+00
1,2-Dichlorobenzene	Upper	kg/yr	n/a	0.00E+00	n/a	6.74E+01	n/a	2.40E-03	n/a	0.00E+00	n/a	6.75E+01
VOCs												
1,2-Dichloroethane	Central	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	1.25E+00
1,2-Dichloroethane	Lower	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	1.53E-01
1,2-Dichloroethane	Upper	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	4.02E+00
1,1,2-Trichloroethane	Central	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	1.98E-02	n/a	0.00E+00	n/a	5.88E-01
1,1,2-Trichloroethane	Lower	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	1.61E-02	n/a	0.00E+00	n/a	7.60E-02
1,1,2-Trichloroethane	Upper	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	2.31E-02	n/a	0.00E+00	n/a	1.88E+00
1,2,4-Trimethylbenzene	Central	kg/yr	n/a	--	n/a	--	n/a	1.76E+00	n/a	--	n/a	4.48E+00
1,2,4-Trimethylbenzene	Lower	kg/yr	n/a	--	n/a	--	n/a	1.47E+00	n/a	--	n/a	2.43E+00
1,2,4-Trimethylbenzene	Upper	kg/yr	n/a	--	n/a	--	n/a	2.01E+00	n/a	--	n/a	6.49E+00
Benzene	Central	kg/yr	n/a	0.00E+00	n/a	1.61E-01	n/a	1.52E+01	n/a	0.00E+00	n/a	5.17E+01
Benzene	Lower	kg/yr	n/a	0.00E+00	n/a	3.45E-02	n/a	1.26E+01	n/a	0.00E+00	n/a	1.80E+01
Benzene	Upper	kg/yr	n/a	0.00E+00	n/a	3.01E-01	n/a	1.75E+01	n/a	0.00E+00	n/a	8.08E+01
Carbon disulfide	Central	kg/yr	n/a	6.13E-04	n/a	0.00E+00	n/a	8.06E-03	n/a	0.00E+00	n/a	6.91E-01
Carbon disulfide	Lower	kg/yr	n/a	3.83E-04	n/a	0.00E+00	n/a	6.56E-03	n/a	0.00E+00	n/a	6.86E-01
Carbon disulfide	Upper	kg/yr	n/a	3.06E-03	n/a	0.00E+00	n/a	9.38E-03	n/a	0.00E+00	n/a	1.38E+00
Chlorobenzene	Central	kg/yr	n/a	0.00E+00	n/a	1.36E+01	n/a	4.39E-03	n/a	0.00E+00	n/a	6.72E+01
Chlorobenzene	Lower	kg/yr	n/a	0.00E+00	n/a	3.45E+00	n/a	3.54E-03	n/a	0.00E+00	n/a	3.28E+01
Chlorobenzene	Upper	kg/yr	n/a	0.00E+00	n/a	2.48E+01	n/a	5.20E-03	n/a	0.00E+00	n/a	1.40E+02
Chloroethane	Central	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	8.94E-03	n/a	5.31E-02	n/a	1.70E+00
Chloroethane	Lower	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	7.28E-03	n/a	4.46E-02	n/a	1.68E+00
Chloroethane	Upper	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	1.04E-02	n/a	6.84E-02	n/a	1.73E+00
Chloroform	Central	kg/yr	n/a	1.30E-04	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	3.28E+00
Chloroform	Lower	kg/yr	n/a	8.11E-05	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	2.79E-01
Chloroform	Upper	kg/yr	n/a	6.49E-04	n/a	0.00E+00	n/a	0.00E+00	n/a	0.00E+00	n/a	2.77E+03
cis-1,2-Dichloroethene c	Central	kg/yr	n/a	0.00E+00	n/a	8.90E-01	n/a	3.46E+02	n/a	0.00E+00	n/a	3.47E+02
cis-1,2-Dichloroethene c	Lower	kg/yr	n/a	0.00E+00	n/a	1.61E-01	n/a	3.05E+02	n/a	0.00E+00	n/a	3.05E+02
cis-1,2-Dichloroethene c	Upper	kg/yr	n/a	0.00E+00	n/a	1.70E+00	n/a	3.82E+02	n/a	0.00E+00	n/a	3.84E+02
Methylene Chloride	Central	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	3.71E-03	n/a	0.00E+00	n/a	8.21E+02
Methylene Chloride	Lower	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	3.02E-03	n/a	0.00E+00	n/a	8.64E+01
Methylene Chloride	Upper	kg/yr	n/a	0.00E+00	n/a	0.00E+00	n/a	4.32E-03	n/a	0.00E+00	n/a	2.68E+03
Ethylbenzene	Central	kg/yr	n/a	0.00E+00	n/a	7.79E-03	n/a	4.01E+00	n/a	0.00E+00	n/a	9.00E+00
Ethylbenzene	Lower	kg/yr	n/a	0.00E+00	n/a	1.26E-03	n/a	3.31E+00	n/a	0.00E+00	n/a	3.70E+00
Ethylbenzene	Upper	kg/yr	n/a	0.00E+00	n/a	1.52E-02	n/a	4.63E+00	n/a	0.00E+00	n/a	1.36E+01
Toluene	Central	kg/yr	n/a	2.13E-04	n/a	0.00E+00	n/a	1.79E+00	n/a	5.95E-02	n/a	3.74E+00
Toluene	Lower	kg/yr	n/a	1.33E-04	n/a	0.00E+00	n/a	1.51E+00	n/a	4.81E-02	n/a	2.03E+00
Toluene	Upper	kg/yr	n/a	1.07E-03	n/a	0.00E+00	n/a	2.03E+00	n/a	8.08E-02	n/a	5.70E+00
Trichloroethene [c]	Central	kg/yr	n/a	0.00E+00	n/a	2.94E-02	n/a	7.09E-01	n/a	0.00E+00	n/a	4.45E+00
Trichloroethene [c]	Lower	kg/yr	n/a	0.00E+00	n/a	4.76E-03	n/a	6.55E-01	n/a	0.00E+00	n/a	1.05E+00
Trichloroethene [c]	Upper	kg/yr	n/a	0.00E+00	n/a	5.73E-02	n/a	2.67E+02	n/a	0.00E+00	n/a	2.80E+02

Table 6.1-7. Estimated Upland Groundwater Plume Loading to the Water Column, by Upland Site.

			Kinder Morgan		Rhone Poulenc		Siltronic		Willbridge		Entire Study Area	
Analyte	**Load Estimate**	**Units**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**	**Peepers and Filtered Push Probe[a]**	**Peepers and Unfiltered Push Probe[b]**
Vinyl chloride [c]	Central	kg/yr	n/a	0.00E+00	n/a	6.41E-01	n/a	4.90E+01	n/a	0.00E+00	n/a	5.01E+01
Vinyl chloride [c]	Lower	kg/yr	n/a	0.00E+00	n/a	1.50E-01	n/a	4.25E+01	n/a	0.00E+00	n/a	4.27E+01
Vinyl chloride [c]	Upper	kg/yr	n/a	0.00E+00	n/a	1.19E+00	n/a	5.46E+01	n/a	0.00E+00	n/a	5.73E+01
Total Xylenes	Central	kg/yr	n/a	0.00E+00	n/a	5.71E-02	n/a	3.01E+00	n/a	2.10E-02	n/a	9.63E+00
Total Xylenes	Lower	kg/yr	n/a	0.00E+00	n/a	2.52E-02	n/a	2.50E+00	n/a	1.58E-02	n/a	2.95E+00
Total Xylenes	Upper	kg/yr	n/a	0.00E+00	n/a	9.29E-02	n/a	3.45E+00	n/a	2.81E-02	n/a	1.56E+01

Notes:

[a] Push Probe refers to samples collected by either Trident or GeoProbe samplers.

[b] Due to sample volume limitations, filtered Push Probe samples were not collected at all sample locations. To calculate loading rate estimates at these sample locations, the average of the filtered push-probe contaminant concentrations within the same flow zone were used.

[c] Station GP-67 is located in Area 2 of the Siltronic site, which is understood to be an area impacted by a direct discharge of trichloroethene. Concentrations of trichloroethene and related degradation-chain chemicals (cis-1,2-Dichloroethene and vinyl chloride) measured at GP-67 are not representative of the upland groundwater plume; therefore, GP-67 was not included in loading calculations for these three contaminants for the Siltronic site or the entire Study Area. For comparison purposes, entire Study Area loads were also calculated for these three contaminants including station GP-67. These comparative loading results are as follows:

cis-1,2-Dichloroethene - central: 3.47E+02 kg/yr, lower: 3.05E+02, upper: 3.84E+02
Trichloroethene - central: 2.34E+02 kg/yr, lower: 1.88E+02, upper: 2.80E+02
Vinyl chloride - central: 5.01E+01 kg/yr, lower: 4.27E+01, upper: 5.73E+01

-- Analyte not sampled.
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
HPAH - high molecular weight polycyclic aromatic hydrocarbon
LPAH - low molecular weight polycyclic aromatic hydrocarbon
n/a - Indicates that filtered data was not available. Per sampling protocols filtered samples were not collected for VOCs or naphthalene.
PAH - polycyclic aromatic hydrocarbon
SVOC - semivolatile organic compound
VOC - volatile organic compound

Table 6.1-8. Summary of Central Estimates of Annual Loading to the Study Area for Indicator Contminants (kg/yr).[a]

		Central Estimate of Annual Loading						
		External Loads to Study Area						Internal Load within Study Area
Analyte	**Total Combined Estimated External Load**	**Surface Water at RM 11.8[b]**	**Direct Permitted Non-Stormwater Discharges**	**Stormwater Runoff**	**Atmospheric Deposition to Water Surface**	**Upland Groundwater Plumes**	**Subsurface Sediment Advection**	**Surface Sediment Advection**
PCBs								
PCB077	1.35E-02	**9.31E-03**	-	4.08E-03	-	-	1.42E-04	5.48E-05
PCB081	1.82E-04	3.60E-05	-	**1.28E-04**	-	-	1.81E-05	5.20E-06
PCB105	8.22E-02	**5.25E-02**	-	2.91E-02	-	-	5.85E-04	1.77E-04
PCB118	2.05E-01	**1.35E-01**	-	6.83E-02	-	-	1.61E-03	7.01E-04
PCB126	8.60E-04	2.75E-04	-	**5.74E-04**	-	-	1.06E-05	3.76E-06
PCB156 & PCB157	2.87E-02	**1.73E-02**	-	1.13E-02	-	-	-	-
PCB169	1.26E-04	**7.21E-05**	-	5.42E-05	-	-	2.70E-08	8.87E-09
Total PCB Congeners	4.71E+00	**4.71E+00**	-	-	-	-	-	1.16E-01
Total PCBs	7.44E+00	**4.71E+00**	-	2.03E+00	6.25E-01	-	7.80E-02	1.16E-01
PCB TEQ (ND=0)	1.01E-04	3.76E-05	-	**5.49E-05**	8.53E-06	-	-	-
PCDD/Fs								
Total PCDD/Fs	5.99E-01	**5.99E-01**	-	-	-	-	5.60-06	1.41E-05
TCDD TEQ (ND=0)	1.48E-03	**1.45E-03**	-	-	3.20E-05	-	-	-
Pesticides								
4,4'-DDD	1.12E+00	**1.06E+00**	-	4.17E-02	-	2.00E-04	1.42E-02	5.19E-03
4,4'-DDE	1.27E-01	-	-	-	**1.27E-01**	-	-	-
4,4'-DDT	3.46E+00	**3.25E+00**	-	1.66E-01	4.02E-02	1.71E-05	5.20E-03	3.60E-03
Total DDE	2.59E+00	**2.50E+00**	-	9.34E-02	-	6.93E-06	6.41E-04	5.64E-04
Total DDD	1.43E+00	**1.33E+00**	-	6.39E-02	-	2.05E-02	1.73E-02	8.16E-03
Total DDT	3.95E+00	**3.70E+00**	-	2.38E-01	-	1.05E-03	6.10E-03	4.32E-03
DDx	7.97E+00	**7.53E+00**	-	3.95E-01	1.67E-01 [c]	2.16E-02	2.41E-02	1.30E-02
Total chlordanes	1.27E+00	**1.22E+00**	-	4.08E-02	1.00E-02	-	8.17E-04	3.31E-04
γ-Hexachlorocyclohexane (Lindane)	6.48E-01	**5.77E-01**	-	1.26E-02	-	-	5.86E-02	9.38E-02
Aldrin	7.37E-02	**6.64E-02**	-	6.90E-03	3.19E-04	-	8.88E-05	1.00E-04
Dieldrin	3.51E+00	**3.49E+00**	-	1.46E-02	2.63E-03	-	7.61E-04	6.65E-04
PAHs								
Total PAHs	1.13E+03	3.80E+02	1.24E+00	1.51E+01	7.18E+00	**1.66E+02**	5.62E+02	1.96E+02
Benzo(a)pyrene	7.19E+00	**5.09E+00**	5.30E-02	7.53E-01	8.10E-01	9.36E-03	4.72E-01	7.04E-01
Naphthalene	6.24E+02	9.66E+01	-	5.71E-01	2.83E+00	1.25E+02 [d]	**3.99E+02**	3.16E+01
Total cPAHs	4.34E+01	**3.59E+01**	-	1.25E+00	3.65E+00	8.34E-02	2.48E+00	3.64E+00
cPAH BaPEq	8.15E+00	**6.87E+00**	-	-	6.92E-01	1.31E-02	5.74E-01	8.62E-01
Total HPAHs	9.72E+01	**9.59E+01**	-	-	-	1.35E+00	-	-
Total LPAHs	4.37E+02	2.73E+02	-	-	-	**1.64E+02**	-	-

Table 6.1-8. Summary of Central Estimates of Annual Loading to the Study Area for Indicator Contminants (kg/yr).[a]

		Central Estimate of Annual Loading						
		External Loads to Study Area						Internal Load within Study Area
Analyte	**Total Combined Estimated External Load**	**Surface Water at RM 11.8[b]**	**Direct Permitted Non-Stormwater Discharges**	**Stormwater Runoff**	**Atmospheric Deposition to Water Surface**	**Upland Groundwater Plumes**	**Subsurface Sediment Advection**	**Surface Sediment Advection**
Petroleum Hydrocarbons								
Total Petroleum Hydrocarbons (Diesel)	3.60E+03	-	-	-	**3.60E+03**	-	-	-
Metals								
Arsenic	9.64E+03	**9.49E+03**	9.30E-02	2.91E+01	7.32E+00	2.70E+01	8.92E+01	1.98E+02
Barium	2.43E+02	-	-	-	-	**2.43E+02**	-	-
Cadmium	6.47E-01	-	**4.20E-01**	-	-	2.27E-01	-	-
Chromium	2.12E+04	**2.11E+04**	4.65E-01	8.30E+01	6.10E+00	3.16E+00	2.14E+00	4.58E+00
Copper	4.71E+04	**4.65E+04**	6.45E+01	3.73E+02	3.06E+01	6.65E-01	1.37E+02	1.78E+02
Lead	9.81E+03	**9.38E+03**	7.89E+01	3.24E+02	1.69E+01	2.60E-01	6.30E+00	6.91E+00
Manganese	7.96E+03	-	-	-	-	**7.96E+03**	-	-
Mercury	2.61E+02	**2.32E+02**	2.75E-04	5.00E-01	2.89E+01	2.38E-02	1.53E-02	1.36E-02
Nickel	2.62E+04	**2.61E+04**	-	6.19E+01	8.79E+00	9.97E+00	-	-
Zinc	9.57E+04	**9.24E+04**	4.49E+02	2.66E+03	7.88E+01	6.52E+00	1.17E+02	1.17E+02
VOCs								
1,2-Dichloroethane	1.25E+00	-	-	-	-	**1.25E+00** [d]	-	-
1,1,2-Trichloroethane	5.88E-01	-	-	-	-	**5.88E-01** [d]	-	-
1,2,4-Trimethylbenzene	4.48E+00	-	-	-	-	**4.48E+00** [d]	-	-
Benzene	5.49E+01	-	3.19E+00	-	-	**5.17E+01** [d]	-	-
Carbon disulfide	6.91E-01	-	-	-	-	**6.91E-01** [d]	-	-
Chlorobenzene	6.72E+01	-	-	-	-	**6.72E+01** [d]	-	-
Chloroethane	1.70E+00	-	-	-	-	**1.70E+00** [d]	-	-
Chloroform	3.28E+00	-	-	-	-	**3.28E+00** [d]	-	-
cis-1,2-Dichloroethene	3.47E+02	-	-	-	-	**3.47E+02** [d]	-	-
Methylene chloride	8.21E+02	-	-	-	-	**8.21E+02** [d]	-	-
Ethylbenzene	9.00E+00	-	-	-	-	**9.00E+00** [d]	-	-
Toluene	3.74E+00	-	-	-	-	**3.74E+00** [d]	-	-
Trichloroethene	4.45E+00	-	-	-	-	**4.45E+00** [d]	-	-
Vinyl chloride	5.01E+01	-	-	-	-	**5.01E+01** [d]	-	-
Total Xylenes	9.63E+00	-	-	-	-	**9.63E+00** [d]	-	-

Table 6.1-8. Summary of Central Estimates of Annual Loading to the Study Area for Indicator Contminants (kg/yr).[a]

		Central Estimate of Annual Loading						
		External Loads to Study Area						Internal Load within Study Area
Analyte	**Total Combined Estimated External Load**	**Surface Water at RM 11.8[b]**	**Direct Permitted Non-Stormwater Discharges**	**Stormwater Runoff**	**Atmospheric Deposition to Water Surface**	**Upland Groundwater Plumes**	**Subsurface Sediment Advection**	**Surface Sediment Advection**
SVOCs								
Bis(2-ethylhexyl)phthalate	7.56E+03	**7.54E+03**	-	2.08E+01	-	-	4.40E-03	8.50E-03
Hexachlorobenzene	1.26E+00	**1.02E+00**	-	1.12E-01	1.29E-01	-	-	-
1,2-Dichlorobenzene	3.55E+01	-	-	-	-	**3.55E+01** [d]	-	-
Butyltins								
Tributyltin Ion	4.74E+01	1.10E+01	-	-	-	-	**3.64E+01**	9.76E+00

Notes:

[a] Loads are presented for only those contaminants which are on the contaminant lists specific to individual loading terms (see Table 6.0-1).

[b] Upstream (RM 11.8) surface water load estimated based on combined data from RM 16 and RM 11, with RM 11 outlying data values excluded.

[c] Sum of 4,4'-DDE and 4,4'-DDT.

[d] Transition zone water samples for volatile chemicals were not filtered due to potential losses from the filtration process. The central load estimates shown here are based on peeper and unfiltered push probe data.

- Indicates that no load was estimated.

Bold font indicates the maximum loading term for each contaminant.

BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
HPAH - high molecular weight polycyclic aromatic hydrocarbon
IC - indicator contaminant
LPAH - low molecular weight polycyclic aromatic hydrocarbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
SVOC - semivolatile organic compound
TEQ - toxic equivalent concentration
VOC - volatile organic compound

Table 6.2-1. Summary of Modeled Fluxes of Water and Total Sediment Load in Portland Harbor for a Range of Flow Conditions.[a]

Flow Regime/Year[b]	Total Sediment Load (Kg/yr)	Yearly Average Flow[c] (m^3/s)
Total Sediment fluxes at RM 11.8		**Flow Rate at RM 11.8**
95th Percentile/1997	4.33E+09	1522.1
75th Percentile/1995	1.32E+09	1077.5
50th Percentile/1986	1.06E+09	877.9
25th Percentile/1981	8.29E+08	787.4
5th Percentile/2001	1.34E+08	453.5
Average	1.53E+09	943.7
Total Sediment fluxes at RM 1.2		**Flow Rate at RM 1.2**
95th Percentile/1997	-2.70E+09	-798.4
75th Percentile/1995	-8.16E+08	-615.7
50th Percentile/1986	-5.99E+08	-381.4
25th Percentile/1981	-4.43E+08	-307.1
5th Percentile/2001	-2.50E+07	-164.6
Average	-9.17E+08	-453.4
Total Sediment fluxes in MC		**Flow Rate in MC**
95th Percentile/1997	-9.48E+08	-723.9
75th Percentile/1995	-2.60E+08	-462.0
50th Percentile/1986	-2.65E+08	-496.3
25th Percentile/1981	-2.04E+08	-480.7
5th Percentile/2001	-1.96E+07	-288.9
Average	-3.40E+08	-490.4
Combined RM1.2 and MC Sediment fluxes		**Combined RM 1.2 and MC Flow Rate**
95th Percentile/1997	-3.65E+09	-1522.3
75th Percentile/1995	-1.08E+09	-1077.71
50th Percentile/1986	-8.64E+08	-877.7
25th Percentile/1981	-6.47E+08	-787.8
5th Percentile/2001	-4.45E+07	-453.5
Average	-1.26E+09	-943.8
Average Annual Mass (Flow) Remaining in Harbor	2.77E+08	-0.122
Percentage of Mass (Flow) Exiting to Mass Entering Harbor	81.9%	100.0%

Notes:

[a] Positive loading values represent fluxes into the study area. Negative loading values represent fluxes out of the study area.

[b] Flow regime was defined by the yearly average flow during USGS water year as follows.

5th Percentile (Flow Year 2001) – mean flow 454 cubic meters per second (m^3/sec)

25th Percentile (Flow Year 1981) – mean flow 787 m^3/sec

50th Percentile (Flow Year 1986) – mean flow 878 m^3/sec

75th Percentile (Flow Year 1995) -- mean flow 1,078 m^3/sec

95th Percentile (Flow Year 1997)– mean flow 1,522 m^3/sec

[c] Anchor QEA calculated yearly average flow rate at upstream of Willamette River, and based on the daily average flow rates recorded by USGS 14211720 Willamette River at Portland, OR.

Yearly flow and sediment loads were calculated based on USGS water year.

MC - Multnomah Channel

RM - river mile

USGS - U.S. Geological Survey

Table 6.2-2. Subsurface and Surface Sediment Advective Annual Loads in the Study Area RM 1.9 - 11.8 (kg/yr).

	Subsurface Advective Loading			Surface Advective Loading		
Analyte	**Primary Loading Estimate (kg/yr)**	**Upper Loading Estimate (kg/yr)**	**Lower Loading Estimate (kg/yr)**	**Primary Loading Estimate (kg/yr)**	**Upper Loading Estimate (kg/yr)**	**Lower Loading Estimate (kg/yr)**
Metals						
Arsenic	8.92E+01	5.54E+02	1.13E+00	1.98E+02	1.22E+03	2.50E+00
Copper	1.37E+02	7.44E+04	2.74E-01	1.78E+02	9.25E+04	3.55E-01
Lead	6.30E+00	2.49E+03	2.51E-02	6.91E+00	2.73E+03	2.75E-02
Mercury	1.53E-02	1.92E-01	1.21E-03	1.36E-02	1.71E-01	1.08E-03
Butyltins						
Tributyltin Ion	3.64E+01	1.86E+03	2.29E-02	9.76E+00	5.47E+02	6.12E-03
PCBs						
PCB077	1.42E-04	1.04E-03	7.70E-05	5.48E-05	4.02E-04	2.98E-05
PCB081	1.81E-05	3.83E-05	8.22E-06	5.20E-06	1.10E-05	2.36E-06
PCB105	5.85E-04	1.31E-03	2.50E-04	1.77E-04	3.95E-04	7.57E-05
PCB118	1.61E-03	5.79E-03	4.01E-04	7.01E-04	2.51E-03	1.74E-04
PCB126	1.06E-05	2.11E-05	5.17E-06	3.76E-06	7.47E-06	1.84E-06
PCB169	2.70E-08	3.52E-08	2.09E-08	8.87E-09	1.16E-08	6.87E-09
Total PCBs	7.80E-02	9.27E-01	2.86E-02	1.16E-01	6.36E-01	2.85E-02
PCDD/Fs						
Total PCDD/Fs	5.60E-06	4.63E-05	2.55E-06	1.41E-05	4.86E-05	8.71E-06
DDx						
4,4'-DDD	1.42E-02	9.93E-02	7.53E-03	5.19E-03	3.63E-02	2.75E-03
4,4'-DDT	5.20E-03	3.27E-01	3.35E-03	3.60E-03	2.26E-01	2.32E-03
Total DDE	6.41E-04	1.77E-02	5.55E-04	5.64E-04	1.55E-02	4.86E-04
Total DDD	1.73E-02	1.16E-01	8.80E-03	8.16E-03	5.22E-02	3.95E-03
Total DDT	6.10E-03	3.68E-01	3.77E-03	4.32E-03	2.58E-01	2.65E-03
DDx	2.41E-02	5.01E-01	1.31E-02	1.30E-02	3.26E-01	7.09E-03
Pesticides (non-DDx)						
Total chlordanes	8.17E-04	2.88E-02	8.17E-04	3.31E-04	9.17E-03	3.31E-04
gamma-Hexachlorocyclohexane (Lindane)	5.86E-02	1.64E-01	4.03E-02	9.38E-02	2.69E-01	6.42E-02
Aldrin	8.88E-05	8.54E-04	7.20E-06	1.00E-04	9.63E-04	8.12E-06
Dieldrin	7.61E-04	8.17E-03	1.16E-04	6.65E-04	7.14E-03	1.02E-04
PAHs						
Naphthalene	3.99E+02	6.09E+02	2.38E+02	3.16E+01	4.80E+01	1.89E+01
Benzo(a)pyrene	4.72E-01	9.96E-01	1.04E-01	7.04E-01	1.49E+00	1.55E-01
Total cPAHs	2.48E+00	6.15E+00	1.57E+00	3.64E+00	9.13E+00	2.33E+00
cPAH BaPEq	5.74E-01	1.31E+00	1.78E-01	8.62E-01	1.99E+00	2.71E-01
Total PAHs	5.62E+02	8.83E+02	3.57E+02	1.96E+02	3.81E+02	1.39E+02
SVOCs						
Bis(2-ethylhexyl)phthalate	4.40E-03	3.11E+01	3.54E-05	8.50E-03	6.64E+01	6.85E-05

Notes:

BaPEq - benzo(a)pyrene equivalent
cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - 2,4'- and 4,4'-DDD, DDE, and DDT
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
RM - river mile
SVOC - semivolatile organic compound

Table 6.3-1. Summary Statistics for All Depositional Cores Combined.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Grain Size														
Fines	percent	28	28	100	4.99 T	83.8 T	57.2	64.5	78.1	4.99 T	83.8 T	57.2	64.5	78.1
Conventionals														
Total organic carbon	percent	29	29	100	0.4	4.16	2.27	2.37	3.33	0.4	4.16	2.27	2.37	3.33
Metals														
Arsenic	mg/kg	29	29	100	3.12	7.77 J	5.27	5.25	6.77	3.12	7.77 J	5.27	5.25	6.77
Cadmium	mg/kg	29	29	100	0.12	0.31	0.227	0.23	0.29	0.12	0.31	0.227	0.23	0.29
Chromium	mg/kg	29	29	100	24.2	44.7	35.8	37.6	41.4	24.2	44.7	35.8	37.6	41.4
Copper	mg/kg	29	29	100	21.1	71.6	40.4	40.5	59.4	21.1	71.6	40.4	40.5	59.4
Lead	mg/kg	29	29	100	8.2 J	17	13.2	13.6	16	8.2 J	17	13.2	13.6	16
Mercury	mg/kg	29	29	100	0.023	0.107 J	0.0604	0.0565	0.0966	0.023	0.107 J	0.0604	0.0565	0.0966
Nickel	mg/kg	29	29	100	19.7 J	35.8 J	30.6	30.1	35.5	19.7 J	35.8 J	30.6	30.1	35.5
Zinc	mg/kg	29	29	100	58	106	88	90.6	101	58	106	88	90.6	101
PCB Aroclors														
Aroclors	µg/kg	29	10	34	11 JT	22 T	15.3	15	21.6	2.5 UT	22 T	6.9	3.6	19.8
Pesticides														
Aldrin	µg/kg	29	10	34	0.26 J	0.81 J	0.507	0.48	0.77	0.22 U	0.81 J	0.275	0.155	0.712
Dieldrin	µg/kg	29	0	0						0.42 U	0.78 U	0.274	0.27	0.338
gamma-Hexachlorocyclohexane (Lindane)	µg/kg	29	0	0						0.22 U	1.7 U	0.201	0.15	0.498
Total chlordanes	µg/kg	29	26	90	0.18 JT	1.1 JT	0.608	0.555	1	0.18 JT	1.1 JT	0.576	0.53	1
Total DDD	µg/kg	29	28	97	0.21 JT	2.8 JT	0.903	0.75	1.87	0.21 JT	2.8 JT	0.877	0.73	1.86
DDx	µg/kg	29	29	100	0.24 JT	11 JT	3.86	3.8	6.42	0.24 JT	11 JT	3.86	3.8	6.42
Total DDE	µg/kg	29	29	100	0.24 JT	2.2 JT	1.36	1.4	2.06	0.24 JT	2.2 JT	1.36	1.4	2.06
Total DDT	µg/kg	29	24	83	0.29 JT	7.6 JT	1.96	1.65	3.5	0.23 UT	7.6 JT	1.68	1.6	3.32
Polycyclic Aromatic Hydrocarbons														
Benzo(a)pyrene	µg/kg	29	29	100	6.3	50	15.8	13	30.4	6.3	50	15.8	13	30.4
Total HPAHs	µg/kg	29	29	100	65 JT	370 T	181	160	338	65 JT	370 T	181	160	338
Total LPAHs	µg/kg	29	29	100	10 JT	140 T	47.8	39	118	10 JT	140 T	47.8	39	118
Naphthalene	µg/kg	29	19	66	8.9	19	13	12	18.1	0.58 U	19	8.61	10	17.6
Phenanthrene	µg/kg	29	29	100	5.3	81	23.6	20	64	5.3	81	23.6	20	64
Total cPAHs	µg/kg	29	29	100	35 JT	240 T	90.8	85	156	35 JT	240 T	90.8	85	156
Total PAHs	µg/kg	29	29	100	75 JT	510 T	229	210	434	75 JT	510 T	229	210	434
Phthalates														
Bis(2-ethylhexyl) phthalate	µg/kg	29	28	97	21	330	105	73.5	250	21	330	102	73	248
Butylbenzyl phthalate	µg/kg	29	1	3.4	210	210	210	210		2.2 U	210	9.59	1.5	8.1

Table 6.3-1. Summary Statistics for All Depositional Cores Combined.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Semivolatile Organic Compounds														
Hexachlorobenzene	µg/kg	29	1	3.4	0.62 J	0.62 J	0.62	0.62		0.12 U	5.1 U	0.429	0.08	2.1
Phenols														
Pentachlorophenol	µg/kg	29	13	45	0.36 J	2.8 J	0.973	0.8	1.96	0.2 U	3 U	0.618	0.42	1.46
Petroleum														
Total Petroleum Hydrocarbons (Diesel)	mg/kg	29	29	100	5.3 J	110 J	51	47	91.6	5.3 J	110 J	51	47	91.6
Total Petroleum Hydrocarbons (Residual)	mg/kg	29	29	100	73 J	1000 J	518	520	968	73 J	1000 J	518	520	968
Total Petroleum Hydrocarbons	mg/kg	29	29	100	82 JT	1100 JT	571	570	1060	82 JT	1100 JT	571	570	1060
PCDD/Fs														
Total PCDD/Fs	pg/g	29	29	100	12.64 JT	4083 JT	299	91.3	675	12.64 JT	4083 JT	299	91.3	675
TCDD TEQ	pg/g	29	29	100	0.0161 JT	5.78 JT	0.536	0.175	1.62	0.0161 JT	5.78 JT	0.536	0.175	1.62

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
HPAH - high molecular weight polycyclic aromatic hydrocarbon
LPAH - low molecular weight polycyclic aromatic hydrocarbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TEQ - toxic equivalent concentration

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 6.3-2. Summary Statistics for RC483.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Mean	Median[b]	95th[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Mean (half DL)	Median (half DL)[b]	95th (half DL)[b]
Grain Size														
Fines	percent	10	10	100	44.3 T	75.1 T	66.7	69.6	74.2	44.3 T	75.1 T	66.7	69.6	74.2
Conventionals														
Total organic carbon	percent	10	10	100	1.77	3.14	2.54	2.71	3.08	1.77	3.14	2.54	2.71	3.08
Metals														
Arsenic	mg/kg	10	10	100	4.58 T	6.62 J	5.86	5.89	6.58	4.58 T	6.62 J	5.86	5.89	6.58
Cadmium	mg/kg	10	10	100	0.205 T	0.27	0.248	0.26	0.27	0.205 T	0.27	0.248	0.26	0.27
Chromium	mg/kg	10	10	100	24.2	44.7	37.3	38.1	43.4	24.2	44.7	37.3	38.1	43.4
Copper	mg/kg	10	10	100	24.6	71.6	45	42.7	66.2	24.6	71.6	45	42.7	66.2
Lead	mg/kg	10	10	100	12 J	15.2 J	13.7	13.8	15.1	12 J	15.2 J	13.7	13.8	15.1
Mercury	mg/kg	10	10	100	0.047	0.094	0.0653	0.0595	0.0936	0.047	0.094	0.0653	0.0595	0.0936
Nickel	mg/kg	10	10	100	27.8 T	35.8 J	32.7	32.7	35.7	27.8 T	35.8 J	32.7	32.7	35.7
Zinc	mg/kg	10	10	100	58	99.1	88.5	92	98.7	58	99.1	88.5	92	98.7
PCB Aroclors														
Aroclors	µg/kg	10	2	20	11 T	11 T	11	11	11	4 UT	11 T	4.51	3.28	11
Pesticides														
Aldrin	µg/kg	10	6	60	0.32 J	0.55 J	0.43	0.42	0.543	0.27 U	0.66 U	0.334	0.34	0.537
Dieldrin	µg/kg	10	0	0						0.48 U	0.7 U	0.288	0.283	0.337
gamma-Hexachlorocyclohexane (Lindane)	µg/kg	10	0	0						0.27 U	1 U	0.189	0.153	0.356
Total chlordanes	µg/kg	10	9	90	0.42 JT	1.1 JT	0.706	0.62	1.06	0.42 JT	1.1 JT	0.671	0.575	1.06
Total DDD	µg/kg	10	10	100	0.48 JT	1.8 JT	0.963	0.87	1.62	0.48 JT	1.8 JT	0.963	0.87	1.62
DDx	µg/kg	10	10	100	2.2 JT	11 JT	4.59	4.15	8.43	2.2 JT	11 JT	4.59	4.15	8.43
Total DDE	µg/kg	10	10	100	1.1 T	2.1 T	1.53	1.5	2.06	1.1 T	2.1 T	1.53	1.5	2.06
Total DDT	µg/kg	10	8	80	1.2 JT	7.6 JT	2.58	1.75	5.96	1 UT	7.6 JT	2.18	1.55	5.48
Polycyclic Aromatic Hydrocarbons														
Benzo(a)pyrene	µg/kg	10	10	100	13	21	16.1	15.5	21	13	21	16.1	15.5	21
Total HPAHs	µg/kg	10	10	100	140 JT	240 JT	192	200	236	140 JT	240 JT	192	200	236
Total LPAHs	µg/kg	10	10	100	29 JT	59 T	47.3	49.5	58.1	29 JT	59 T	47.3	49.5	58.1
Naphthalene	µg/kg	10	9	90	8.9	17	12.1	12	15.8	0.76 U	17	11	11	15.7
Phenanthrene	µg/kg	10	10	100	15	28	21.7	21.5	27.6	15	28	21.7	21.5	27.6
Total cPAHs	µg/kg	10	10	100	75 JT	130 JT	96.5	92.5	126	75 JT	130 JT	96.5	92.5	126
Total PAHs	µg/kg	10	10	100	180 JT	270 JT	238	255	270	180 JT	270 JT	238	255	270
Phthalates														
Bis(2-ethylhexyl) phthalate	µg/kg	10	10	100	53	170	88.2	74	152	53	170	88.2	74	152
Butylbenzyl phthalate	µg/kg	10	0	0						2.5 U	12 U	2.52	1.58	5.78

Table 6.3-2. Summary Statistics for RC483.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Semivolatile Organic Compounds														
Hexachlorobenzene	µg/kg	10	1	10	0.62 J	0.62 J	0.62	0.62		0.14 U	5.1 U	0.379	0.0775	1.68
Phenols														
Pentachlorophenol	µg/kg	10	2	20	0.36 J	1 J	0.68	0.68	0.968	0.33 U	1 J	0.335	0.24	0.743
Petroleum														
Total Petroleum Hydrocarbons (Diesel)	mg/kg	10	10	100	36 J	78 J	54.7	47	77.1	36 J	78 J	54.7	47	77.1
Total Petroleum Hydrocarbons (Residual)	mg/kg	10	10	100	370 J	780 J	578	560	776	370 J	780 J	578	560	776
Total Petroleum Hydrocarbons	mg/kg	10	10	100	410 JT	860 JT	636	620	851	410 JT	860 JT	636	620	851
PCDD/Fs														
Total PCDD/Fs	pg/g	10	10	100	12.64 JT	253.3 T	95.8	63.6	224	12.64 JT	253.3 T	95.8	63.6	224
TCDD TEQ	pg/g	10	10	100	0.0161 JT	0.63 JT	0.181	0.103	0.5	0.0161 JT	0.63 JT	0.181	0.103	0.5

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
HPAH - high molecular weight polycyclic aromatic hydrocarbon
LPAH - low molecular weight polycyclic aromatic hydrocarbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TEQ - toxic equivalent concentration

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 6.3-3. Summary Statistics for RC01.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Mean	Median[b]	95th[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Mean (half DL)	Median (half DL)[b]	95th (half DL)[b]
Grain Size														
Fines	percent	8	8	100	4.99 T	83.8 T	45.5	47.8	78	4.99 T	83.8 T	45.5	47.8	78
Conventionals														
Total organic carbon	percent	9	9	100	0.4	4.16	2.53	2.94	3.83	0.4	4.16	2.53	2.94	3.83
Metals														
Arsenic	mg/kg	9	9	100	3.39 J	7.77 J	5.66	5.25	7.39	3.39 J	7.77 J	5.66	5.25	7.39
Cadmium	mg/kg	9	9	100	0.12	0.31	0.225	0.21	0.306	0.12	0.31	0.225	0.21	0.306
Chromium	mg/kg	9	9	100	25.7	40.3	35.5	38.1	40	25.7	40.3	35.5	38.1	40
Copper	mg/kg	9	9	100	21.1	47.5	36.2	36.4	46.5	21.1	47.5	36.2	36.4	46.5
Lead	mg/kg	9	9	100	8.2 J	15.7 J	12.6	11.8	15.7	8.2 J	15.7 J	12.6	11.8	15.7
Mercury	mg/kg	9	9	100	0.023	0.06	0.0487	0.055	0.0592	0.023	0.06	0.0487	0.055	0.0592
Nickel	mg/kg	9	9	100	25.6 J	35.5 J	31.4	30.1	35.1	25.6 J	35.5 J	31.4	30.1	35.1
Zinc	mg/kg	9	9	100	72.6	102	88.5	90.6	100	72.6	102	88.5	90.6	100
PCB Aroclors														
Aroclors	µg/kg	9	1	11	11 JT	11 JT	11	11		2.5 UT	11 JT	3.41	2.3	8.12
Pesticides														
Aldrin	µg/kg	9	4	44	0.26 J	0.81 J	0.623	0.71	0.797	0.22 U	0.81 J	0.363	0.2	0.774
Dieldrin	µg/kg	9	0	0						0.42 U	0.78 U	0.281	0.275	0.362
gamma-Hexachlorocyclohexane (Lindane)	µg/kg	9	0	0						0.22 U	0.99 U	0.194	0.15	0.393
Total chlordanes	µg/kg	9	8	89	0.3 JT	1 JT	0.621	0.59	1	0.3 JT	1 JT	0.582	0.58	1
Total DDD	µg/kg	9	8	89	0.21 JT	1.4 JT	0.72	0.665	1.26	0.21 JT	1.4 JT	0.657	0.6	1.24
DDx	µg/kg	9	9	100	0.24 JT	5.7 JT	3.03	3.5	5.34	0.24 JT	5.7 JT	3.03	3.5	5.34
Total DDE	µg/kg	9	9	100	0.24 JT	2 T	1.17	1.1	1.92	0.24 JT	2 T	1.17	1.1	1.92
Total DDT	µg/kg	9	6	67	0.48 JT	3.6 JT	1.81	1.7	3.35	0.23 UT	3.6 JT	1.29	0.75	3.2
Polycyclic Aromatic Hydrocarbons														
Benzo(a)pyrene	µg/kg	9	9	100	6.3	50	17	12	43.6	6.3	50	17	12	43.6
Total HPAHs	µg/kg	9	9	100	65 JT	350 T	165	130	338	65 JT	350 T	165	130	338
Total LPAHs	µg/kg	9	9	100	10 JT	130 T	44.4	36	99.6	10 JT	130 T	44.4	36	99.6
Naphthalene	µg/kg	9	6	67	10	19	14.3	13.5	18.8	0.58 U	19	9.66	12	18.6
Phenanthrene	µg/kg	9	9	100	5.3	70	19.9	13	50.4	5.3	70	19.9	13	50.4
Total cPAHs	µg/kg	9	9	100	35 JT	240 T	90.6	65	208	35 JT	240 T	90.6	65	208
Total PAHs	µg/kg	9	9	100	75 JT	450 T	212	170	422	75 JT	450 T	212	170	422
Phthalates														
Bis(2-ethylhexyl) phthalate	µg/kg	9	8	89	51	140	82.5	72	140	41 U	140	75.6	71	140
Butylbenzyl phthalate	µg/kg	9	0	0						2.2 U	19 U	2.99	1.5	7.56

Table 6.3-3. Summary Statistics for RC01.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Semivolatile Organic Compounds														
Hexachlorobenzene	µg/kg	9	0	0						0.12 U	4.4 U	0.409	0.08	1.54
Phenols														
Pentachlorophenol	µg/kg	9	3	33	0.42 J	1.2 J	0.843	0.91	1.17	0.2 U	3 U	0.554	0.375	1.38
Petroleum														
Total Petroleum Hydrocarbons (Diesel)	mg/kg	9	9	100	5.3 J	110 J	56.5	54	104	5.3 J	110 J	56.5	54	104
Total Petroleum Hydrocarbons (Residual)	mg/kg	9	9	100	91 J	1000 J	583	560	1000	91 J	1000 J	583	560	1000
Total Petroleum Hydrocarbons	mg/kg	9	9	100	96 JT	1100 JT	641	620	1100	96 JT	1100 JT	641	620	1100
PCDD/Fs														
Total PCDD/Fs	pg/g	9	9	100	41.01 JT	4083 JT	596	167	2560	41.01 JT	4083 JT	596	167	2560
TCDD TEQ	pg/g	9	9	100	0.0758 JT	5.78 JT	0.969	0.387	3.72	0.0758 JT	5.78 JT	0.969	0.387	3.72

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
HPAH - high molecular weight polycyclic aromatic hydrocarbon
LPAH - low molecular weight polycyclic aromatic hydrocarbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TEQ - toxic equivalent concentration

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 6.3-4. Summary Statistics for RC02.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	Units	# Analyzed	# Detected	% Detected	Minimum[a]	Maximum[a]	Mean	Median[b]	95th[b]	Minimum (full DL)[a]	Maximum (full DL)[a]	Mean (half DL)	Median (half DL)[b]	95th (half DL)[b]
Grain Size														
Fines	percent	10	10	100	26.6 T	79.6 T	57	61.7	77.7	26.6 T	79.6 T	57	61.7	77.7
Conventionals														
Total organic carbon	percent	10	10	100	0.5	2.9	1.77	1.82	2.68	0.5	2.9	1.77	1.82	2.68
Metals														
Arsenic	mg/kg	10	10	100	3.12	5.68	4.32	4.5	5.32	3.12	5.68	4.32	4.5	5.32
Cadmium	mg/kg	10	10	100	0.14	0.26	0.21	0.23	0.26	0.14	0.26	0.21	0.23	0.26
Chromium	mg/kg	10	10	100	29.2	41	34.8	35.1	40.8	29.2	41	34.8	35.1	40.8
Copper	mg/kg	10	10	100	26.8 T	59.3	39.6	35.6	58.7	26.8 T	59.3	39.6	35.6	58.7
Lead	mg/kg	10	10	100	8.48	17	13.2	14.1	16.6	8.48	17	13.2	14.1	16.6
Mercury	mg/kg	10	10	100	0.028	0.107 J	0.0661	0.059	0.103	0.028	0.107 J	0.0661	0.059	0.103
Nickel	mg/kg	10	10	100	19.7 J	33.5	27.9	28.2	31.7	19.7 J	33.5	27.9	28.2	31.7
Zinc	mg/kg	10	10	100	70.1	106	87.1	86.6	103	70.1	106	87.1	86.6	103
PCB Aroclors														
Aroclors	µg/kg	10	7	70	12 JT	22 T	17.1	17	21.7	2.5 UT	22 T	12.4	15	21.6
Pesticides														
Aldrin	µg/kg	10	0	0						0.22 U	0.41 U	0.138	0.13	0.183
Dieldrin	µg/kg	10	0	0						0.42 U	0.6 U	0.255	0.253	0.291
gamma-Hexachlorocyclohexane (Lindane)	µg/kg	10	0	0						0.22 U	1.7 U	0.22	0.138	0.598
Total chlordanes	µg/kg	10	9	90	0.18 JT	0.76 JT	0.499	0.5	0.748	0.18 JT	0.76 JT	0.476	0.475	0.747
Total DDD	µg/kg	10	10	100	0.25 JT	2.8 JT	0.988	0.73	2.4	0.25 JT	2.8 JT	0.988	0.73	2.4
DDx	µg/kg	10	10	100	1 JT	6.9 JT	3.89	4.05	6.27	1 JT	6.9 JT	3.89	4.05	6.27
Total DDE	µg/kg	10	10	100	0.49 JT	2.2 JT	1.37	1.45	2.11	0.49 JT	2.2 JT	1.37	1.45	2.11
Total DDT	µg/kg	10	10	100	0.29 JT	2.6 JT	1.55	1.65	2.51	0.29 JT	2.6 JT	1.55	1.65	2.51
Polycyclic Aromatic Hydrocarbons														
Benzo(a)pyrene	µg/kg	10	10	100	6.4	25	14.3	11.5	23.2	6.4	25	14.3	11.5	23.2
Total HPAHs	µg/kg	10	10	100	73 JT	370 T	184	120	348	73 JT	370 T	184	120	348
Total LPAHs	µg/kg	10	10	100	13 JT	140 T	51.3	31.5	122	13 JT	140 T	51.3	31.5	122
Naphthalene	µg/kg	10	4	40	11	16	12.8	12	15.4	0.58 U	16	5.31	0.398	14.2
Phenanthrene	µg/kg	10	10	100	8	81	28.8	19.5	69.3	8	81	28.8	19.5	69.3
Total cPAHs	µg/kg	10	10	100	39 JT	150 T	85.3	63	150	39 JT	150 T	85.3	63	150
Total PAHs	µg/kg	10	10	100	87 JT	510 T	236	150	465	87 JT	510 T	236	150	465
Phthalates														
Bis(2-ethylhexyl) phthalate	µg/kg	10	10	100	21	330	139	135	299	21	330	139	135	299
Butylbenzyl phthalate	µg/kg	10	1	10	210	210	210	210		2.4 U	210	22.6	1.48	117

Table 6.3-4. Summary Statistics for RC02.

					Detected Concentrations					Detected and Nondetected Concentrations				
Analyte	**Units**	**# Analyzed**	**# Detected**	**% Detected**	**Minimum[a]**	**Maximum[a]**	**Mean**	**Median[b]**	**95th[b]**	**Minimum (full DL)[a]**	**Maximum (full DL)[a]**	**Mean (half DL)**	**Median (half DL)[b]**	**95th (half DL)[b]**
Semivolatile Organic Compounds														
Hexachlorobenzene	µg/kg	10	0	0						0.12 U	3.9 U	0.498	0.095	1.93
Phenols														
Pentachlorophenol	µg/kg	10	8	80	0.45 J	2.8 J	1.1	0.79	2.31	0.23 U	2.8 J	0.958	0.74	2.17
Petroleum														
Total Petroleum Hydrocarbons (Diesel)	mg/kg	10	10	100	9.2 J	75 J	42.4	44.5	68.3	9.2 J	75 J	42.4	44.5	68.3
Total Petroleum Hydrocarbons (Residual)	mg/kg	10	10	100	73 J	740 J	399	400	655	73 J	740 J	399	400	655
Total Petroleum Hydrocarbons	mg/kg	10	10	100	82 JT	820 JT	443	450	726	82 JT	820 JT	443	450	726
PCDD/Fs														
Total PCDD/Fs	pg/g	10	10	100	32.9 JT	720.4 T	235	75.5	670	32.9 JT	720.4 T	235	75.5	670
TCDD TEQ	pg/g	10	10	100	0.0502 JT	1.85 JT	0.503	0.14	1.59	0.0502 JT	1.85 JT	0.503	0.14	1.59

Notes:

[a] Whenever several result values match maximum or minimum value, qualifier and descriptor preference has been given in the following order: U over J over A over N over T over no qualification.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

cPAH - carcinogenic polycyclic aromatic hydrocarbon
DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
DL - detection limit
HPAH - high molecular weight polycyclic aromatic hydrocarbon
LPAH - low molecular weight polycyclic aromatic hydrocarbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
TEQ - toxic equivalent concentration

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 6.3-5. Summary Statistics in the Upstream Study Area Depositional Cores.

	Total PCBs[a] (µg/kg)					TCDD TEQ (pg/g)					DDx (µg/kg)					Total PAHs (µg/kg)				
Location	**# Analyzed**	**# Detected**	**Mean**	**Median[b]**	**95th[b]**	**# Analyzed**	**# Detected**	**Mean**	**Median[b]**	**95th[b]**	**# Analyzed**	**# Detected**	**Mean**	**Median[b]**	**95th[b]**	**# Analyzed**	**# Detected**	**Mean**	**Median[b]**	**95th[b]**
Study Area Depositional Cores																				
All Upstream Depositional Area Core - Combined	29	10	6.9	3.6	19.8	29	29	0.536	0.175	1.62	29	29	3.86	3.8	6.42	29	29	229	210	434
RC02 - Borrow Pit @ RM 10.9	10	7	12.4	15	21.6	10	10	0.503	0.14	1.59	10	10	3.89	4.05	6.27	10	10	236	150	465
RC01 - Borrow Pit @ RM 10.5	9	1	3.41	2.3	na	9	9	0.969	0.387	3.72	9	9	3.03	3.5	5.34	9	9	212	170	422
RC483 - Shoal @ RM 9.5	10	2	4.51	3.28	11	10	10	0.181	0.103	0.5	10	10	4.59	4.15	8.43	10	10	238	255	270

Notes:

[a] Total PCBs are based on Aroclors, congeners were not analyzed in these cores samples.

[b] Median is the exact result value ranking as the 0.50 percentile in an ascending list of all results, and 95th percentile is the exact result value of the 0.95 ranking result. When the ascending list of all results doesn't produce an exact match to the corresponding percentile rank, average of two adjacent results ranking closest to 0.50 percentile is the median, and an interpolated value is the 95th percentile. Such median or 95th percentile value is not qualified. It is qualified with "U" if both results ranking immediately above and below the corresponding percentile are "U" qualified, and with "J" if at least one of the results is "J" qualified.

DDx - total of 2,4' and 4,4'-DDD, -DDE, -DDT
na - not applicable
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
RM - river mile
TEQ - toxic equivalent concentration
TOC - total organic carbon

Reason codes for qualifiers:
J - The associated numerical value is an estimated quantity.
N - Presumptive evidence of presence of material; identification of the compound is not definitive.
U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

Reason codes for descriptors:
A - Total value based on limited number of analytes.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

Table 7.2-1. Upriver Surface Sediment Summary Statistics, Dry Weight Concentrations, All Data.

		Sample Counts					Data Summary			
							Non-detects		Detects	
Analyte	Units	High Biasing Non-detects	Sample Count	Detects	Non-detects	Detection Frequency (%)	Minimum	Maximum	Minimum	Maximum
Aldrin [a,b]	µg/kg	0	48	6	42	13	0.03	0.91	0.24	0.55
Arsenic	mg/kg	0	71	71	0	100	0.00	0.00	1.90	5.29
Bis(2-ethylhexyl) phthalate	µg/kg	0	67	52	15	78	3.20	31.00	4.20	2100.00
Total chlordanes [a]	µg/kg	0	48	33	15	69	0.04	0.91	0.12	1.18
Chromium	mg/kg	0	65	65	0	100			11.90	38.10
Copper	mg/kg	0	67	67	0	100			10.50	47.20
DDx [a]	µg/kg	0	48	47	1	98	0.18	1.80	0.20	6.70
Dieldrin [a,b]	µg/kg	1	47	7	40	15	0.03	1.80	0.11	0.39
Mercury	mg/kg	0	61	52	9	85	0.02	0.04	0.01	0.06
Total PAHs	µg/kg	0	71	60	11	85	1.50	10.00	6.12	464.48
Total PCBs (Aroclors) [a]	µg/kg	0	48	23	25	48	1.30	18.00	4.95	53.45
Total PCBs (Congeners)	µg/kg	0	33	33	0	100			0.60	47.98
Total PCDD/Fs	µg/kg	0	33	33	0	100			0.01	0.31
Tributyltin Ion	µg/kg	0	3	2	1	67	0.09	0.09	0.72	1.10
Zinc	mg/kg	0	67	67	0	100			40.40	165.00

Notes:

[a] Indicates data analyzed by Method SOM01.2 were excluded

[b] Indicates data has a detection frequency of less than ~ 50%

PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan

Table 7.3-1. Summary of Background Results, Dry Weight and OC-Equivalent Concentrations

		All Data					Outliers Removed							
			95% UPL		95% UCL			95% UPL			95% UCL			
Type	**Units**	**Distribution**	**Type**	**UPL**	**Type**	**UCL**	**No. of Outliers removed**	**Type**	**UPL**	**UPL - OC Equivalent**	**Type**	**UCL**	**UCL – OC Equivalent**	**Notes**
Aldrin[a]	µg/kg	No background calculated, insufficient detections												
Arsenic	µg/kg	Approx. Gamma	Log-t	4.0	Gamma	3.0	3	Normal-t	3.6	--	Normal Student's-t	2.9	--	Data are approximate normal with 3 outliers removed
Bis(2-ethylhexyl) phthalate	µg/kg	Lognormal	Log ROS-t	189	KM-Chebyshev	208	4	Hawkins-Wixley	103	158	Gamma-ROS	40.3	62	Data are not normal with outliers removed
Chlordanes [a]	µg/kg	Approx. Gamma	Hawkins-Wixley	0.9	KM-t	0.4	2	Normal KM-t	0.7	1	Normal KM-t	0.3	0.5	2 outliers
Chromium	mg/kg	Normal	Normal-t	32.2	Normal Student's-t	23.8	0							No outliers
Copper	mg/kg	Approx. Normal	Normal-t	37.4	Normal Student's-t	25.9	0							No outliers
DDx [a]	µg/kg	Approx. Normal	Normal KM-t	4.0	Normal KM-t	2.3	2	Normal KM-t	3.3	5.1	Normal KM-t	2	3.1	
Dieldrin [a]	µg/kg	No background calculated, insufficient detections												
Mercury	mg/kg	Normal	Normal KM-t	0.05	Normal KM-t	0.03	0							No outliers
Total PAHs	µg/kg	Gamma	Hawkins-Wixley	353	Gamma ROS	106	3	Normal KM-t	148	228	Normal KM-t	73.3	113	Data are approximate normal with 3 outliers removed
PCBs (Aroclors) [a]	µg/kg	None	None	39.3	KM-t	10.5	5	Hawkins-Wixley	12	19	Gamma KM	5.6	9	Data are not normal with outliers removed
PCBs (Congeners)	µg/kg	Lognormal	Log-t	20.5	H-UCL	9.3	4	Hawkins-Wixley	7.7	11.9	Gamma	4.2	6.4	Data are not normal with outliers removed
Total PCDD/Fs	µg/kg	Gamma	Hawkins-Wixley	0.2	Gamma	0.09	1	Hawkins-Wixley	0.2	0.3	Gamma	0.08	0.1	Data are not normal with outlier removed
Tributyltin	µg/kg	No background calculated, insufficient detections												
Zinc	mg/kg	Approx. Normal	Normal-t	111	Normal Student's-t	79	1	Normal-t	104	--	Normal Student's-t	77	--	1 outlier

Notes:

[a] Indicates data analyzed by Method SOM01.2 were excluded

The OC-equivalent values were calculated by multiplying the dry weight values by the ratio of the Study Area average total organic carbon content (1.71%) and the average total organic carbon content of the background data set (1.11%) (1.71/1.11 or 1.54).

GROS - gamma regression on order statistics
KM - Kaplan-Meier
OC - organic carbon
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
PCDD/F - dioxin/furan
UCL - upper confidence limit
UPL - upper prediction limit

Table 8.4-1. Summary of Human Health Risks, Reasonable Maximum Exposures.

			Exposure Area											
Receptor	**Exposure Medium Scenario**	**Endpoint**	**RM 2**	**RM 3**	**RM 4**	**RM 5**	**RM 6**	**RM 7**	**RM 8**	**Swan Island Lagoon**	**RM 9**	**RM 10**	**RM 11**	**Study-Area Wide**
Dockside Workers	Beach sediment	Cancer Risk	7.E-07 (B002) 2.E-06 (B004) 6.E-07 (B006)	--	--	6.E-07 (05B019)	9.E-05 (06B025) 1.E-06 (06B029)	5.E-07 (07B022)	5.E-07 (08B032)	--	--	--	--	--
		Hazard Index	0.01 (B002) 0.07 (B004) 0.004 (B006)	--	--	0.004 (05B019)	0.005 (06B025) 0.002 (06B029)	0.003 (07B022)	0.004 (08B032)	--	--	--	--	--
		Breastfeeding Infant Hazard Index	0.1 (B002) 1 (B004) 0.01 (B006)	--	--	--	0.03 (06B025)	--	0.01 (08B032)	--	--	--	--	--
In-Water Workers	In-water sediment	Cancer Risk	9.E-08 (2W) 3.E-07 (2E) 2.E-07 (2.5W) 8.E-07 (2.5E)	2.E-07 (3W) 1.E-07 (3E) 6.E-07 (3.5W) 6.E-07 (3.5E)	2.E-07 (4W) 5.E-07 (4E) 4.E-07 (4.5W) 2.E-06 (4.5E)	7.E-07 (5W) 2.E-07 (5E) 8.E-07 (5.5W) 3.E-07 (5.5E)	9.E-06 (6W) 4.E-07 (6E) 7.E-07 (6.5W) 3.E-07 (6.5E)	2.E-05 (7W) 4.E-07 (7E) 1.E-07 (7.5W) 9.E-08 (7.5E)	3.E-07 (8W) 3.E-07 (8E) 1.E-06 (8.5W) 2.E-07 (8.5E)	4.E-07	3.E-07 (9W) 1.E-07 (9E) 2.E-07 (9.5W) 8.E-08 (9.5E)	6.E-07 (10W) 1.E-07 (10E) 1.E-07 (10.5W)	1.E-07 (11W) 3.E-07 (11E) 7.E-08 (11.5W)	2.E-06
		Hazard Index	0.001 (2W) 0.02 (2E) 0.002 (2.5W) 0.002 (2.5E)	0.1 (3W) 0.1 (3E) 0.1 (3.5W) 0.2 (3.5E)	0.1 (4W) 0.1 (4E) 0.1 (4.5W) 0.1 (4.5E)	0.1 (5W) 0.1 (5E) 0.1 (5.5W) 0.1 (5.5E)	0.1 (6W) 0.1 (6E) 0.2 (6.5W) 0.2 (6.5E)	1 (7W) 0.1 (7E) 0.1 (7.5W) 0.1 (7.5E)	0.1 (8W) 0.1 (8E) 0.2 (8.5W) 0.1 (8.5E)	0.2	0.1 (9W) 0.002 (9E) 0.005 (9.5W) 0.002 (9.5E)	0.01 (10W) 0.001 (10E) 0.002 (10.5W) 0.002 (10.5E)	0.001 (11W) 0.03 (11E) 0.001 (11.5W)	0.2
		Breastfeeding Infant Hazard Index	0.003 (2W) 0.2 (2E) 0.003 (2.5W) 0.01 (2.5E)	0.003 (3W) 0.004 (3E) 0.004 (3.5W) 0.3 (3.5E)	0.005 (4W) 0.05 (4E) 0.01 (4.5W) 0.01 (4.5E)	0.01 (5W) 0.004 (5E) 0.01 (5.5W) 0.03 (5.5E)	0.01 (6W) 0.03 (6E) 0.03 (6.5W) 0.2 (6.5E)	2 (7W) 0.02 (7E) 0.04 (7.5W) 0.01 (7.5E)	0.06 (8W) 0.09 (8E) 1 (8.5W) 0.01 (8.5E)	0.1	0.3 (9W) 0.01 (9E) 0.05 (9.5W) 0.01 (9.5E)	0.07 (10W) 0.01 (10E) 0.01 (10.5W) 0.02 (10.5E)	0.005 (11W) 0.6 (11E) 0.004 (11.5W)	0.2
Transients	Beach sediment	Cancer Risk	--	3.E-07 (03B030)	--	--	4.E-07 (06B022)	3.E-07 (07B024)	--	1.E-07 (07B023)	4.E-07 (09B026)	--	--	--
		Hazard Index	--	0.06 (03B030) 0.1 (03B031)	--	--	0.08 (06B022)	0.06 (07B024)	--	0.04 (07B023)	0.06 (09B026) 0.08 (09B027)	--	--	--
	Surface water	Cancer Risk	7.E-07 (W025)	--	6.E-07 (W005)	--	6.E-07 (W014) 9.E-07 (W011)	--	--	--	--	--	6.E-07 (W023)	9.E-07
		Hazard Index	0.06 (W025)	--	0.3 (W005)	--	0.05 (W014) 0.05 (W011)	--	--	--	--	--	0.3 (W023)	0.3
	Groundwater seep	Cancer Risk	--	--	--	--	3.E-09 (OF22B)	--	--	--	--	--	--	--
		Hazard Index	--	--	--	--	0.006 (OF22B)	--	--	--	--	--	--	--
Divers (Wet Suit)	In-water sediment	Cancer Risk	1.E-07 (2W) 1.E-06 (2E) 4.E-07 (2.5W) 3.E-06 (2.5E)	5.E-07 (3W) 2.E-07 (3E) 2.E-06 (3.5W) 2.E-06 (3.5E)	4.E-07 (4W) 2.E-06 (4E) 1.E-06 (4.5W) 5.E-06 (4.5E)	2.E-06 (5W) 4.E-07 (5E) 2.E-06 (5.5W) 7.E-07 (5.5E)	3.E-05 (6W) 1.E-06 (6E) 1.E-06 (6.5W) 6.E-07 (6.5E)	3.E-05 (7W) 8.E-07 (7E) 3.E-07 (7.5W) 1.E-07 (7.5E)	6.E-07 (8W) 7.E-07 (8E) 3.E-06 (8.5W) 3.E-07 (8.5E)	1.E-06	7.E-07 (9W) 1.E-07 (9E) 4.E-07 (9.5W) 1.E-07 (9.5E)	9.E-07 (10W) 3.E-07 (10E) 1.E-07 (10.5W)	2.E-07 (11W) 8.E-07 (11E) 9.E-08 (11.5W)	4.E-06
		Hazard Index	0.001 (2W) 0.03 (2E) 0.001 (2.5W) 0.002 (2.5E)	0.01 (3W) 0.02 (3E) 0.02 (3.5W) 0.1 (3.5E)	0.02 (4W) 0.02 (4E) 0.02 (4.5W) 0.02 (4.5E)	0.02 (5W) 0.02 (5E) 0.02 (5.5W) 0.02 (5.5E)	0.02 (6W) 0.02 (6E) 0.03 (6.5W) 0.03 (6.5E)	0.6 (7W) 0.02 (7E) 0.02 (7.5W) 0.02 (7.5E)	0.02 (8W) 0.03 (8E) 0.1 (8.5W) 0.02 (8.5E)	0.05	0.04 (9W) 0.002 (9E) 0.005 (9.5W) 0.001 (9.5E)	0.01 (10W) 0.001 (10E) 0.001 (10.5W) 0.002 (10.5E)	0.001 (11W) 0.04 (11E) 0.001 (11.5W)	0.1
		Breastfeeding Infant Hazard Index	0.004 (2W) 0.3 (2E) 0.004 (2.5W) 0.02 (2.5E)	0.004 (3W) 0.005 (3E) 0.01 (3.5W) 0.4 (3.5E)	0.01 (4W) 0.1 (4E) 0.01 (4.5W) 0.01 (4.5E)	0.01 (5W) 0.01 (5E) 0.01 (5.5W) 0.04 (5.5E)	0.01 (6W) 0.04 (6E) 0.03 (6.5W) 0.3 (6.5E)	1 (7W) 0.02 (7E) 0.05 (7.5W) 0.009 (7.5E)	0.1 (8W) 0.1 (8E) 2 (8.5W) 0.01 (8.5E)	0.1	0.5 (9W) 0.02 (9E) 0.1 (9.5W) 0.01 (9.5E)	0.1 (10W) 0.01 (10E) 0.01 (10.5W) 0.03 (10.5E)	0.01 (11W) 0.8 (11E) 0.005 (11.5W)	0.1
	Surface water	Cancer Risk	2.E-08 (2W) 2.E-08 (2E) 7.E-08 (W025)	2.E-07 (3W) 1.E-07 (3.5E)	3.E-08 (4W) 3.E-07 (4E) 1.E-06 (4.5E) 1.E-07 (W005)	3.E-08 (5.5W) 2.E-08 (5.5E)	1.E-05 (6W) 6.E-07 (6.5W) 2.E-07 (6.5E) 1.E-07 (W011)	3.E-07 (7W) 2.E-08 (7.5W)	4.E-08 (8.5W)	4.E-07	7.E-07 (9.5W) 1.E-08 (9.5E)	--	1.E-07 (W023)	--
		Hazard Index	0.0001 (2W) 0.002 (2E) 0.0001 (W025)	0.0001 (3W) 0.0001 (3.5E)	0.0001 (4W) 0.0001 (4E) 0.0001 (4.5E) 0.003 (W005)	0.0001 (5.5W) 0.0001 (5.5E)	0.0001 (6W) 0.0001 (6.5W) 0.0002 (6.5E) 0.0001 (W011)	0.003 (7W) 0.0001 (7.5W)	0.0001 (8.5W)	0.006	0.0001 (9.5W) 0.0001 (9.5E)	--	0.003 (W023)	--
Divers (Dry Suit)	In-water sediment	Cancer Risk	4.E-08 (2W) 2.E-07 (2E) 9.E-08 (2.5W) 5.E-07 (2.5E)	1.E-07 (3W) 6.E-08 (3E) 3.E-07 (3.5W) 3.E-07 (3.5E)	1.E-07 (4W) 3.E-07 (4E) 3.E-07 (4.5W) 1.E-06 (4.5E)	5.E-07 (5W) 8.E-08 (5E) 5.E-07 (5.5W) 2.E-07 (5.5E)	6.E-06 (6W) 3.E-07 (6E) 3.E-07 (6.5W) 2.E-07 (6.5E)	1.E-05 (7W) 2.E-07 (7E) 7.E-08 (7.5W) 4.E-08 (7.5E)	1.E-07 (8W) 2.E-07 (8E) 7.E-07 (8.5W) 8.E-08 (8.5E)	3.E-07	2.E-07 (9W) 4.E-08 (9E) 1.E-07 (9.5W) 3.E-08 (9.5E)	3.E-07 (10W) 7.E-08 (10E) 4.E-08 (10.5W)	5.E-08 (11W) 2.E-07 (11E) 3.E-08 (11.5W)	9.E-07
		Hazard Index	0.0003 (2W) 0.01 (2E) 0.0003 (2.5W) 0.0005 (2.5E)	0.01 (3W) 0.02 (3E) 0.01 (3.5W) 0.02 (3.5E)	0.02 (4W) 0.02 (4E) 0.02 (4.5W) 0.02 (4.5E)	0.01 (5W) 0.02 (5E) 0.02 (5.5W) 0.01 (5.5E)	0.02 (6W) 0.01 (6E) 0.02 (6.5W) 0.02 (6.5E)	0.2 (7W) 0.02 (7E) 0.02 (7.5W) 0.02 (7.5E)	0.02 (8W) 0.02 (8E) 0.04 (8.5W) 0.02 (8.5E)	0.02	0.02 (9W) 0.0004 (9E) 0.001 (9.5W) 0.0003 (9.5E)	0.002 (10W) 0.0003 (10E) 0.0003 (10.5W)	0.0002 (11W) 0.007 (11E) 0.0002 (11.5W)	0.03
		Breastfeeding Infant Hazard Index	0.001 (2W) 0.1 (2E) 0.001 (2.5W) 0.003 (2.5E)	0.001 (3W) 0.001 (3E) 0.001 (3.5W) 0.1 (3.5E)	0.001 (4W) 0.01 (4E) 0.002 (4.5W) 0.002 (4.5E)	0.001 (5W) 0.001 (5E) 0.002 (5.5W) 0.01 (5.5E)	0.003 (6W) 0.01 (6E) 0.01 (6.5W) 0.1 (6.5E)	0.4 (7W) 0.004 (7E) 0.01 (7.5W) 0.002 (7.5E)	0.02 (8W) 0.02 (8E) 0.3 (8.5W) 0.003 (8.5E)	0.03	0.1 (9W) 0.004 (9E) 0.01 (9.5W) 0.002 (9.5E)	0.02 (10W) 0.002 (10E) 0.002 (10.5W) 0.006 (10.5E)	0.001 (11W) 0.1 (11E) 0.001 (11.5W)	0.03
	Surface water	Cancer Risk	2.E-08 (2W) 1.E-08 (2E) 2.E-08 (W025)	4.E-08 (3W) 3.E-08 (3.5E)	1.E-08 (4W) 5.E-08 (4E) 1.E-07 (4.5E) 3.E-08 (W005)	1.E-08 (5.5W) 1.E-08 (5.5E)	2.E-06 (6W) 9.E-08 (6.5W) 3.E-08 (6.5E) 3.E-08 (W011)	5.E-08 (7W) 1.E-08 (7.5W)	2.E-08 (8.5W)	6.E-08	1.E-07 (9.5W) 1.E-08 (9.5E)	--	2.E-08 (W023)	--

Table 8.4-1. Summary of Human Health Risks, Reasonable Maximum Exposures.

				Exposure Area											
Receptor	**Exposure Medium**	**Scenario**	**Endpoint**	**RM 2**	**RM 3**	**RM 4**	**RM 5**	**RM 6**	**RM 7**	**RM 8**	**Swan Island Lagoon**	**RM 9**	**RM 10**	**RM 11**	**Study-Area Wide**
			Hazard Index	0.0001 (2W) 0.0005 (2E) 0.0001 (W025)	0.0001 (3W) 0.0001 (3.5E)	0.0001 (4W) 0.0001 (4E) 0.0001 (4.5E) 0.0008 (W005)	0.0001 (5.5W) 0.0001 (5.5E)	0.0001 (6W) 0.0001 (6.5W) 0.0001 (6.5E) 0.0001 (W011)	0.001 (7W) 0.0001 (7.5W)	0.0001 (8.5W)	0.002	0.0001 (9.5W) 0.0001 (9.5E)	--	0.0007 (W023)	--
Recreational Beach Users	Beach sediment		Cancer Risk	5.E-06 (B001) 4.E-05 (B003) 2.E-05 (B005)	1.E-05 (03B031) 6.E-06	9.E-06 (04B023) 5.E-05	.E-05 (05B018)	4.E-06 (06B022) 3.E-06 (06B026) 2.E-05 (06B030)	--	--	2.E-06 (09B028) 3.E-06	3.E-06 (09B026) 3.E-06	--	--	--
			Hazard Index	0.1 (B001) 0.1 (B003) 0.1 (B005)	0.2 (03B031) 0.2 (03B033)	0.1 (04B023) 0.3 (04B024)	0.1 (05B018)	0.1 (06B022) 0.1 (06B026) 0.4 (06B030)	--	--	0.1 (09B028) 0.1 (09B024)	0.1 (09B026) 0.1 (09B027)	--	--	--
	Surface water		Cancer Risk	--	--	--	7.E-08 (W010)	6.E-08 (W014)	--	--	6.E-08 (W020)	--	--	--	7.E-08
			Hazard Index	--	--	--	0.001 (W010)	0.001 (W014)	--	--	0.001 (W020)	--	--	--	0.001
Recreational/Subsistence Fishers	Beach sediment	High-frequency	Cancer Risk	1.E-06 (B001) 4.E-06 (B003) 3.E-06 (B005)	1.E-06 (03B030) 2.E-06	2.E-06 (04B023) 6.E-06	.E-06 (05B018)	2.E-06 (06B022) 1.E-06 (06B026) 6.E-06 (06B030)	1.E-06 (07B024)	--	5.E-07 (07B023) 8.E-07	1.E-06 (09B026) 9.E-07	--	--	--
			Hazard Index	0.02 (B001) 0.03 (B003) 0.03 (B005)	0.01 (03B030) 0.02 (03B031) 0.02 (03B033)	0.02 (04B023) 0.05 (04B024)	0.02 (05B018)	0.02 (06B022) 0.01 (06B026) 0.05 (06B030)	0.01 (07B024)	--	0.01 (07B023) 0.01 (09B028) 0.01 (09B024)	0.01 (09B026) 0.02 (09B027)	--	--	--
		Low-frequency	Cancer Risk	1.E-06 (B001) 3.E-06 (B003) 2.E-06 (B005)	8.E-07 (03B030) 2.E-06	1.E-06 (04B023) 4.E-06	.E-06 (05B018)	1.E-06 (06B022) 7.E-07 (06B026) 4.E-06 (06B030)	9.E-07 (07B024)	--	4.E-07 (07B023) 5.E-07	1.E-06 (09B026) 6.E-07	--	--	--
			Hazard Index	0.01 (B001) 0.03 (B003) 0.03 (B005)	0.01 (03B030) 0.02 (03B031) 0.01 (03B033)	0.01 (04B023) 0.03 (04B024)	0.01 (05B018)	0.01 (06B022) 0.01 (06B026) 0.03 (06B030)	0.01 (07B024)	--	0.01 (07B023) 0.01 (09B028) 0.01 (09B024)	0.01 (09B026) 0.01 (09B027)	--	--	--
	In-water sediment	High-frequency	Cancer Risk	4.E-07 (2W) 2.E-06 (2E) 8.E-07 (2.5W) 4.E-06 (2.5E)	9.E-07 (3W) 5.E-07 (3E) 3.E-06 (3.5W) 3.E-06 (3.5E)	8.E-07 (4W) 3.E-06 (4E) 2.E-06 (4.5W) 9.E-06 (4.5E)	4.E-06 (5W) 7.E-07 (5E) 4.E-06 (5.5W) 1.E-06 (5.5E)	5.E-05 (6W) 2.E-06 (6E) 3.E-06 (6.5W) 1.E-06 (6.5E)	8.E-05 (7W) 2.E-06 (7E) 6.E-07 (7.5W) 3.E-07 (7.5E)	1.E-06 (8W) 1.E-06 (8E) 5.E-06 (8.5W) 7.E-07 (8.5E)	2.E-06	1.E-06 (9W) 4.E-07 (9E) 9.E-07 (9.5W) 3.E-07 (9.5E)	2.E-06 (10W) 6.E-07 (10E) 4.E-07 (10.5W)	4.E-07 (11W) 1.E-06 (11E) 3.E-07 (11.5W)	7.E-06
			Hazard Index	0.002 (2W) 0.03 (2E) 0.002 (2.5W) 0.003 (2.5E)	0.1 (3W) 0.1 (3E) 0.1 (3.5W) 0.2 (3.5E)	0.1 (4W) 0.1 (4E) 0.1 (4.5W) 0.1 (4.5E)	0.1 (5W) 0.1 (5E) 0.1 (5.5W) 0.1 (5.5E)	0.1 (6W) 0.1 (6E) 0.2 (6.5W) 0.2 (6.5E)	2 (7W) 0.1 (7E) 0.1 (7.5W) 0.1 (7.5E)	0.1 (8W) 0.1 (8E) 0.3 (8.5W) 0.1 (8.5E)	0.2	0.2 (9W) 0.003 (9E) 0.007 (9.5W) 0.002 (9.5E)	0.02 (10W) 0.002 (10E) 0.002 (10.5W) 0.003 (10.5E)	0.002 (11W) 0.05 (11E) 0.002 (11.5W)	0.2
			Breastfeeding Infant Hazard Index	0.01 (2W) 0.4 (2E) 0.01 (2.5W) 0.02 (2.5E)	0.01 (3W) 0.01 (3E) 0.007 (3.5W) 0.5 (3.5E)	0.01 (4W) 0.1 (4E) 0.01 (4.5W) 0.01 (4.5E)	0.01 (5W) 0.01 (5E) 0.01 (5.5W) 0.05 (5.5E)	0.02 (6W) 0.05 (6E) 0.05 (6.5W) 0.4 (6.5E)	3 (7W) 0.03 (7E) 0.1 (7.5W) 0.01 (7.5E)	0.1 (8W) 0.2 (8E) 2 (8.5W) 0.02 (8.5E)	0.2	0.6 (9W) 0.03 (9E) 0.1 (9.5W) 0.01 (9.5E)	0.1 (10W) 0.01 (10E) 0.01 (10.5W) 0.04 (10.5E)	0.01 (11W) 1 (11E) 0.01 (11.5W)	0.2
		Low-frequency	Cancer Risk	2.E-07 (2W) 1.E-06 (2E) 5.E-07 (2.5W) 3.E-06 (2.5E)	6.E-07 (3W) 3.E-07 (3E) 2.E-06 (3.5W) 2.E-06 (3.5E)	6.E-07 (4W) 2.E-06 (4E) 1.E-06 (4.5W) 6.E-06 (4.5E)	3.E-06 (5W) 5.E-07 (5E) 3.E-06 (5.5W) 9.E-07 (5.5E)	3.E-05 (6W) 1.E-06 (6E) 2.E-06 (6.5W) 9.E-07 (6.5E)	6.E-05 (7W) 1.E-06 (7E) 4.E-07 (7.5W) 2.E-07 (7.5E)	8.E-07 (8W) 9.E-07 (8E) 4.E-06 (8.5W) 5.E-07 (8.5E)	1.E-06	9.E-07 (9W) 2.E-07 (9E) 6.E-07 (9.5W) 2.E-07 (9.5E)	2.E-06 (10W) 4.E-07 (10E) 2.E-07 (10.5W)	3.E-07 (11W) 9.E-07 (11E) 2.E-07 (11.5W)	5.E-06
			Hazard Index	0.001 (2W) 0.02 (2E) 0.001 (2.5W) 0.002 (2.5E)	0.1 (3W) 0.1 (3E) 0.1 (3.5W) 0.1 (3.5E)	0.1 (4W) 0.1 (4E) 0.1 (4.5W) 0.1 (4.5E)	0.1 (5W) 0.1 (5E) 0.1 (5.5W) 0.1 (5.5E)	0.1 (6W) 0.1 (6E) 0.1 (6.5W) 0.1 (6.5E)	1 (7W) 0.1 (7E) 0.1 (7.5W) 0.1 (7.5E)	0.1 (8W) 0.1 (8E) 0.2 (8.5W) 0.1 (8.5E)	0.1	0.1 (9W) 0.002 (9E) 0.005 (9.5W) 0.001 (9.5E)	0.01 (10W) 0.001 (10E) 0.001 (10.5W) 0.002 (10.5E)	0.001 (11W) 0.03 (11E) 0.001 (11.5W)	0.1
			Breastfeeding Infant Hazard Index	0.003 (2W) 0.3 (2E) 0.004 (2.5W) 0.01 (2.5E)	0.003 (3W) 0.005 (3E) 0.005 (3.5W) 0.3 (3.5E)	0.005 (4W) 0.06 (4E) 0.01 (4.5W) 0.01 (4.5E)	0.01 (5W) 0.004 (5E) 0.01 (5.5W) 0.03 (5.5E)	0.01 (6W) 0.03 (6E) 0.03 (6.5W) 0.2 (6.5E)	2 (7W) 0.02 (7E) 0.04 (7.5W) 0.01 (7.5E)	0.07 (8W) 0.1 (8E) 2 (8.5W) 0.01 (8.5E)	0.1	0.4 (9W) 0.02 (9E) 0.1 (9.5W) 0.01 (9.5E)	0.1 (10W) 0.01 (10E) 0.01 (10.5W) 0.03 (10.5E)	0.01 (11W) 0.7 (11E) 0.004 (11.5W)	0.2
	Fish tissue	Subsistence	Cancer Risk	--	--	--	--	--	--	--	--	--	--	--	1.E-02
			Hazard Index	--	--	--	--	--	--	--	--	--	--	--	1000
			Breastfeeding Infant Hazard Index	--	--	--	--	--	--	--	--	--	--	--	10000
		Recreational	Cancer Risk	2.E-04	1.E-04	3.E-04	9.E-05	1.E-04	6.E-04	1.E-04	6.E-04	2.E-04	1.E-04	1.E-03	4.E-03
			Hazard Index	10	7	20	6	9	20	7	50	10	10	100	300
			Breastfeeding Infant Hazard Index	200	30	200	30	70	200	40	600	80	100	1000	4000
	Shellfish tissue	Clam consumption	Cancer Risk	2.E-04 (2E) 8.E-05 (2W)	2.E-04 (3E) 7.E-05 (3W)	1.E-04 (4E) 1.E-04 (4W)	9.E-05 (5E) 6.E-04 (5W)	7.E-04 (6E) 7.E-04 (6W)	7.E-05 (7E) 2.E-04 (7W)	5.E-05 (8E) 2.E-04 (8W)	2.E-04	5.E-05 (9E) 2.E-04 (9W)	4.E-05 (10W)	2.E-04 (11E) 4.E-05 (11W)	4.E-04
			Hazard Index	5 (2E) 2 (2W)	8 (3E) 2 (3W)	3 (4E) 3 (4W)	3 (5E) 2 (5W)	30 (6E) 3 (6W)	2 (7E) 3 (7W)	3 (8E) 7 (8W)	6	1 (9E) 8 (9W)	2 (10W)	10 (11E) 1 (11W)	9
			Breastfeeding Infant Hazard Index	100 (2E) 30 (2W)	200 (3E) 30 (3W)	30 (4E) 40 (4W)	50 (5E) 20 (5W)	800 (6E) 30 (6W)	30 (7E) 30 (7W)	30 (8E) 100 (8W)	100	20 (9E) 100 (9W)	30 (10W)	300 (11E) 10 (11W)	200
		Crayfish consumption	Cancer Risk	7.E-05 (02R001) 1.E-05 (02R015)	6.E-06 (03R001) 7.E-06 (03R002) 5.E-05 (03R003)	7.E-06 (04R002) 7.E-06 (04R003) 7.E-06 (04R004)	6.E-06 (05R001) 1.E-05 (05R003) 1.E-05 (CR05W)	6.E-06 (06R001) 4.E-05 (06R004) 4.E-05 (CR06W)	1.E-05 (07R003) 9.E-06 (07R004) 3.E-04 (07R006)	2.E-05 (08R001) 8.E-06 (08R002) 2.E-05 (CR08W)	4.E-05 (08R003) 2.E-05 (09R001)	.E-05 (09R002)	.E-05 (CR10W)	3.E-04 (CR11E)	3.E-04

Table 8.4-1. Summary of Human Health Risks, Reasonable Maximum Exposures.

				Exposure Area											
Receptor	**Exposure Medium**	**Scenario**	**Endpoint**	**RM 2**	**RM 3**	**RM 4**	**RM 5**	**RM 6**	**RM 7**	**RM 8**	**Swan Island Lagoon**	**RM 9**	**RM 10**	**RM 11**	**Study-Area Wide**
			Hazard Index	2 (02R001) 0.9 (02R015)	0.5 (03R001) 0.5 (03R002) 2 (03R003) 1 (03R004) 4 (03R005) 0.5 (03R032)	0.5 (04R002) 0.5 (04R003) 0.6 (04R004)	0.5 (05R001) 0.9 (05R003) 0.7 (CR05W)	0.5 (06R001) 1 (06R004) 2 (CR06W)	1 (07R003) 0.7 (07R004) 6 (07R006)	1 (08R001) 0.7 (08R002) 1 (CR08W)	1 (08R003) 1 (09R001)	2 (09R002)	1 (CR10W)	10 (CR11E)	10
			Breastfeeding Infant Hazard Index	10 (02R001) 9 (02R015)	0.008 (03R001) 0.01 (03R002) 20 (03R003) 9 (03R004) 60 (03R005)	0.01 (04R002) 0.02 (04R003) 0.01 (04R004)	0.01 (05R001) 9 (05R003) 3 (CR05W)	0.01 (06R001) 6 (06R004) 10 (CR06W)	10 (07R003) 0.01 (07R004) 20 (07R006)	20 (08R001) 5 (08R002) 9 (CR08W)	10 (08R003) 20 (09R001)	30 (09R002)	10 (CR10W)	400 (CR11E)	200
Tribal Fishers	Beach sediment	--	Cancer Risk	6.E-06 (B001) 2.E-05 (B003) 1.E-05 (B005)	5.E-06 (03B030) 9.E-06	8.E-06 (04B023) 2.E-05	.E-06 (05B018)	6.E-06 (06B022) 4.E-06 (06B026) 2.E-05 (06B030)	5.E-06 (07B024)	--	2.E-06 (07B023) 3.E-06	6.E-06 (09B026) 4.E-06	--	--	--
			Hazard Index	0.03 (B001) 0.03 (B003) 0.03 (B005)	0.02 (03B030) 0.04 (03B031) 0.04 (03B033)	0.03 (04B023) 0.08 (04B024)	0.03 (05B018)	0.03 (06B022) 0.02 (06B026) 0.08 (06B030)	0.02 (07B024)	--	0.02 (07B023) 0.02 (09B028) 0.02 (09B024)	0.02 (09B026) 0.03 (09B027)	--	--	--
	In-water sediment	--	Cancer Risk	1.E-06 (2W) 6.E-06 (2E) 3.E-06 (2.5W) 2.E-05 (2.5E)	3.E-06 (3W) 2.E-06 (3E) 1.E-05 (3.5W) 1.E-05 (3.5E)	3.E-06 (4W) 1.E-05 (4E) 8.E-06 (4.5W) 3.E-05 (4.5E)	1.E-05 (5W) 3.E-06 (5E) 2.E-05 (5.5W) 5.E-06 (5.5E)	2.E-04 (6W) 8.E-06 (6E) 1.E-05 (6.5W) 6.E-06 (6.5E)	3.E-04 (7W) 7.E-06 (7E) 2.E-06 (7.5W) 1.E-06 (7.5E)	5.E-06 (8W) 5.E-06 (8E) 2.E-05 (8.5W) 3.E-06 (8.5E)	8.E-06	5.E-06 (9W) 1.E-06 (9E) 3.E-06 (9.5W) 1.E-06 (9.5E)	9.E-06 (10W) 2.E-06 (10E) 1.E-06 (10.5W)	2.E-06 (11W) 5.E-06 (11E) 1.E-06 (11.5W)	3.E-05
			Hazard Index	0.003 (2W) 0.06 (2E) 0.003 (2.5W) 0.006 (2.5E)	0.2 (3W) 0.2 (3E) 0.2 (3.5W) 0.3 (3.5E)	0.2 (4W) 0.2 (4E) 0.2 (4.5W) 0.2 (4.5E)	0.2 (5W) 0.2 (5E) 0.2 (5.5W) 0.2 (5.5E)	0.2 (6W) 0.2 (6E) 0.3 (6.5W) 0.3 (6.5E)	3 (7W) 0.2 (7E) 0.2 (7.5W) 0.2 (7.5E)	0.2 (8W) 0.2 (8E) 0.4 (8.5W) 0.2 (8.5E)	0.3	0.3 (9W) 0.005 (9E) 0.01 (9.5W) 0.004 (9.5E)	0.03 (10W) 0.003 (10E) 0.004 (10.5W) 0.005 (10.5E)	0.003 (11W) 0.08 (11E) 0.003 (11.5W)	0.4
			Breastfeeding Infant Hazard Index	0.01 (2W) 0.7 (2E) 0.01 (2.5W) 0.04 (2.5E)	0.01 (3W) 0.01 (3E) 0.01 (3.5W) 0.8 (3.5E)	0.01 (4W) 0.2 (4E) 0.02 (4.5W) 0.02 (4.5E)	0.01 (5W) 0.01 (5E) 0.02 (5.5W) 0.1 (5.5E)	0.03 (6W) 0.1 (6E) 0.1 (6.5W) 0.6 (6.5E)	5 (7W) 0.04 (7E) 0.1 (7.5W) 0.02 (7.5E)	0.2 (8W) 0.3 (8E) 4 (8.5W) 0.03 (8.5E)	0.3	1 (9W) 0.04 (9E) 0.1 (9.5W) 0.02 (9.5E)	0.2 (10W) 0.02 (10E) 0.02 (10.5W) 0.1 (10.5E)	0.01 (11W) 2 (11E) 0.01 (11.5W)	0.4
	Fish tissue	Fillet consumption	Cancer Risk	--	--	--	--	--	--	--	--	--	--	--	1.E-02
			Hazard Index	--	--	--	--	--	--	--	--	--	--	--	600
			Breastfeeding Infant Hazard Index	--	--	--	--	--	--	--	--	--	--	--	8000
		Whole body consumption	Cancer Risk	--	--	--	--	--	--	--	--	--	--	--	2.E-02
			Hazard Index	--	--	--	--	--	--	--	--	--	--	--	800
			Breastfeeding Infant Hazard Index	--	--	--	--	--	--	--	--	--	--	--	9000
Domestic Water Use	Surface water	--	Cancer Risk	2.E-05 (W025) 1.E-05 (W026)	1.E-05 (W028) 3.E-05 (W005)	9.E-06 (W029)	1.E-05 (W030) 1.E-05 (W010)	3.E-05 (W011) 9.E-04 (W031) 1.E-05 (W014) 2.E-05 (W032)	7.E-05 (W033) 1.E-05 (W034)	2.E-05 (W036)	6.E-05 (W035) 1.E-05 (W020)	1.E-05 (W037) 1.E-05 (W038)	--	2.E-05 (W023)	8.E-05
			Hazard Index	0.2 (W025) 0.7 (W026)	0.1 (W028) 1 (W005)	0.1 (W029)	0.2 (W030) 0.2 (W010)	0.1 (W011) 0.1 (W031) 0.2 (W014) 0.1 (W032)	0.8 (W033) 0.2 (W034)	0.1 (W036)	2 (W035) 0.2 (W020)	0.2 (W037) 0.2 (W038)	--	1 (W023)	0.9

Notes:
RM - river mile

Table 8.4-2. Summary of Human Health Risks, Central Tendency.

				Exposure Area											
Receptor	**Exposure Medium**	**Scenario**	**Endpoint**	**RM 2**	**RM 3**	**RM 4**	**RM 5**	**RM 6**	**RM 7**	**RM 8**	**Swan Island Lagoon**	**RM 9**	**RM 10**	**RM 11**	**Study-Area Wide**
Dockside Workers	Beach sediment		Cancer Risk	5.E-08 (B002) 2.E-07 (B004) 4.E-08 (B006)	--	--	5.E-08 (05B019)	6.E-06 (06B025) 7.E-08 (06B029)	4.E-08 (07B022)	4.E-08 (08B032)	--	--	--	--	--
			Hazard Index	0.002 (B002) 0.01 (B004) 0.001 (B006)	--	--	0.001 (05B019)	0.001 (06B025) 0.001 (06B029)	0.001 (07B022)	0.001 (08B032)	--	--	--	--	--
			Breastfeeding Infant Hazard Index	0.02 (B002) 0.2 (B004) 0.002 (B006)	--	--	--	0.01 (06B025)	--	0.002 (08B032)	--	--	--	--	--
In-Water Workers	In-water sediment		Cancer Risk	7.E-09 (2W) 1.E-08 (2E) 1.E-08 (2.5W) 1.E-08 (2.5E)	1.E-08 (3W) 9.E-09 (3E) 2.E-08 (3.5W) 1.E-08 (3.5E)	1.E-08 (4W) 2.E-08 (4E) 2.E-08 (4.5W) 6.E-08 (4.5E)	2.E-08 (5W) 1.E-08 (5E) 3.E-08 (5.5W) 2.E-08 (5.5E)	4.E-07 (6W) 2.E-08 (6E) 3.E-08 (6.5W) 1.E-08 (6.5E)	3.E-07 (7W) 2.E-08 (7E) 8.E-09 (7.5W) 6.E-09 (7.5E)	1.E-08 (8W) 1.E-08 (8E) 2.E-08 (8.5W) 9.E-09 (8.5E)	2.E-08	1.E-08 (9W) 7.E-09 (9E) 1.E-08 (9.5W) 6.E-09 (9.5E)	2.E-08 (10W) 8.E-09 (10E) 8.E-09 (10.5W) 6.E-09 (10.5E)	7.E-09 (11W) 1.E-08 (11E) 5.E-09 (11.5W)	5.E-08
			Hazard Index	0.0003 (2W) 0.001 (2E) 0.0003 (2.5W) 0.0004 (2.5E)	0.02 (3W) 0.03 (3E) 0.03 (3.5W) 0.03 (3.5E)	0.03 (4W) 0.03 (4E) 0.03 (4.5W) 0.03 (4.5E)	0.03 (5W) 0.03 (5E) 0.03 (5.5W) 0.02 (5.5E)	0.03 (6W) 0.03 (6E) 0.03 (6.5W) 0.03 (6.5E)	0.06 (7W) 0.03 (7E) 0.03 (7.5W) 0.03 (7.5E)	0.03 (8W) 0.03 (8E) 0.03 (8.5W) 0.03 (8.5E)	0.03	0.03 (9W) 0.0003 (9E) 0.0008 (9.5W) 0.0003 (9.5E)	0.001 (10W) 0.0003 (10E) 0.0003 (10.5W)	0.0003 (11W) 0.002 (11E) 0.0002 (11.5W)	0.03
			Breastfeeding Infant Hazard Index	0.0004 (2W) 0.01 (2E) 0.0003 (2.5W) 0.002 (2.5E)	0.0004 (3W) 0.001 (3E) 0.001 (3.5W) 0.01 (3.5E)	0.001 (4W) 0.005 (4E) 0.001 (4.5W) 0.001 (4.5E)	0.001 (5W) 0.001 (5E) 0.001 (5.5W) 0.003 (5.5E)	0.001 (6W) 0.002 (6E) 0.003 (6.5W) 0.01 (6.5E)	0.1 (7W) 0.002 (7E) 0.003 (7.5W) 0.001 (7.5E)	0.004 (8W) 0.01 (8E) 0.04 (8.5W) 0.001 (8.5E)	0.009	0.01 (9W) 0.002 (9E) 0.01 (9.5W) 0.001 (9.5E)	0.01 (10W) 0.001 (10E) 0.001 (10.5W) 0.002 (10.5E)	0.001 (11W) 0.03 (11E) 0.0004 (11.5W)	0.01
Transients	Beach sediment		Cancer Risk	--	2.E-08 (03B030)	--	--	3.E-08 (06B022)	2.E-08 (07B024)	--	8.E-09 (07B023)	2.E-08 (09B026)	--	--	--
			Hazard Index	--	0.007 (03B030) 0.01 (03B031)	--	--	0.01 (06B022)	0.008 (07B024)	--	0.006 (07B023)	0.008 (09B026) 0.009 (09B027)	--	--	--
	Surface water		Cancer Risk	7.E-08 (W025)	--	1.E-07 (W005)	--	9.E-08 (W014) 1.E-07 (W011)	--	--	--	--	--	9.E-08 (W023)	1.E-07
			Hazard Index	0.01 (W025)	--	0.06 (W005)	--	0.01 (W014) 0.01 (W011)	--	--	--	--	--	0.06 (W023)	0.06
	Groundwater seep		Cancer Risk	--	--	--	--	4.E-10 (OF22B)	--	--	--	--	--	--	--
			Hazard Index	--	--	--	--	0.001 (OF22B)	--	--	--	--	--	--	--
Divers (Wet Suit)	In-water sediment		Cancer Risk	5.E-09 (2W) 1.E-08 (2E) 1.E-08 (2.5W) 1.E-08 (2.5E)	1.E-08 (3W) 6.E-09 (3E) 1.E-08 (3.5W) 2.E-08 (3.5E)	1.E-08 (4W) 2.E-08 (4E) 2.E-08 (4.5W) 9.E-08 (4.5E)	2.E-08 (5W) 9.E-09 (5E) 4.E-08 (5.5W) 2.E-08 (5.5E)	6.E-07 (6W) 2.E-08 (6E) 3.E-08 (6.5W) 9.E-09 (6.5E)	2.E-07 (7W) 1.E-08 (7E) 6.E-09 (7.5W) 4.E-09 (7.5E)	9.E-09 (8W) 1.E-08 (8E) 2.E-08 (8.5W) 6.E-09 (8.5E)	1.E-08	1.E-08 (9W) 4.E-09 (9E) 1.E-08 (9.5W) 4.E-09 (9.5E)	1.E-08 (10W) 6.E-09 (10E) 5.E-09 (10.5W) 4.E-09 (10.5E)	5.E-09 (11W) 1.E-08 (11E) 3.E-09 (11.5W)	5.E-08
			Hazard Index	0.0001 (2W) 0.0006 (2E) 0.0001 (2.5W) 0.0001 (2.5E)	0.002 (3W) 0.003 (3E) 0.003 (3.5W) 0.003 (3.5E)	0.003 (4W) 0.003 (4E) 0.003 (4.5W) 0.003 (4.5E)	0.003 (5W) 0.003 (5E) 0.003 (5.5W) 0.003 (5.5E)	0.003 (6W) 0.003 (6E) 0.004 (6.5W) 0.003 (6.5E)	0.01 (7W) 0.003 (7E) 0.003 (7.5W) 0.003 (7.5E)	0.003 (8W) 0.003 (8E) 0.005 (8.5W) 0.003 (8.5E)	0.004	0.004 (9W) 0.0001 (9E) 0.0003 (9.5W) 0.0001 (9.5E)	0.0004 (10W) 0.0001 (10E) 0.0001 (10.5W)	0.0001 (11W) 0.001 (11E) 0.0001 (11.5W)	0.004
			Breastfeeding Infant Hazard Index	0.0003 (2W) 0.01 (2E) 0.0002 (2.5W) 0.001 (2.5E)	0.0002 (3W) 0.0004 (3E) 0.0005 (3.5W) 0.01 (3.5E)	0.0005 (4W) 0.003 (4E) 0.001 (4.5W) 0.001 (4.5E)	0.0004 (5W) 0.0004 (5E) 0.001 (5.5W) 0.002 (5.5E)	0.001 (6W) 0.002 (6E) 0.002 (6.5W) 0.004 (6.5E)	0.02 (7W) 0.001 (7E) 0.002 (7.5W) 0.001 (7.5E)	0.002 (8W) 0.004 (8E) 0.03 (8.5W) 0.001 (8.5E)	0.01	0.01 (9W) 0.001 (9E) 0.004 (9.5W) 0.001 (9.5E)	0.004 (10W) 0.001 (10E) 0.001 (10.5W) 0.001 (10.5E)	0.001 (11W) 0.02 (11E) 0.0003 (11.5W)	0.005
	Surface water		Cancer Risk	1.E-09 (2W) 9.E-10 (2E) 4.E-09 (W025)	2.E-08 (3W) 7.E-09 (3.5E)	2.E-09 (4W) 2.E-08 (4E) 6.E-08 (4.5E) 9.E-09 (W005)	2.E-09 (5.5W) 9.E-10 (5.5E)	5.E-07 (6W) 3.E-08 (6.5W) 7.E-09 (6.5E) 9.E-09 (W011)	2.E-08 (7W) 1.E-09 (7.5W)	3.E-09 (8.5W)	2.E-08	3.E-08 (9.5W) 8.E-10 (9.5E)	--	6.E-09 (W023)	--
			Hazard Index	0.00002 (2W) 0.0005 (2E) 0.00001 (W025)	0.00002 (3W) 0.00002 (3.5E)	0.00001 (4W) 0.00002 (4E) 0.00002 (4.5E) 0.0004 (W005)	0.00002 (5.5W) 0.00002 (5.5E)	0.00002 (6W) 0.00002 (6.5W) 0.00003 (6.5E) 0.00001 (W011)	0.0005 (7W) 0.00002 (7.5W)	0.00002 (8.5W)	0.0007	0.00002 (9.5W) 0.00001 (9.5E)	--	0.0004 (W023)	--
Recreational Beach Users	Beach sediment		Cancer Risk	4.E-07 (B001) 2.E-06 (B003) 1.E-06 (B005)	7.E-07 (03B031) 5.E-07	6.E-07 (04B023) 2.E-06	3.E-07 (05B018)	3.E-07 (06B022) 2.E-07 (06B026) 2.E-06 (06B030)	--	--	2.E-07 (09B028) 2.E-07	3.E-07 (09B026) 2.E-07	--	--	--
			Hazard Index	0.02 (B001) 0.02 (B003) 0.02 (B005)	0.02 (03B031) 0.02 (03B033)	0.02 (04B023) 0.05 (04B024)	0.02 (05B018)	0.02 (06B022) 0.01 (06B026) 0.05 (06B030)	--	--	0.01 (09B028) 0.01 (09B024)	0.01 (09B026) 0.02 (09B027)	--	--	--
	Surface water		Cancer Risk	--	--	--	1.E-08 (W010)	1.E-08 (W014)	--	--	9.E-09 (W020)	--	--	--	1.E-08
			Hazard Index	--	--	--	0.0002 (W010)	0.0002 (W014)	--	--	0.0002 (W020)	--	--	--	0.0002
Recreational/Subsistence Fishers	Beach sediment	High-frequency	Cancer Risk	6.E-08 (B001) 2.E-07 (B003) 1.E-07 (B005)	5.E-08 (03B030) 9.E-08	8.E-08 (04B023) 2.E-07	3.E-08 (05B018)	6.E-08 (06B022) 4.E-08 (06B026) 3.E-07 (06B030)	5.E-08 (07B024)	--	2.E-08 (07B023) 3.E-08	6.E-08 (09B026) 3.E-08	--	--	--
			Hazard Index	0.003 (B001) 0.03 (B003) 0.03 (B005)	0.002 (03B030) 0.004 (03B031) 0.003 (03B033)	0.003 (04B023) 0.01 (04B024)	0.003 (05B018)	0.003 (06B022) 0.002 (06B026) 0.01 (06B030)	0.002 (07B024)	--	0.002 (07B023) 0.002 (09B028) 0.002 (09B024)	0.002 (09B026) 0.003 (09B027)	--	--	--

Table 8.4-2. Summary of Human Health Risks, Central Tendency.

				Exposure Area											
Receptor	**Exposure Medium**	**Scenario**	**Endpoint**	**RM 2**	**RM 3**	**RM 4**	**RM 5**	**RM 6**	**RM 7**	**RM 8**	**Swan Island Lagoon**	**RM 9**	**RM 10**	**RM 11**	**Study-Area Wide**
		Low-frequency	Cancer Risk	3.E-08 (B001) 8.E-08 (B003) 6.E-08 (B005)	2.E-08 (03B030) 5.E-08	4.E-08 (04B023) 1.E-07	1.E-08 (05B018)	3.E-08 (06B022) 2.E-08 (06B026) 1.E-07 (06B030)	3.E-08 (07B024)	--	1.E-08 (07B023) 2.E-08	3.E-08 (09B026) 2.E-08	--	--	--
			Hazard Index	0.001 (B001) 0.03 (B003) 0.03 (B005)	0.001 (03B030) 0.002 (03B031) 0.002 (03B033)	0.001 (04B023) 0.004 (04B024)	0.002 (05B018)	0.001 (06B022) 0.001 (06B026) 0.004 (06B030)	0.001 (07B024)	--	0.001 (07B023) 0.001 (09B028) 0.001 (09B024)	0.001 (09B026) 0.001 (09B027)	--	--	--
	In-water sediment	High-frequency	Cancer Risk	1.E-08 (2W) 2.E-08 (2E) 2.E-08 (2.5W) 3.E-08 (2.5E)	2.E-08 (3W) 2.E-08 (3E) 3.E-08 (3.5W) 3.E-08 (3.5E)	2.E-08 (4W) 4.E-08 (4E) 3.E-08 (4.5W) 1.E-07 (4.5E)	3.E-08 (5W) 2.E-08 (5E) 6.E-08 (5.5W) 4.E-08 (5.5E)	9.E-07 (6W) 3.E-08 (6E) 5.E-08 (6.5W) 2.E-08 (6.5E)	4.E-07 (7W) 4.E-08 (7E) 1.E-08 (7.5W) 1.E-08 (7.5E)	2.E-08 (8W) 3.E-08 (8E) 4.E-08 (8.5W) 2.E-08 (8.5E)	3.E-08	2.E-08 (9W) 1.E-08 (9E) 2.E-08 (9.5W) 1.E-08 (9.5E)	4.E-08 (10W) 1.E-08 (10E) 1.E-08 (10.5W) 1.E-08 (10.5E)	1.E-08 (11W) 2.E-08 (11E) 9.E-09 (11.5W)	9.E-08
			Hazard Index	0.0002 (2W) 0.001 (2E) 0.0002 (2.5W) 0.0003 (2.5E)	0.02 (3W) 0.02 (3E) 0.02 (3.5W) 0.02 (3.5E)	0.02 (4W) 0.02 (4E) 0.02 (4.5W) 0.02 (4.5E)	0.02 (5W) 0.02 (5E) 0.02 (5.5W) 0.02 (5.5E)	0.02 (6W) 0.02 (6E) 0.02 (6.5W) 0.02 (6.5E)	0.04 (7W) 0.02 (7E) 0.02 (7.5W) 0.02 (7.5E)	0.02 (8W) 0.02 (8E) 0.02 (8.5W) 0.02 (8.5E)	0.02	0.02 (9W) 0.0003 (9E) 0.0006 (9.5W) 0.0002 (9.5E)	0.001 (10W) 0.0002 (10E) 0.0003 (10.5W)	0.0002 (11W) 0.002 (11E) 0.0002 (11.5W)	0.02
			Breastfeeding Infant Hazard Index	0.0004 (2W) 0.01 (2E) 0.0003 (2.5W) 0.002 (2.5E)	0.0004 (3W) 0.001 (3E) 0.001 (3.5W) 0.01 (3.5E)	0.001 (4W) 0.004 (4E) 0.001 (4.5W) 0.001 (4.5E)	0.001 (5W) 0.001 (5E) 0.001 (5.5W) 0.003 (5.5E)	0.001 (6W) 0.002 (6E) 0.002 (6.5W) 0.01 (6.5E)	0.05 (7W) 0.002 (7E) 0.002 (7.5W) 0.001 (7.5E)	0.004 (8W) 0.005 (8E) 0.04 (8.5W) 0.001 (8.5E)	0.01	0.01 (9W) 0.002 (9E) 0.006 (9.5W) 0.001 (9.5E)	0.01 (10W) 0.001 (10E) 0.001 (10.5W) 0.001 (10.5E)	0.001 (11W) 0.03 (11E) 0.0004 (11.5W)	0.01
		Low-frequency	Cancer Risk	6.E-09 (2W) 1.E-08 (2E) 1.E-08 (2.5W) 1.E-08 (2.5E)	1.E-08 (3W) 8.E-09 (3E) 1.E-08 (3.5W) 1.E-08 (3.5E)	1.E-08 (4W) 2.E-08 (4E) 2.E-08 (4.5W) 7.E-08 (4.5E)	2.E-08 (5W) 9.E-09 (5E) 3.E-08 (5.5W) 2.E-08 (5.5E)	4.E-07 (6W) 2.E-08 (6E) 3.E-08 (6.5W) 1.E-08 (6.5E)	2.E-07 (7W) 2.E-08 (7E) 7.E-09 (7.5W) 5.E-09 (7.5E)	1.E-08 (8W) 1.E-08 (8E) 2.E-08 (8.5W) 8.E-09 (8.5E)	1.E-08	1.E-08 (9W) 6.E-09 (9E) 1.E-08 (9.5W) 5.E-09 (9.5E)	2.E-08 (10W) 7.E-09 (10E) 6.E-09 (10.5W) 5.E-09 (10.5E)	6.E-09 (11W) 1.E-08 (11E) 5.E-09 (11.5W)	5.E-08
			Hazard Index	0.0001 (2W) 0.0005 (2E) 0.0001 (2.5W) 0.0002 (2.5E)	0.01 (3W) 0.01 (3E) 0.01 (3.5W) 0.01 (3.5E)	0.01 (4W) 0.01 (4E) 0.01 (4.5W) 0.01 (4.5E)	0.01 (5W) 0.01 (5E) 0.01 (5.5W) 0.01 (5.5E)	0.01 (6W) 0.01 (6E) 0.01 (6.5W) 0.01 (6.5E)	0.02 (7W) 0.01 (7E) 0.01 (7.5W) 0.01 (7.5E)	0.01 (8W) 0.01 (8E) 0.01 (8.5W) 0.01 (8.5E)	0.01	0.01 (9W) 0.0001 (9E) 0.0003 (9.5W) 0.0001 (9.5E)	0.0004 (10W) 0.0001 (10E) 0.0001 (10.5W)	0.0001 (11W) 0.001 (11E) 0.0001 (11.5W)	0.01
			Breastfeeding Infant Hazard Index	0.0002 (2W) 0.01 (2E) 0.0002 (2.5W) 0.001 (2.5E)	0.0002 (3W) 0.0003 (3E) 0.0003 (3.5W) 0.01 (3.5E)	0.0003 (4W) 0.002 (4E) 0.0004 (4.5W) 0.0005 (4.5E)	0.0003 (5W) 0.0003 (5E) 0.0005 (5.5W) 0.002 (5.5E)	0.001 (6W) 0.001 (6E) 0.001 (6.5W) 0.003 (6.5E)	0.03 (7W) 0.001 (7E) 0.001 (7.5W) 0.0004 (7.5E)	0.002 (8W) 0.003 (8E) 0.02 (8.5W) 0.001 (8.5E)	0.004	0.007 (9W) 0.001 (9E) 0.003 (9.5W) 0.001 (9.5E)	0.003 (10W) 0.001 (10E) 0.0005 (10.5W)	0.0004 (11W) 0.02 (11E) 0.0002 (11.5W)	0.004
	Fish tissue	Recreational	Cancer Risk	9.E-05	4.E-05	9.E-05	3.E-05	4.E-05	2.E-04	5.E-05	2.E-04	6.E-05	5.E-05	4.E-04	1.E-03
			Hazard Index	5	2	7	2	3	10	2	20	5	4	30	100
			Breastfeeding Infant Hazard Index	50	10	70	10	20	60	10	200	30	40	500	2000
	Shellfish tissue	Clam consumption	Cancer Risk	3.E-05 (2E) 1.E-05 (2W)	4.E-05 (3E) 1.E-05 (3W)	2.E-05 (4E) 2.E-05 (4W)	2.E-05 (5E) 1.E-04 (5W)	1.E-04 (6E) 1.E-04 (6W)	1.E-05 (7E) 3.E-05 (7W)	9.E-06 (8E) 4.E-05 (8W)	3.E-05	1.E-05 (9E) 4.E-05 (9W)	8.E-06 (10W)	4.E-05 (11E) 6.E-06 (11W)	7.E-05
			Hazard Index	1 (2E) 0.3 (2W)	1 (3E) 0.4 (3W)	0.5 (4E) 0.5 (4W)	0.5 (5E) 0.4 (5W)	7 (6E) 0.6 (6W)	0.4 (7E) 0.6 (7W)	0.5 (8E) 1 (8W)	1	0.3 (9E) 1 (9W)	0.3 (10W)	2 (11E) 0.2 (11W)	2
			Breastfeeding Infant Hazard Index	20 (2E) 5 (2W)	30 (3E) 6 (3W)	6 (4E) 7 (4W)	9 (5E) 5 (5W)	200 (6E) 7 (6W)	6 (7E) 6 (7W)	5 (8E) 20 (8W)	20	3 (9E) 30 (9W)	5 (10W)	50 (11E) 2 (11W)	30
		Crayfish consumption	Cancer Risk	1.E-05 (02R001) 2.E-06 (02R015)	1.E-06 (03R001) 1.E-06 (03R002) 9.E-06 (03R003)	1.E-06 (04R002) 1.E-06 (04R003) 1.E-06 (04R004)	1.E-06 (05R001) 2.E-06 (05R003) 3.E-06 (CR05W)	1.E-06 (06R001) 8.E-06 (06R004) 7.E-06 (CR06W)	3.E-06 (07R003) 2.E-06 (07R004) 5.E-05 (07R006)	4.E-06 (08R001) 2.E-06 (08R002) 4.E-06 (CR08W)	8.E-06 (08R003) 3.E-06 (09R001)	9.E-06 (09R002)	1.E-06 (CR10W)	6.E-05 (CR11E)	6.E-05
			Hazard Index	0.4 (02R001) 0.2 (02R015)	0.09 (03R001) 0.1 (03R002) 0.4 (03R003) 0.2 (03R004) 0.7 (03R005) 0.09 (03R032)	0.09 (04R002) 0.08 (04R003) 0.1 (04R004)	0.08 (05R001) 0.2 (05R003) 0.1 (CR05W)	0.09 (06R001) 0.2 (06R004) 0.3 (CR06W)	0.2 (07R003) 0.1 (07R004) 1 (07R006)	0.2 (08R001) 0.1 (08R002) 0.2 (CR08W)	0.2 (08R003) 0.2 (09R001)	0.4 (09R002)	0.2 (CR10W)	3 (CR11E)	2
			Breastfeeding Infant Hazard Index	3 (02R001) 2 (02R015)	0.002 (03R001) 0.001 (03R002) 4 (03R003) 2 (03R004) 10 (03R005) 0.001 (03R032)	0.001 (04R002) 0.004 (04R003) 0.002 (04R004)	0.001 (05R001) 2 (05R003) 0.5 (CR05W)	0.001 (06R001) 1 (06R004) 3 (CR06W)	2 (07R003) 0.002 (07R004) 3 (07R006)	3 (08R001) 1 (08R002) 2 (CR08W)	2 (08R003) 3 (09R001)	5 (09R002)	3 (CR10W)	70 (CR11E)	40
Tribal Fishers	Beach sediment	--	Cancer Risk	4.E-07 (B001) 1.E-06 (B003) 8.E-07 (B005)	3.E-07 (03B030) 6.E-07	5.E-07 (04B023) 1.E-06	3.E-07 (05B018)	4.E-07 (06B022) 3.E-07 (06B026) 2.E-06 (06B030)	3.E-07 (07B024)	--	1.E-07 (07B023) 2.E-07	4.E-07 (09B026) 2.E-07	--	--	--
			Hazard Index	0.005 (B001) 0.03 (B003) 0.03 (B005)	0.004 (03B030) 0.007 (03B031) 0.006 (03B033)	0.005 (04B023) 0.02 (04B024)	0.006 (05B018)	0.006 (06B022) 0.004 (06B026) 0.01 (06B030)	0.005 (07B024)	--	0.003 (07B023) 0.004 (09B028) 0.004 (09B024)	0.004 (09B026) 0.005 (09B027)	--	--	--
	In-water sediment	--	Cancer Risk	8.E-08 (2W) 1.E-07 (2E) 1.E-07 (2.5W) 2.E-07 (2.5E)	2.E-07 (3W) 1.E-07 (3E) 2.E-07 (3.5W) 2.E-07 (3.5E)	1.E-07 (4W) 3.E-07 (4E) 2.E-07 (4.5W) 9.E-07 (4.5E)	2.E-07 (5W) 1.E-07 (5E) 4.E-07 (5.5W) 2.E-07 (5.5E)	6.E-06 (6W) 2.E-07 (6E) 4.E-07 (6.5W) 1.E-07 (6.5E)	3.E-06 (7W) 3.E-07 (7E) 9.E-08 (7.5W) 7.E-08 (7.5E)	1.E-07 (8W) 2.E-07 (8E) 3.E-07 (8.5W) 1.E-07 (8.5E)	2.E-07	2.E-07 (9W) 8.E-08 (9E) 1.E-07 (9.5W) 7.E-08 (9.5E)	2.E-07 (10W) 9.E-08 (10E) 8.E-08 (10.5W) 7.E-08 (10.5E)	8.E-08 (11W) 1.E-07 (11E) 6.E-08 (11.5W)	6.E-07

Table 8.4-2. Summary of Human Health Risks, Central Tendency.

				Exposure Area											
Receptor	**Exposure Medium**	**Scenario**	**Endpoint**	**RM 2**	**RM 3**	**RM 4**	**RM 5**	**RM 6**	**RM 7**	**RM 8**	**Swan Island Lagoon**	**RM 9**	**RM 10**	**RM 11**	**Study-Area Wide**
			Hazard Index	0.0004 (2W) 0.002 (2E) 0.0005 (2.5W) 0.0006 (2.5E)	0.03 (3W) 0.03 (3E) 0.04 (3.5W) 0.04 (3.5E)	0.04 (4W) 0.04 (4E) 0.04 (4.5W) 0.04 (4.5E)	0.04 (5W) 0.04 (5E) 0.03 (5.5W) 0.03 (5.5E)	0.04 (6W) 0.03 (6E) 0.05 (6.5W) 0.04 (6.5E)	0.09 (7W) 0.04 (7E) 0.04 (7.5W) 0.04 (7.5E)	0.04 (8W) 0.04 (8E) 0.04 (8.5W) 0.04 (8.5E)	0.04	0.04 (9W) 0.0005 (9E) 0.001 (9.5W) 0.0005 (9.5E)	0.002 (10W) 0.0004 (10E) 0.0005 (10.5W)	0.0004 (11W) 0.003 (11E) 0.0003 (11.5W)	0.04
			Breastfeeding Infant Hazard Index	0.0008 (2W) 0.03 (2E) 0.0006 (2.5W) 0.003 (2.5E)	0.001 (3W) 0.001 (3E) 0.001 (3.5W) 0.02 (3.5E)	0.001 (4W) 0.01 (4E) 0.002 (4.5W) 0.002 (4.5E)	0.001 (5W) 0.001 (5E) 0.002 (5.5W) 0.01 (5.5E)	0.003 (6W) 0.005 (6E) 0.005 (6.5W) 0.01 (6.5E)	0.1 (7W) 0.003 (7E) 0.005 (7.5W) 0.002 (7.5E)	0.007 (8W) 0.01 (8E) 0.1 (8.5W) 0.003 (8.5E)	0.02	0.03 (9W) 0.003 (9E) 0.01 (9.5W) 0.002 (9.5E)	0.01 (10W) 0.002 (10E) 0.002 (10.5W) 0.003 (10.5E)	0.002 (11W) 0.1 (11E) 0.001 (11.5W)	0.02
Domestic Water Use	Surface water	--	Cancer Risk	2.E-05 (W025) 4.E-06 (W026)	4.E-06 (W028) 1.E-05 (W005)	3.E-06 (W029)	4.E-06 (W030) 5.E-06 (W010)	2.E-05 (W011) 2.E-04 (W031) 5.E-06 (W014) 2.E-05 (W032)	2.E-05 (W033) 5.E-06 (W034)	6.E-06 (W036)	2.E-05 (W035) 4.E-06 (W020)	4.E-06 (W037) 4.E-06 (W038)	--	1.E-05 (W023)	3.E-05
			Hazard Index	0.07 (W025) 0.4 (W026)	0.07 (W028) 0.5 (W005)	0.05 (W029)	0.08 (W030) 0.09 (W010)	0.07 (W011) 0.08 (W031) 0.08 (W014) 0.06 (W032)	0.3 (W033) 0.09 (W034)	0.08 (W036)	0.8 (W035) 0.08 (W020)	0.08 (W037) 0.08 (W038)	--	0.5 (W023)	0.6

Notes:
RM - river mile

Table 8.4-3. Chemicals Potentially Posing Unacceptable Risks for Human Health

	Beach Sediment							Surface Water					In-Water Sediment												Fish Tissue					Shellfish	
Chemical of Concern	Recreational Beach User	Dockside Worker	Low-Frequency Fisher	High-Frequency Fisher	Tribal Fisher	Transients	Ingestion of Human Milk (Dockside Worker)	Recreational Beach User	Transients	Diver in Wet Suit	Diver in Dry Suit	Potential Future Domestic Water Use	In-Water Worker	Low Frequency Fisher	High Frequency Fisher	Tribal Fisher	Diver in Wet Suit	Diver in Dry Suit	Ingestion of Human Milk (In-Water Worker)	Ingestion of Human Milk (Low Frequency Fisher)	Ingestion of Human Milk (High Frequency Fisher)	Ingestion of Human Milk (Tribal Fisher)	Ingestion of Human Milk (Diver in Wet Suit)	Ingestion of Human Milk (Diver in Dry Suit)	Fish Consumption, River Mile Basis	Fish Consumption, Study Area-Wide	Tribal Fish Consumption	Ingestion of Human Milk (Non-tribal Consumption)	Ingestion of Human Milk (Tribal Consumption)	Adult Consumption	Ingestion of Human Milk (Non-tribal Consumption)
Metals																															
Antimony																											+				
Arsenic	X[b]		X[b]	X[b]	O							X			X[ab]	X[b]									O	O	#			O	
Chromium, hexavalent												X[a]																			
Lead[d]																											X				
Mercury																									+	+	+				
PAHs																															
Benzo(a)anthracene	X[ab]	X[ab]										O		X[ab]	X[ab]	X[ab]	X[ab]								X[ab]					O	
Benzo(a)pyrene	O[b]	O[a]		X[ab]	X[b]					X[ab]		#	X[ab]	O[b]	O[b]	O	O[b]	X[ab]							O	X[c]	X			#	
Benzo(b)fluoranthene	X[ab]	X[ab]										O		X[ab]	X[ab]	X[ab]	X[ab]													O	
Benzo(k)fluoranthene																														X[a]	
Dibenzo(a,h)anthracene	X[b]	X[ab]										O		X[ab]	X[ab]	X[ab]	X[ab]								X[ab]	X[c]	X			O	
Indeno(1,2,3-cd)pyrene	X[ab]	X[ab]										O		X[ab]	X[ab]	X[ab]	X[ab]													X	
Total Carcinogenic PAHs	O	O[a]	X[ab]	X[ab]	X[b]					X[ab]	X[ab]	#	X[ab]	O[b]	O[b]	#	O[b]	X[ab]							O	X	X			#	
Phthalates																															
Bis(2-ethylhexyl)phthalate																											O				
SVOCs																															
Hexachlorobenzene																										O	O				
Phenols																															
Pentachlorophenol																														X[a]	
Polychlorinated Biphenyls																															
Total PCBs														X[ab]	X[ab]	O[b]	X[ab]				+[ab]	+[ab]	+[ab]		#	#	#	+	+	#	+
Total PCB TEQ														X[ab]	X[ab]	X[b]	X[ab]								O	#	#	+[b]	+	O	+[b]
Dioxin/Furan																															
Total Dioxin TEQ													O[ab]	O[ab]	O[ab]	#	O[ab]	X[ab]	+[ab]	+[ab]	+[ab]	+[ab]			#	#	#	+	+	#	+[b]
Pesticides																															
Aldrin																														X[a]	
Dieldrin																									O	O	O			X	
Total Chlordane																										X[c]	X				

Table 8.4-3. Chemicals Potentially Posing Unacceptable Risks for Human Health

	Beach Sediment							Surface Water					In-Water Sediment												Fish Tissue					Shellfish	
Chemical of Concern	Recreational Beach User	Dockside Worker	Low-Frequency Fisher	High-Frequency Fisher	Tribal Fisher	Transients	Ingestion of Human Milk (Dockside Worker)	Recreational Beach User	Transients	Diver in Wet Suit	Diver in Dry Suit	Potential Future Domestic Water Use	In-Water Worker	Low Frequency Fisher	High Frequency Fisher	Tribal Fisher	Diver in Wet Suit	Diver in Dry Suit	Ingestion of Human Milk (In-Water Worker)	Ingestion of Human Milk (Low Frequency Fisher)	Ingestion of Human Milk (High Frequency Fisher)	Ingestion of Human Milk (Tribal Fisher)	Ingestion of Human Milk (Diver in Wet Suit)	Ingestion of Human Milk (Diver in Dry Suit)	Fish Consumption, River Mile Basis	Fish Consumption, Study Area-Wide	Tribal Fish Consumption	Ingestion of Human Milk (Non-tribal Consumption)	Ingestion of Human Milk (Tribal Consumption)	Adult Consumption	Ingestion of Human Milk (Non-tribal Consumption)
Total DDD																									X[a]	X	O			X	
Total DDE																									X	X	O			X	
Total DDT																									X	X	O			X[a]	
Total DDX																															
Herbicides																															
MCPP												+[ab]																			
Polybrominated Diphenyl Ethers																												+[ab]			

Notes:

Groundwater seep exposure resulted in no cancer or noncancer exceedances of target risk levels.

Abbreviations:

X Chemical exceeds cancer risk of 10^{-5} or a hazard quotient of 1 for at least one BHHRA scenario.
O Chemical exceeds cancer risk of 10^{-5} or a hazard quotient of 1 for at least one BHHRA scenario.
Chemical exceeds cancer risk of 10^{-4} or a hazard quotient of 1 for at least one BHHRA scenario.
+ Chemical exceeds a hazard quotient of 1 for at least one BHHRA scenario, but does not exceed a cancer risk of 10^{-6}.
a Status is result of target risk or hazard exceedance for two or fewer exposure points.
b Status is result of target risk or hazard exceedance for RME scenario only.
c Status is result of target risk or hazard exceedance only for subsistence fish consumption.
d Status for lead is based on results of predicted blood lead levels.

Shading indicates an exceedance of a hazard quotient of 1 for at least one BHHRA scenario.

Table 9.4-1. Numbers of Samples Chemically Analyzed During the Portland Harbor BERA.

Location	Sediment	Sediment Toxicity Tests	Fish and Invertebrate Tissue	Bird Eggs	Surface Water	Transition Zone Water
Study Area (RM 1.9 – RM 11.8)	1,469	269	315	5	313	192
Downstream reach (RM 0 – RM 1.9)	21	0	5	0	0	0
Multnomah Channel	7	0	0	0	0	0
Downtown reach (RM 11.8 – RM 15.3)	17	2	6	0	0	0
Upstream (RM 15.3 – RM 28.4)	22	22	18	5	0	0

Notes:

BERA - baseline ecological risk assessment
RM - river mile

Table 9.6-1. Number of COPCs Evaluated in the BERA.

Medium or Diet	No. of COPCs	No. of Chemicals without Screening-Level TRVs
Sediment	67	106
Invertebrate tissue	18	23
Fish tissue	16	8
Fish dietary dose	9	11
Bird dietary dose	23	19
Mammal dietary dose	12	11
Bird egg tissue	5	0
Surface water	14	19
TZW	58	14

Notes:

BERA - baseline ecological risk assessment
COPC - contaminant of potential concern
TRV - toxicity reference value
TZW - transition zone water

Table 9.6-2. COPCs Forwarded to the BERA after Screening.

Receptor Group	Media Evaluated	Number of COPCs	COPCs
Benthic invertebrates, bivalves, decapods	Surface water, TZW, sediment, tissue	104	20 metals, 2 butyltins, 21 individual PAHs or PAH sums, 4 phthalates, 12 SVOCs, 6 phenols, 16 pesticide or pesticide sums, total PCBs, 2,3,7,8-TCDD (dioxin), 16 VOCs, 3 total TPH fractions, cyanide, perchlorate
Fish	Surface water, TZW, sediment, diet, tissue	74	19 metals, 4 butyltins, 17 individual PAHs or PAH sums, BEHP, 3 SVOCs, total PCBs, dioxin TEQ, total TEQ, 7 pesticide or pesticide sums, 18 VOCs, cyanide, perchlorate
Birds and mammals	Diet (birds and mammals), bird eggs	23 (birds) 12 (mammals)	11 metals, 3 individual PAHs or PAH sums, 2 phthalates, total PCBs, dioxin TEQ, PCB TEQ, total TEQ, 3 pesticide or pesticide sums
Aquatic plants, amphibians	Surface water, TZW	64	15 metals, monobutyltin, 16 individual PAHs, BEHP, 3 SVOCs, total PCBs, 6 pesticide or pesticide sums, 18 VOCs, gasoline-range hydrocarbons, cyanide, perchlorate

Notes:

BEHP - bis(2-ethylhexyl) phthalate
BERA - baseline ecological risk assessment
COPC - contaminant of potential concern
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
SVOC - semivolatile organic compound
TCDD - tetrachlorodibenzo-p-dioxin
TEQ - toxic equivalent
TPH - total petroleum hydrocarbons
TZW - transition zone water
VOC - volatile organic compound

Table 9.10-1. Sediment Toxicity Test Results.

Test	Level 0 (No Toxicity)	Level 1 (Low Toxicity)	Level 2 (Moderate Toxicity)	Level 3 (Severe Toxicity)
Chironomus survival	210 of 256	12 of 256	9 of 256	25 of 256
Chironomus biomass	190 of 256	24 of 256	7 of 256	35 of 256
Hyalella survival	224 of 256	15 of 256	2 of 256	15 of 256
Hyalella biomass	143 of 256	47 of 256	42 of 256	24 of 256

Table 9.10-2. COPCs Posing Potentially Unacceptable Ecological Risks within the Portland Harbor Study Area.

Assessment Endpoint	Exposure Pathway	COPCs with HQ ≥ 1.0	Section of the BERA with Additional Details
Aquatic plants, amphibians	Surface water	Benzo(a)anthracene, benzo(a)pyrene, BEHP, naphthalene, DDx, total PCBs,[a] zinc	Sections 9-1 (amphibians) and 10-1 (aquatic plants)
	TZW	1,2,4-trimethylbenzene, 1,2-dichlorobenzene, 2-methylnaphthalene, 4,4′-DDT, acenaphthene, anthracene, barium, benzo(a)anthracene, benzo(a)pyrene, cadmium, carbon disulfide, chlorobenzene, chloroethane, chloroform, copper, cyanide, ethylbenzene, fluorene, gasoline fraction (aliphatic) C4 – C6, gasoline fraction (aliphatic) C10 – C12, iron, isopropylbenzene, lead, magnesium, manganese, naphthalene, nickel, perchlorate, phenanthrene, potassium, sodium, toluene, DDx, zinc	Sections 9-2 (amphibians) and 10-1 (aquatic plants)
Benthic invertebrates, bivalves, decapods	Sediment	2,4′-DDD, 2-methylnaphthalene, 4,4′-DDD, 4,4′-DDE, 4,4′-DDT, 4-methylphenol, acenaphthene, acenaphthylene, ammonia,[b] anthracene, Aroclor 1254,[c] arsenic,[c] benzo(a)anthracene, benzo(a)pyrene,[c] benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzyl alcohol, cadmium, carbazole, chlordane (cis and trans),[c] chromium, chrysene, cis-chlordane, copper, dibenzo(a,h)anthracene, dibenzofuran, dibutyl phthalate, dieldrin, diesel-range petroleum hydrocarbons, endrin, endrin ketone, fluoranthene, fluorene, gasoline-range hydrocarbons,[d] heptachlor epoxide,[c] indeno(1,2,3-cd)pyrene, lead, lindane (γ-HCH),[c] mercury, naphthalene,[c] nickel,[c] phenanthrene, phenol, pyrene, residual-range hydrocarbons,[e] silver, sulfide,[b] sum DDD, sum DDE, sum DDT, total chlordane,[c] DDx, total endosulfan, total HPAH, total LPAH, total PAH, total PCBs, TBT, zinc,[c] β-HCH, δ-HCH	Sections 6-2 and 6-3
	Surface water	4,4′-DDT,[a] benzo(a)anthracene, benzo(a)pyrene, BEHP, ethylbenzene, naphthalene, DDx, total PCBs,[a] trichloroethene, zinc	Section 6-5

Table 9.10-2. COPCs Posing Potentially Unacceptable Ecological Risks within the Portland Harbor Study Area.

Assessment Endpoint	Exposure Pathway	COPCs with HQ ≥ 1.0	Section of the BERA with Additional Details
	TZW	1,1-Dichloroethene, 1,2,4-trimethylbenzene, 1,2-dichlorobenzene, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, 2-methylnaphthalene, 4,4′-DDT, acenaphthene, anthracene, barium, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, beryllium, cadmium, carbon disulfide, chlorobenzene, chloroethane, chloroform, chrysene, cis-1,2-dichloroethene, cobalt, copper, cyanide, dibenzo(a,h)anthracene, dibenzofuran, ethylbenzene, fluoranthene, fluorene, gasoline fraction (aliphatic) C4 – C6, gasoline fraction (aliphatic) C6 – C8, gasoline fraction (aliphatic) C10 – C12, gasoline fraction (aromatic) C8 – C10, indeno(1,2,3-cd)pyrene, iron, isopropylbenzene, lead, m,p-xylene, magnesium, manganese, naphthalene, nickel, o-xylene, perchlorate, phenanthrene, potassium, pyrene, sodium, toluene, DDx, total xylenes, trichloroethene, vanadium, zinc	Section 6-6
	Tissue	4,4′-DDD, arsenic, BEHP, copper, DDx, total PCBs, TBT, zinc	Section 6-4

Table 9.10-2. COPCs Posing Potentially Unacceptable Ecological Risks within the Portland Harbor Study Area.

Assessment Endpoint	Exposure Pathway	COPCs with HQ ≥ 1.0	Section of the BERA with Additional Details
Fish	Surface water	4,4′-DDT,[a] benzo(a)anthracene, benzo(a)pyrene, BEHP, ethylbenzene, naphthalene, DDx, total PCBs,[a] trichloroethene, zinc	Section 7-3
	TZW	1,1-Dichloroethene, 1,2,4-trimethylbenzene, 1,2-dichlorobenzene, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, 2-methylnaphthalene, 4,4′-DDT, acenaphthene, anthracene, barium, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, beryllium, cadmium, carbon disulfide, chlorobenzene, chloroethane, chloroform, chrysene, cis-1,2-dichloroethene, cobalt, copper, cyanide, dibenzo(a,h)anthracene, dibenzofuran, ethylbenzene, fluoranthene, fluorene, gasoline fraction (aliphatic) C4 – C6, gasoline fraction (aliphatic) C6 – C8, gasoline fraction (aliphatic) C10 – C12, gasoline fraction (aromatic) C8 – C10, indeno(1,2,3-cd)pyrene, iron, isopropylbenzene, lead, m,p-xylene, magnesium, manganese, naphthalene, nickel, o-xylene, perchlorate, phenanthrene, potassium, pyrene, sodium, toluene, DDx, total xylenes, trichloroethene, vanadium, zinc	Section 7-4
	Fish tissue	Antimony, BEHP, copper, lead, DDx, total PCBs	Section 7-1
	Diet	Cadmium, copper, mercury, TBT	Section 7-2
Birds	Diet	Aldrin, benzo(a)pyrene, copper, dibutyl phthalate, lead, sum DDE, DDx, total dioxin/furan TEQ, total PCBs, total PCB TEQ, total TEQ	Section 8-1
	Bird egg tissue	Total dioxin/furan TEQ, total PCBs, total PCB TEQ, total TEQ	Section 8-2

Table 9.10-2. COPCs Posing Potentially Unacceptable Ecological Risks within the Portland Harbor Study Area.

Assessment Endpoint	Exposure Pathway	COPCs with HQ ≥ 1.0	Section of the BERA with Additional Details
Mammals	Diet	Aluminum, lead, total dioxin/furan TEQ, total PCBs, total PCB TEQ, total TEQ	Section 8-1

Notes:

[a] Identified as a COPC (HQ ≥ 1.0) when the AWQC TRV was adopted; not identified as a COPC (HQ < 1.0) when the alternative TRV was adopted. These chemicals are not included in the total counts of COPCs with potentially unacceptable ecological risk unless they were identified as a COPC for another LOE.

[b] Ammonia and sulfide in bulk sediment exceeded SLs but are not included in the total counts of COPCs with potentially unacceptable ecological risk.

[c] Identified as a COPC based on concentrations that exceeded the sediment PEC and/or PEL [BERA Section 6.3]; chemical was not identified as a COPC based on the FPM or LRM predicted toxicity LOE. These chemicals are not included in the total counts of COPCs with potentially unacceptable ecological risk unless they were identified as a COPC for another LOE (e.g., arsenic is identified as a COPC with potentially unacceptable risk for benthic invertebrates based on the tissue LOE and is, therefore, included in the total count of COPCs).

[d] Identified as a COPC based on concentrations that exceeded the TPH SQG (i.e., the chemical was not identified as a COPC for any other benthic sediment evaluation).

[e] Identified as a COPC based on concentrations that exceeded the TPH SQG; chemical was not included in the COPC counts if identified as a COPC based only on the TPH SQG exceedence.

AWQC - ambient water quality criteria
BEHP - bis(2-ethylhexyl) phthalate
COPC - chemical of potential concern
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethylene
DDT - dichlorodiphenyltrichloroethane
FPM - floating percentile model
HCH - hexachlorocyclohexane
HPAH - high-molecular-weight polycyclic aromatic hydrocarbon
HQ - hazard quotient
LOE - line of evidence
LPAH - low-molecular-weight polycyclic aromatic hydrocarbon
LRM - logistic regression model
PCB - polychlorinated biphenyl
PEC - probable effects concentration
PEL - probable effects level
SL - screening level
SQG - sediment quality guideline
TBT - tributyltin
TEQ - toxic equivalent
TPH - total petroleum hydrocarbons
TRV - toxicity reference value
TZW - transition zone water

Table 9.10-3. BERA LOEs for which No Potentially Unacceptable Ecological Risks Are Identified.

Assessment Endpoint	Measurement Endpoint	Line of Evidence
Survival, growth, reproduction of benthic invertebrates	Benthic invertebrate tissue data compared to tissue TRVs	Field-collected epibenthic macroinvertebrate tissue concentration (from Hester-Dendy samplers) relative to tissue TRVs
Survival, growth, reproduction of bivalves	Sediment toxicity testing to empirically assess adverse effects	*Corbicula fluminea* survival in 28-day bioaccumulation test
Survival, growth, reproduction of omnivorous fish	Concentrations in surface water compared with water TRVs	
Survival and growth of detritivorous fish	Concentrations in surface water compared with water TRVs	

Notes:

BERA - baseline ecological risk assessment
LOE - line of evidence
TRV - toxicity reference value

Table 9.11-1. Contaminants of Ecological Significance.

PCBs	Dioxins and furans
PAHs	DDT and its metabolites
Total chlordanes	Mercury
Lead	Cadmium
Copper	BEHP
Zinc	Dieldrin
Lindane (γ-HCH)	Cyanide
Tributyltin	Ethylbenzene
Perchlorate	$C_{10} - C_{12}$ TPH
Manganese	Vanadium

Notes:

BEHP – bis(2-ethylhexyl) phthalate
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl

Table 10.2-1. Upland Site Pathway Assessment Summary for PCBs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
Anderson Brothers	970	8	West			H-a, C-d	OF19			
Burgard Ind. Park - NW Pipe	138	4	East			H-b, C-b[b]	WR-123[e]			
Burgard Ind. Park - Schnitzer Steel, Calbag Metals	2355	4	East			H-a, C-b[b]				
Calbag Metals - Front Ave.	2454	8.5	West			H-a, C-a[b]	OF19			
Cascade General (Portland Shipyard/Vigor Industrial) - OU1	271	8.5	East			H-b, C-a[b,c]	OFS-1[e] OFS-6[e]			
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a[*]				
Columbia American Plating	29	9.5	West			H-a, C-a	OF18			
Consolidated Metco	3295	2.8	East			H-b, C-a	OF53A[g]			
Crawford Street Corp.	2363	6.5	East			H-b, C-c	OF50[e] OF52[e]		H-b, C-c	H-b, C-c
Evraz Oregon Steel Mills	141	2.4	East			H-a, C-c[b,c,d]	OF53A[h]			H-a, C-a

Table 10.2-1. Upland Site Pathway Assessment Summary for PCBs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Freightliner TMP	2366	8.5	East			H-b, C-c[b]	OFM-1			
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West			H-b, C-c[b]	OF19[e]			
GE Decommissioning	4003	9.5	West			H-a, C-a	OF17[g]			
Gunderson	1155	8.8	West			H-a, C-a	OF18[e]		H-a, C-a	H-b, C-a
Kittridge Distribution Center	2442	8.4	West			H-a, C-d	OF19			
Linnton Plywood (Columbia River Sand and Gravel)	2373, 2351	4.7	West			H-b, C-d[b,c]			H-b, C-d	
Mar Com - North Parcel	4797	5.6	East						H-b, C-d	
Mar Com - South Parcel	2350	5.6	East			H-b, C-d			H-b, C-d	
McCall Oil	134	7.9	West			H-b, C-c	OF22[e]			
Metro Central Transfer Station	1398	7.2	West			H-c, C-a	OF22B[g]			
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[c]	OF22B[g]			
Schnitzer Investment - Doane Lake (Aire Liquide)	395	7.3	West			H-a, C-a	OF22B[g]			
Swan Island Upland Facility - OU3	271	8.4	East			H-b, C-c	OFS-2[h]			

Table 10.2-1. Upland Site Pathway Assessment Summary for PCBs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Triangle Park (Riedel Env.)	277	7.4	East	H-c, C-a	N	H-b, C-a			H-b, C-a	H-b, C-a
Trumbull Asphalt Plant	1160	9.1	West			H-b, C-c	OF18			
UPRR Albina Yard	178	10 to 11	East			H-a, C-a	OF45[e] OF46[e] OF47[e]			
Willamette Cove	2066	6.8	East							H-b, C-c
RM 11-11.8										
Tucker Building	3036	11.3	East			H-b, C-d	OF43 OF44			
Westinghouse	4497	11.5	East			H-b, C-d	OF43			
PacifiCorp Albina Riverlots	5117	11.3 to 11.5	East			H-b, C-b	OF44[g]			
Other ECSI Sites within the Basins of Shared Conveyance Systems [f]										
ANRFS (aka AFB)	1820	9.5	West			H-b, C-d	OF18			
Ashland Chemical	1076	9.5	West			H-b, C-c	OF18			
Calbag-Nicolai	5059	10.3	West			H-b, C-a	OF16			
Carson Oil	1405	9.7	West			H-b, C-c	OF18			
Container Management	4784	9.5	West			H-b, C-c	OF18			

Table 10.2-1. Upland Site Pathway Assessment Summary for PCBs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Container Recovery	4015	9.3	West			H-b, C-c	OF18			
Front Avenue MP	4008	9.9	West			H-b, C-d	OF16			
GE - NW 28th	No ECSI#	10	West			H-b, C-b	OF17			
Greenway Recycling	4655	8.4	West			H-b, C-d	OF19			
PGE - Forest Park	2406	8.3	West			H-b, C-c	OF19			
SFI	5103	10	West			H-a, C-c	OF17			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] EOSM's permitted discharge from their wastewater plant was not a complete pathway.

[e] A portion of this site discharges stormwater to a shared conveyance system.

[f] Stormwater COIs at these ECSI sites were identified based on independent investigations.

[g] These sites have or had groundwater infiltration in the City storm sewer.

[h] A non-operational portion of the facility drains to a shared conveyance system.

* PCBs are not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway

b: likely a complete pathway

c: insufficient data to make determination

d: not a complete pathway

Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

Table 10.2-1. Upland Site Pathway Assessment Summary for PCBs.[a]

				Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
Site Name	**ECSI #**	**River Mile**	**River Bank**	**Pathway Status**	**NAPL**	**Stormwater Pathway Status**	**Shared Conveyance System**	**Overwater Pathway Status**	**Pathway Status**	**Pathway Status**

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
PCB - polychlorinated biphenyl
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
TSCA - Toxic Substances Control Act
USEPA - U.S. Environmental Protection Agency

Table 10.2-2. Upland Site Pathway Assessment Summary for Total PCDD/Fs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a*				
Gould Electronics/NL Industries	49	7.2	West			H-a, C-d	OF22B[c,e]			
McCormick & Baxter Creosoting	74	7	East	H-a, C-d	Y	H-a, C-d		H-a, C-d	H-a, C-d	H-a, C-d
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[b,d]	OF22B[e]			
Triangle Park (Riedel Env.)	277	7.4	East			H-b, C-a			H-b, C-a	H-b, C-a

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[c] A portion of this site discharges stormwater to a shared conveyance system.

[d] Stormwater discharges are related to groundwater infiltration into OF22B.

[e] These sites have or had groundwater infiltration in the City storm sewer.

* Total PCDD/Fs is not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway

b: likely a complete pathway

c: insufficient data to make determination

d: not a complete pathway

Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

Table 10.2-2. Upland Site Pathway Assessment Summary for Total PCDD/Fs.[a]

				Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
Site Name	**ECSI #**	**River Mile**	**River Bank**	**Pathway Status**	**NAPL**	**Stormwater Pathway Status**	**Shared Conveyance System**	**Overwater Pathway Status**	**Pathway Status**	**Pathway Status**

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
PCDD/F - dioxin/furan
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-3. Upland Site Pathway Assessment Summary for DDx.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
Arkema	398	7.3	West	H-a, C-a	Y	H-a, C-a[c]	OF22B[g]			H-a, C-a
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a*				
Metro Central Transfer Station	1398	7.2	West			H-c, C-a	OF22B[f]			
Rhone Poulenc (Starlink)	155	7.2	West	H-b, C-d	Y	H-a, C-d[c, e]	OF22B[f]			
Willbridge Bulk Fuel Facility	1549	7.5	West			H-b, C-b[b]	Saltzman Creek[d], OF22[d,f]			H-b, C-c

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] A portion of this site discharges stormwater to a shared conveyance system.

[e] Stormwater discharges are related to groundwater infiltration into OF22B.

[f] These sites have or had groundwater infiltration in the City storm sewer.

[g] A non-operational portion of the facility drains to a shared conveyance system.

* DDx is not a COI for all outfalls covered under ECSI #2425.

Table 10.2-3. Upland Site Pathway Assessment Summary for DDx.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway

b: likely a complete pathway

c: insufficient data to make determination

d: not a complete pathway

Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DDx - total of 2,4'- and 4,4'-DDD, DDE, and DDT
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-4. Upland Site Pathway Assessment Summary for PAHs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
Anderson Brothers	970	8	West			H-a, C-d	OF19			
ARCO	1528	4.9	West	H-a, C-b[g]	Y	H-b, C-c		H-a, C-a		
Burgard Ind. Park - NW Pipe	138	4	East			H-b, C-b[b]	WR-123[e]			
Cascade General (Portland Shipyard/Vigor Industrial) - OU1	271	8.5	East			H-b, C-a[b,c]	OFS-1[e] OFS-6[e]	H-a, C-a		
Chevron Asphalt Refinery	1281	8	West			H-a, C-d[b]	OF19[e] OF22[e,h]			
Christenson Oil	2426	8.8	West			H-a, C-c[b]	OF18			
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a[*]				
Columbia American Plating	29	9.5	West			H-a, C-a	OF18			
Consolidated Metco	3295	2.8	East			H-b, C-a[b]	OF53A[h]			
Crawford Street Corp.	2363	6.5	East			H-b,C-c	OF52[e] OF50[e]	H-b, C-d	H-b, C-c	H-b, C-c
Evraz Oregon Steel Mills	141	2.4	East			H-a, C-c[b,c,d]	OF53A[i]	H-a, C-d		

Table 10.2-4. Upland Site Pathway Assessment Summary for PAHs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
ExxonMobil Oil Terminal	137	5	West	H-a, C-b[g]	Y	H-b, C-c[b]		H-a, C-a		
Foss Maritime/Brix Marine	2364	5.7	West	H-b,C-d				H-a, C-a		
Fred Devine Diving and Salvage	2365	8.4	East			H-b, C-d	OFM-1			
Freightliner TMP	2366	8.5	East			H-b, C-c[b]	OFM-1			
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West			H-b, C-c[b]	OF19[e]			
Gasco (NW Natural, Koppers, Pacific Northern Oil)	84, 2348	6.5	West	H-a, C-a	Y	H-a, C-a[c]	OF22C[e]	H-a, C-b	H-a, C-b	H-a, C-a
GE Decommissioning	4003	9.5	West			H-a, C-a	OF17[h]			
Goldendale Aluminum	2440	10	East			H-b, C-d		H-a, C-b		
Gould Electronics/NL Industries	49	7.2	West			H-a, C-d	OF22B[e,h]			
GS Roofing	117	7.5	West			H-b, C-c[b]	Saltzman Creek			
Gunderson	1155	8.8	West	H-b, C-b	N		OF18[e]		H-a, C-a	H-b, C-a
Kinder Morgan Linnton Terminal (GATX)	1096	4.1	West	H-b, C-b[g]	Y					
Linnton Oil Fire Training Gds.	1189	3.5	West			H-a, C-d				
Linnton Plywood (Columbia River Sand and Gravel)	2373, 2351	4.7	West			H-b, C-d[b,c]			H-b, C-d	

Table 10.2-4. Upland Site Pathway Assessment Summary for PAHs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Mar Com - South Parcel	2350	5.6	East			H-b, C-d[b]		H-a, C-a	H-b, C-d	H-b, C-c
Marine Finance (Hendren Tow Boats)	2352	5.8	West			H-b, C-d		H-a, C-b	H-b, C-d	H-b, C-d
McCall Oil	134	7.9	West			H-b, C-c	OF22[e]	H-a, C-a		
McCormick & Baxter Creosoting	74	7	East	H-a, C-d	Y	H-a, C-d		H-a, C-d	H-a, C-d	H-a, C-d
McWhorter Inc.	135	8.8	West			H-a, C-c	OF18			
Owens Corning - Linnton	1036	3.8	West					H-b, C-d		
POP - Terminal 2	2769	10	West					H-a, C-a		
POP - Terminal 4, Slip 1	2356	~ 4.3	East			H-b, C-c		H-a, C-b		H-a, C-d
POP - Terminal 4, Slip 3	272	~ 4.7	East	H-a, C-d	Y	H-a, C-a		H-a, C-d		H-a, C-a
Premier Edible Oils	2013	3.6	East	H-c, C-a	Y	H-a, C-a			H-b, C-c	H-b, C-c
Siltronic	183, 84	6.6	West	H-a, C-a	Y	H-b, C-a[b,c]	OF22C[e,h]	H-b, C-d	H-b, C-d	H-b, C-c
Swan Island Upland Facility - OU3	271	8.4	East			H-b, C-c	OFS-2[i]			
Sulzer Bingham Pumps	1235	10.3	West			H-a, C-c	OF15[e]			H-b, C-c
Texaco/Equilon - Pipeline	2117	8.8	West				OF18	H-a, C-b		
Time Oil	170	3.5	East	H-a, C-d	Y	H-b, C-d[b]				
Triangle Park (Riedel Env.)	277	7.4	East	H-c, C-a	N	H-b, C-a		H-b, C-d	H-b, C-a	H-b, C-a

Table 10.2-4. Upland Site Pathway Assessment Summary for PAHs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Trumbull Asphalt Plant	1160	9.1	West			H-b, C-c	OF18			
UPRR Albina Yard	178	10 to 11	East			H-a, C-a	OF45[e] OF46[e] OF47[e]			
US Coast Guard - Marine Safety Station	1338	8	East			H-b, C-c		H-a, C-a		
Willamette Cove	2066	6.8	East							H-b, C-c
Willbridge Bulk Fuel Facility	1549	7.5	West	H-a, C-b[g]	Y	H-b, C-b	Saltzman Creek[e], OF22[e,h]	H-a, C-a		H-b, C-c
RM 11-11.8										
Tucker Building	3036	11.3	East			H-b, C-d	OF43 OF44			
Other ECSI Sites within the Basins of Shared Conveyance Systems[f]										
ANRFS (aka AFB)	1820	9.5	West			H-b, C-d	OF18			
Ashland Chemical	1076	9.5	West			H-b, C-c	OF18			
Calbag-Nicolai	5059	10.3	West			H-b, C-a	OF16			
Carson Oil	1405	9.7	West			H-b, C-c	OF18			
Container Management	4784	9.5	West			H-b, C-c	OF18			

Table 10.2-4. Upland Site Pathway Assessment Summary for PAHs.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Container Recovery	4015	9.3	West			H-b, C-c	OF18			
Front Avenue MP	4008	9.9	West			H-b, C-d	OF16			
Galvanizers	1196	9.4	West			H-b, C-b	OF17[h]			
SFI	5103	10	West			H-a, C-c	OF17			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through June 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] EOSM's permitted discharge from their wastewater plant was not a complete pathway.

[e] A portion of this site discharges stormwater to a shared conveyance system.

[f] Stormwater COIs at these ECSI sites were identified based on independent investigations.

[g] PAH concentrations in TZW at this site currently appear to be controlled by direct chemical partitioning from PAH-contaminated sediment to pore water, suggesting that the role of the groundwater pathway, if any, is minor (see Appendix C2).

[h] These sites have or had groundwater infiltration in the City storm sewer.

[i] A non-operational portion of the facility drains to a shared conveyance system.

* PAHs are not a COI for all outfalls covered under ECSI #2425.

Table 10.2-4. Upland Site Pathway Assessment Summary for PAHs.[a]

				Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
Site Name	**ECSI #**	**River Mile**	**River Bank**	**Pathway Status**	**NAPL**	**Stormwater Pathway Status**	**Shared Conveyance System**	**Overwater Pathway Status**	**Pathway Status**	**Pathway Status**

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway

b: likely a complete pathway

c: insufficient data to make determination

d: not a complete pathway

Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
PAH - polycyclic aromatic hydrocarbon
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
TZW - transition zone water
USEPA - U.S. Environmental Protection Agency

Table 10.2-5. Upland Site Pathway Assessment Summary for BEHP.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
Anderson Brothers	970	8	West			H-a, C-d	OF19			
Calbag Metals - Front Ave.	2454	8.5	West			H-a, C-a[b]	OF19			
Cascade General (Portland Shipyard/Vigor Industrial) - OU1	271	8.5	East			H-b, C-a[b,c]	OFS-1[d] OFS-6[d]	H-a, C-a		
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a[*]				
Columbia American Plating	29	9.5	West			H-a, C-a	OF18			
Consolidated Metco	3295	2.8	East			H-b, C-a	OF53A[f]			
Crawford Street Corp.	2363	6.5	East							H-b, C-c
Fred Devine Diving and Salvage	2365	8	East			H-b, C-d	OFM-1			
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West			H-b, C-c[b]	OF19[d]			
Gunderson	1155	8.8	West			H-a, C-a	OF18[d]			
Linnton Plywood (Columbia River Sand and Gravel)	2373, 2351	4.7	West			H-b, C-d[b,c]				

Table 10.2-5. Upland Site Pathway Assessment Summary for BEHP.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Mar Com - South Parcel	2350	5.6	East			H-b, C-d[b]		H-a, C-a	H-b, C-d	H-b, C-c
McCall Oil	134	7.9	West			H-b, C-c	OF22[d]			
McWhorter Inc.	135	8.8	West			H-a, C-c	OF18			
Metro Central Transfer Station	1398	7.2	West			H-c, C-a	OF22B[f]			
POP - Terminal 4, Slip 1	2356	~ 4.3	East			H-b, C-c				
POP - Terminal 4, Slip 3	272	~ 4.7	East			H-b, C-d				
Premier Edible Oils	2013	3.6	East	H-c, C-a	Y					
Siltronic	183, 84, 155	6.6	West			H-b, C-a	OF22C[d,f]			
Swan Island Upland Facility - OU3	271	8.4	East			H-b, C-c	OFS-2[g]			
Triangle Park (Riedel Env.)	277	7.4	East	H-c, C-a	N					
Trumbull Asphalt Plant	1160	9.1	West			H-b, C-c	OF18			
UPRR Albina Yard	178	10 to 11	East			H-a, C-a	OF45[d] OF46[d] OF47[d]			
Willbridge Bulk Fuel Facility	1549	7.5	West	H-a, C-b	Y	H-b, C-b[b]	Saltzman Creek[d], OF22[d,f]			

Table 10.2-5. Upland Site Pathway Assessment Summary for BEHP.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Other ECSI Sites within the Basins of Shared Conveyance Systems [e]										
ANRFS (aka AFB)	1820	9.5	West			H-b, C-d	OF18			
Ashland Chemical	1076	9.5	West			H-b, C-c	OF18			
Carson Oil	1405	9.7	West			H-b, C-c	OF18			
Container Management	4784	9.5	West			H-b, C-c	OF18			
Container Recovery	4015	9.3	West			H-b, C-c	OF18			
Calbag-Nicolai	5059	10.3	West			H-b, C-a	OF16			
Galvanizers	1196	9.4	West			H-b, C-b	OF17[f]			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] A portion of this site discharges stormwater to a shared conveyance system.

[e] Stormwater COIs at these ECSI sites were identified based on independent investigations.

[f] These sites have groundwater infiltration in the City storm sewer.

[g] A non-operational portion of the facility drains to a shared conveyance system.

* BEHP is not a COI for all outfalls covered under ECSI #2425.

Table 10.2-5. Upland Site Pathway Assessment Summary for BEHP.[a]

				Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
Site Name	**ECSI #**	**River Mile**	**River Bank**	**Pathway Status**	**NAPL**	**Stormwater Pathway Status**	**Shared Conveyance System**	**Overwater Pathway Status**	**Pathway Status**	**Pathway Status**

Pathway - the potential for impacting in-water media rated as follows:
- a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway
- b: likely a complete pathway
- c: insufficient data to make determination
- d: not a complete pathway
- Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).
- N/A: pathway does not exist at site

BEHP - bis(2-ethylhexyl)phthalate
COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-6. Upland Site Pathway Assessment Summary for Total Chlordanes.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a*				
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[b,c]	OF22B[d]			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[c] Stormwater discharges are related to groundwater infiltration into OF22B.

[d] These sites have or had groundwater infiltration in the City storm sewer.

* Total chlordanes are not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway
b: likely a complete pathway
c: insufficient data to make determination
d: not a complete pathway
Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-7. Upland Site Pathway Assessment Summary for Aldrin.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a*				
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[b,c]	OF22B[d]			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[c] Stormwater discharges are related to groundwater infiltration into OF22B.

[d] These sites have or had groundwater infiltration in the City storm sewer.

* Aldrin is not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway
b: likely a complete pathway
c: insufficient data to make determination
d: not a complete pathway
Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-8. Upland Site Pathway Assessment Summary for Dieldrin.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a*				
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[b,c]	OF22B[d]			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[c] Stormwater discharges are related to groundwater infiltration into OF22B.

[d] These sites have or had groundwater infiltration in the City storm sewer.

* Dieldrin is not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway

b: likely a complete pathway

c: insufficient data to make determination

d: not a complete pathway

Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-9. Upland Site Pathway Assessment Summary for Arsenic.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
ACF Industries	794	3.7	West			H-b, C-d				
ARCO	1528	4.9	West	H-b[g], C-b[g]	Y	H-b, C-c				
Burgard Ind. Park - Schnitzer Steel, Calbag Metals	2355	4	East	H-a, C-c	N	H-a, C-b[b]	WR-121[e]			
Chevron Asphalt Refinery	1281	8	West			H-a, C-d[b]	OF19[e] OF22[e,i]			
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a[*]				
Columbia American Plating	29	9.5	West			H-a, C-a	OF18			
Crawford Street Corp.	2363	6.5	East			H-b, C-c	OF52[e] OF50[e]		H-b, C-c	H-b, C-c
Evraz Oregon Steel Mills	141	2.4	East			H-a, C-c[b,c,d]	OF53A[j]			H-a, C-a
ExxonMobil Oil Terminal	137	5	West	H-b[g], C-b[g]	Y					
Fred Devine Diving and Salvage	2365	8.4	East			H-b, C-d	OFM-1			
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West			H-b, C-c[b]	OF19[e]			
Gasco (NW Natural, Koppers, Pacific Northern Oil)	84, 2348	6.5	West	H-b[g], C-b[g]	Y	H-a, C-a[c]	OF22C[e]		H-a, C-b	H-a, C-a

Table 10.2-9. Upland Site Pathway Assessment Summary for Arsenic.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
GE Decommissioning	4003	9.5	West			H-a, C-b	OF17[i]			
Gould Electronics/NL Industries	49	7.2	West			H-a, C-d	OF22B[e,i]			
GS Roofing	117	7.5	West			H-b, C-c[b]	Saltzman Creek			
Gunderson	1155	8.8	West	H-b[g], C-b[g]	N	H-a, C-a	OF18[e]		H-a, C-a	H-b, C-a
Mar Com - North Parcel	4797	5.6	East						H-b, C-d	
Mar Com - South Parcel	2350	5.6	East			H-b, C-d[b]			H-b, C-d	H-b, C-c
Marine Finance (Hendren Tow Boats)	2352	5.8	West			H-b, C-d			H-b, C-d	H-b, C-d
McCall Oil	134	7.9	West			H-b, C-c	OF22[e]			
McCormick & Baxter Creosoting	74	7	East	H-a, C-d	Y	H-a, C-d		H-a, C-d	H-a, C-d	H-a, C-d
Metro Central Transfer Station	1398	7.2	West			H-c, C-a	OF22B[i]			
POP - Terminal 4, Slip 1	2356	~ 4.3	East							H-a, C-d
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[c,h]	OF22B[i]			
Schnitzer Investment - Doane Lake (Aire Liquide)	395	7.3	West			H-a, C-a	OF22B[i]			
Siltronic	183, 84	6.6	West	H-b[g], C-b[g]	Y	H-b, C-a[b,c]	OF22C[e,i]		H-b, C-d	H-b, C-c

Table 10.2-9. Upland Site Pathway Assessment Summary for Arsenic.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Sulzer Bingham Pumps	1235	10.3	West			H-a, C-c	OF15[e]			H-b, C-c
Triangle Park (Riedel Env.)	277	7.4	East			H-b, C-a			H-b, C-a	H-b, C-a
Trumbull Asphalt Plant	1160	9.1	West			H-b, C-c	OF18			
UPRR Albina Yard	178	10 to 11	East			H-a, C-a	OF45[e] OF46[e] OF47[e]			
Willamette Cove	2066	6.8	East							H-b, C-c
Willbridge Bulk Fuel Facility	1549	7.5	West			H-b, C-b[b]	Saltzman Creek[e], OF22[e,i]			H-b, C-c
Other ECSI Sites within the Basins of Shared Conveyance Systems [f]										
ANRFS (aka AFB)	1820	9.5	West			H-b, C-d	OF18			
Ashland Chemical	1076	9.5	West			H-b, C-c	OF18			
Calbag-Nicolai	5059	10.3	West			H-b, C-a	OF16			
Carson Oil	1405	9.7	West			H-b, C-c	OF18			
Container Management	4784	9.5	West			H-b, C-c	OF18			

Table 10.2-9. Upland Site Pathway Assessment Summary for Arsenic.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Container Recovery	4015	9.3	West			H-b, C-c	OF18			
Front Avenue MP	4008	9.9	West			H-b, C-d	OF16			
Galvanizers	1196	9.4	West			H-b,C-b	OF17[i]			
SFI	5103	10	West			H-a, C-c	OF17			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] EOSM's permitted discharge from their wastewater plant was not a complete pathway.

[e] A portion of this site discharges stormwater to a shared conveyance system.

[f] Stormwater COIs at these ECSI sites were identified based on independent investigations.

[g] Arsenic concentrations in TZW do not show systematic differences between groundwater discharge and non-discharge zones and are likely regulated by geochemical conditions in the TZW environment (see Appendix C2).

[h] Stormwater discharges are related to groundwater infiltration into OF22B.

[i] These sites have or had groundwater infiltration in the City storm sewer.

[j] A non-operational portion of the facility drains to a shared conveyance system.

* Arsenic is not a COI for all outfalls covered under ECSI #2425.

Table 10.2-9. Upland Site Pathway Assessment Summary for Arsenic.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway

b: likely a complete pathway

c: insufficient data to make determination

d: not a complete pathway

Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
TZW - transition zone water
USEPA - U.S. Environmental Protection Agency

Table 10.2-10. Upland Site Pathway Assessment Summary for Copper.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
ACF Industries	794	3.7	West			H-b, C-d				
Anderson Brothers	970	8	West			H-a, C-d	OF19			
ARCO	1528	4.9	West	H-b, C-b	Y	H-b, C-c				
Burgard Ind. Park - Schnitzer Steel, Calbag Metals	2355	4	East	H-a, C-c	N	H-a, C-b[b]	WR-121[e]	H-a, C-a		
Calbag Metals - Front Ave.	2454	8.5	West			H-a, C-a[b]	OF19			
Cascade General (Portland Shipyard/Vigor Industrial) - OU1	271	8.5	East			H-b, C-a[b,c]	OFS-1[e] OFS-6[e]	H-a, C-a		
Chevron Asphalt Refinery	1281	8	West			H-a, C-d[b]	OF19[e] OF22[e,g]			
Christenson Oil	2426	8.8	West			H-a, C-c[b]	OF18			
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a*				
Columbia American Plating	29	9.5	West			H-a, C-a	OF18			
Consolidated Metco	3295	2.8	East			H-b, C-a	OF53A[g]			

Table 10.2-10. Upland Site Pathway Assessment Summary for Copper.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Crawford Street Corp.	2363	6.5	East			H-b, C-c	OF52[e] OF50[e]	H-b, C-d	H-b, C-c	H-b, C-c
Evraz Oregon Steel Mills	141	2.4	East			H-a, C-c[b,c,d]	OF53A[h]			H-a, C-a
ExxonMobil Oil Terminal	137	5	West	H-b, C-b	Y					
Fred Devine Diving and Salvage	2365	8.4	East			H-b, C-d	OFM-1			
Freightliner TMP	2366	8.5	East			H-b, C-c[b]	OFM-1			
Freightliner TMP2 (Parts Plant)	115	9.3	East			H-b, C-c[b]	OFM-3			
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West			H-b, C-c	OF19[e]			
Gasco (NW Natural, Koppers, Pacific Northern Oil)	84, 2348	6.5	West	H-b, C-b	Y	H-a, C-a[c]	OF22C[e]		H-a, C-b	H-a, C-a
GE Decommissioning	4003	9.5	West			H-a, C-a	OF17[g]			
Gould Electronics/NL Industries	49	7.2	West			H-a, C-d	OF22B[e,g]			
GS Roofing	117	7.5	West			H-b, C-c[b]	Saltzman Creek			
Gunderson	1155	8.8	West	H-b, C-b	N	H-a, C-a	OF18[e]	H-a, C-b	H-a, C-a	H-b, C-a
Linnton Plywood (Columbia River Sand and Gravel)	2373, 2351	4.7	West			H-b, C-d[b,c]			H-b, C-d	

Table 10.2-10. Upland Site Pathway Assessment Summary for Copper.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Mar Com - North Parcel	4797	5.6	East						H-b, C-d	
Mar Com - South Parcel	2350	5.6	East			H-b, C-d[b]			H-b, C-d	
Marine Finance (Hendren Tow Boats)	2352	5.8	West			H-b, C-d			H-b, C-d	
McCall Oil	134	7.9	West			H-b, C-c	OF22[e]			
McCormick & Baxter Creosoting	74	7	East	H-a, C-d	Y	H-a, C-d		H-a, C-d	H-a, C-d	H-a, C-d
Metro Central Transfer Station	1398	7.2	West			H-c, C-a	OF22B[g]			
POP - Terminal 4, Slip 1	2356	~ 4.3	East			H-b, C-c				H-a, C-d
Siltronic	183, 84	6.6	West			H-b, C-a[b,c]	OF22C[e,g]			H-b, C-c
Sulzer Bingham Pumps	1235	10.3	West			H-a, C-c	OF15[e]			H-b, C-c
Swan Island Upland Facility - OU3	271	8.4	East			H-b, C-c	OFS-2[h]			
Triangle Park (Riedel Env.)	277	7.4	East			H-b, C-a			H-b, C-a	H-b, C-a
Trumbull Asphalt Plant	1160	9.1	West			H-b, C-c	OF18			
UPRR Albina Yard	178	10 to 11	East			H-a, C-a	OF45[e] OF46[e] OF47[e]			
Willamette Cove	2066	6.8	East							H-b, C-c

Table 10.2-10. Upland Site Pathway Assessment Summary for Copper.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Willbridge Bulk Fuel Facility	1549	7.5	West			H-b, C-b[b]	Saltzman Creek[e], OF22[e,g]			H-b, C-c
Other ECSI Sites within the Basins of Shared Conveyance Systems [f]										
ANRFS (aka AFB)	1820	9.5	West			H-b, C-d	OF18			
Ashland Chemical	1076	9.5	West			H-b, C-c	OF18			
Calbag-Nicolai	5059	10.3	West			H-b, C-a	OF16			
Carson Oil	1405	9.7	West			H-b, C-c	OF18			
Container Management	4784	9.5	West			H-b, C-c	OF18			
Container Recovery	4015	9.3	West			H-b, C-c	OF18			
Galvanizers	1196	9.6	West			H-b, C-b	OF17[g]			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] EOSM's permitted discharge from their wastewater plant was not a complete pathway.

[e] A portion of this site discharges stormwater to a shared conveyance system.

[f] Stormwater COIs at these ECSI sites were identified based on independent investigations.

Table 10.2-10. Upland Site Pathway Assessment Summary for Copper.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status

[g] These sites have or had groundwater infiltration in the City storm sewer.

[h] A non-operational portion of the facility drains to a shared conveyance system.

* Copper is not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway
b: likely a complete pathway
c: insufficient data to make determination
d: not a complete pathway
Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
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N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-11. Upland Site Pathway Assessment Summary for Zinc.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
ACF Industries	794	3.7	West			H-b, C-d				
Anderson Brothers	970	8	West			H-a, C-d	OF19			
Burgard Ind. Park - Schnitzer Steel, Calbag Metals	2355	4	East			H-a, C-b[b]	WR-121[e]	H-a, C-a		
Calbag Metals - Front Ave.	2454	8.5	West			H-a, C-a[b]	OF19			
Cascade General (Portland Shipyard/Vigor Industrial) - OU1	271	8.5	East			H-b, C-a[b,c]	OFS-1[e] OFS-6[e]	H-a, C-a		
Chevron Asphalt Refinery	1281	8	West			H-a, C-d[b]	OF19[e] OF22[e,g]			
Christenson Oil	2426	8.8	West			H-a, C-c[b]	OF18			
City of Portland Outfalls	2425	Outfalls from RM 2.7 to 9.8	East/West			H-a, C-a*				
Columbia American Plating	29	9.5	West			H-a, C-a	OF18			
Consolidated Metco	3295	2.8	East			H-b, C-a	OF53A[g]			
Crawford Street Corp.	2363	6.5	East			H-b, C-c	OF52[e] OF50[e]	H-b, C-d	H-b, C-c	H-b, C-c
Evraz Oregon Steel Mills	141	2.4	East			H-a, C-c[b,c,d]	OF53A[h]			

Table 10.2-11. Upland Site Pathway Assessment Summary for Zinc.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
ExxonMobil Oil Terminal	137	5	West	H-b, C-b	Y	H-b, C-c[b]				
Fred Devine Diving and Salvage	2365	8.4	East			H-b, C-d	OFM-1			
Freightliner TMP	2366	8.5	East			H-b, C-c[b]	OFM-1			
Freightliner TMP2 (Parts Plant)	115	9.3	East			H-b, C-c[b]	OFM-3			
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West			H-b, C-c	OF19[e]			
Gasco (NW Natural, Koppers, Pacific Northern Oil)	84, 2348	6.5	West	H-a, C-a	Y	H-a, C-a[c]	OF22C[e]		H-a, C-b	H-a, C-a
GE Decommissioning	4003	9.5	West			H-a, C-a	OF17[g]			
Gould Electronics/NL Industries	49	7.2	West			H-a, C-d	OF22B[e,g]			
GS Roofing	117	7.5	West			H-b, C-c[b]	Saltzman Creek			
Gunderson	1155	8.8	West	H-a, C-a	N	H-a, C-a	OF18[e]	H-a, C-b	H-a, C-a	H-b, C-a
Kittridge Distribution Center	2442	8.4	West			H-a, C-d	OF19			
Linnton Plywood (Columbia River Sand and Gravel)	2373, 2351	4.7	West			H-b, C-d[b,c]			H-b, C-d	
Mar Com - North Parcel	4797	5.6	East						H-b, C-d	
Mar Com - South Parcel	2350	5.6	East			H-b, C-d[b]			H-b, C-d	H-b, C-c

Table 10.2-11. Upland Site Pathway Assessment Summary for Zinc.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Marine Finance (Hendren Tow Boats)	2352	5.8	West			H-b, C-d			H-b, C-d	H-b, C-d
McCall Oil	134	7.4	West			H-b, C-c	OF22[e]			
McCormick & Baxter Creosoting	74	7	East	H-a, C-d	Y	H-a, C-d		H-a, C-d	H-a, C-d	H-a, C-d
Metro Central Transfer Station	1398	7.2	West			H-c, C-a	OF22B[g]			
POP - Terminal 4, Slip 1	2356	~ 4.3	East			H-b, C-c				H-a, C-d
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[c]	OF22B[g]			
Siltronic	183, 84	6.6	West			H-b, C-a[b,c]	OF22C[e,g]			H-b, C-c
Sulzer Bingham Pumps	1235	10.3	West			H-a, C-c	OF15[e]			H-b, C-c
Swan Island Upland Facility - OU3	271	8.4	East			H-b, C-c	OFS-2[h]			
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Trumbull Asphalt Plant	1160	9.1	West			H-b, C-c	OF18			
UPRR Albina Yard	178	10 to 11	East			H-a, C-a	OF45[e] OF46[e] OF47[e]			
Willamette Cove	2066	6.8	East							H-b, C-c

Table 10.2-11. Upland Site Pathway Assessment Summary for Zinc.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Willbridge Bulk Fuel Facility	1549	7.5	West			H-b, C-b[b]	Saltzman Creek[e], OF22[e,g]			H-b, C-c
Other ECSI Sites within the Basins of Shared Conveyance Systems [f]										
ANRFS (aka AFB)	1820	9.5	West			H-b, C-d	OF18			
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Carson Oil	1405	9.7	West			H-b, C-c	OF18			
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Galvanizers	1196	9.6	West			H-b, C-b	OF17[g]			

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This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

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[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] EOSM's permitted discharge from their wastewater plant was not a complete pathway.

[e] A portion of this site discharges stormwater to a shared conveyance system.

Table 10.2-11. Upland Site Pathway Assessment Summary for Zinc.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status

[f] Stormwater COIs at these ECSI sites were identified based on independent investigations.

[g] These sites have or had groundwater infiltration in the City storm sewer.

[h] A non-operational portion of the facility drains to a shared conveyance system.

* Zinc is not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway
b: likely a complete pathway
c: insufficient data to make determination
d: not a complete pathway
Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-12. Upland Site Pathway Assessment Summary for Chromium.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Study Area										
ACF Industries	794	3.7	West			H-b, C-d				
Anderson Brothers	970	8	West			H-a, C-d	OF19			
ARCO	1528	4.9	West	H-b, C-b	Y	H-b, C-c				
Arkema	398	7.3	West	H-a, C-a	Y					
Burgard Ind. Park - Schnitzer Steel, Calbag Metals	2355	4	East	H-a, C-c	N	H-a, C-b[b]	WR-121[e]	H-a, C-a		
Calbag Metals - Front Ave.	2454	8.5	West			H-a, C-a[b]	OF19			
Cascade General (Portland Shipyard/Vigor Industrial) - OU1	271	8.5	East			H-b, C-a[b,c]	OFS-1[e] OFS-6[e]	H-a, C-a		
Chevron Asphalt Refinery	1281	8	West			H-a, C-d[b]	OF19[e] OF22[e,g]			
City of Portland Outfalls	2425	Outfalls from RM 2.75 to 9.8	East/West			H-a, C-a[*]				
Columbia American Plating	29	9.5	West			H-a, C-a	OF18			
Crawford Street Corp.	2363	6.5	East			H-b, C-c	OF52[e] OF50[e]	H-b, C-d	H-b, C-c	H-b, C-c
Evraz Oregon Steel Mills	141	2.4	East			H-a, C-c[b,c,d]	OF53A[h]			H-a, C-a

Table 10.2-12. Upland Site Pathway Assessment Summary for Chromium.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Freightliner TMP	2366	8.5	East			H-b, C-c[b]	OFM-1			
Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)	1239	8.3	West			H-b, C-c[b]	OF19[e]			
Gasco (NW Natural, Koppers, Pacific Northern Oil)	84, 2348	6.5	West	H-a, C-a	Y	H-a, C-a[c]	OF22C[e]		H-a, C-b	H-a, C-a
GE Decommissioning	4003	9.5	West			H-a, C-a	OF17[g]			
Gould Electronics/NL Industries	49	7.2	West			H-a, C-c	OF22B[e,g]			
Gunderson	1155	8.8	West	H-b, C-b	N	H-a, C-a	OF18[e]		H-a, C-a	H-b, C-a
Kinder Morgan Linnton Terminal (GATX)	1096	4.1	West	H-a, C-a	Y					
Linnton Plywood (Columbia River Sand and Gravel)	2373, 2351	4.7	West			H-b, C-d[b,c]			H-b, C-d	
Mar Com - North Parcel	4797	5.6	East						H-b, C-d	
Mar Com - South Parcel	2350	5.6	East			H-b, C-d[b]			H-b, C-d	H-b, C-c
Marine Finance (Hendren Tow Boats)	2352	5.8	West			H-b, C-d		H-a, C-b	H-b, C-d	
McCall Oil	134	7.9	West			H-b, C-c	OF22[e]			
McCormick & Baxter Creosoting	74	7	East	H-a, C-d	Y	H-a, C-d		H-a, C-d	H-a, C-d	H-a, C-d

Table 10.2-12. Upland Site Pathway Assessment Summary for Chromium.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Metro Central Transfer Station	1398	7.2	West			H-c, C-a	OF22B[g]			
POP - Terminal 4, Slip 1	2356	~ 4.3	East							H-a, C-d
Rhone Poulenc (Starlink)	155	7.2	West			H-a, C-d[c]	OF22B[g]			
Schnitzer Investment - Doane Lake (Aire Liquide)	395	7.3	West			H-a, C-a	OF22B[g]			
Sulzer Bingham Pumps	1235	10.3	West			H-a, C-c	OF15[e]			H-b, C-c
Swan Island Upland Facility - OU3	271	8.4	East			H-b, C-c	OFS-2[h]			
Triangle Park (Riedel Env.)	277	7.4	East			H-b, C-a			H-b, C-a	
Trumbull Asphalt Plant	1160	9.1	West			H-b, C-c	OF18			
UPRR Albina Yard	178	10 to 11	East			H-a, C-a	OF45[e] OF46[e] OF47[e]			
Willamette Cove	2066	6.8	East							H-b, C-c
Willbridge Bulk Fuel Facility	1549	7.5	West			H-b, C-b[b]	Saltzman Creek[e], OF22[e,g]			H-b, C-c

Table 10.2-12. Upland Site Pathway Assessment Summary for Chromium.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Other ECSI Sites within the Basins of Shared Conveyance Systems [f]										
ANRFS (aka AFB)	1820	9.5	West			H-b, C-d	OF18			
Ashland Chemical	1076	9.5	West			H-b, C-c	OF18			
Carson Oil	1405	9.7	West			H-b, C-c	OF18			
Container Management	4784	9.5	West			H-b, C-c	OF18			
Container Recovery	4015	9.3	West			H-b, C-c	OF18			
Calbag-Nicolai	5059	10.3	West			H-b, C-a	OF16			
Galvanizers	1196	9.6	West			H-b,C-b	OF17[g]			
SFI	5103	10	West			H-a, C-c	OF17			

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] EOSM's permitted discharge from their wastewater plant was not a complete pathway.

[e] A portion of this site discharges stormwater to a shared conveyance system.

Table 10.2-12. Upland Site Pathway Assessment Summary for Chromium.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status

[f] Stormwater COIs at these ECSI sites were identified based on independent investigations.

[g] These sites have or had groundwater infiltration in the City storm sewer.

[h] A non-operational portion of the facility drains to a shared conveyance system.

* Chromium is not a COI for all outfalls covered under ECSI #2425.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway
b: likely a complete pathway
c: insufficient data to make determination
d: not a complete pathway
Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-13. Upland Site Pathway Assessment Summary for Tributyltin Ion.[a]

Site Name	ECSI #	River Mile	River Bank	Pathway Summary						
				Groundwater		Direct Discharge			Overland Transport	Riverbank Erosion
				Pathway Status	NAPL	Stormwater Pathway Status	Shared Conveyance System	Overwater Pathway Status	Pathway Status	Pathway Status
Cascade General (Portland Shipyard/Vigor Industrial) - OU1	271	8.5	East			H-b, C-a[b,c]	OFS-1[d] OFS-6[d]	H-a, C-a		
Gunderson	1155	8.8	West			H-a, C-a	OF18[d]			
Mar Com - South Parcel	2350	5.6	East			H-b, C-d[b]		H-a, C-d	H-b, C-d	H-b, C-c
Marine Finance (Hendren Tow Boats)	2352	5.8	West			H-b, C-d			H-b, C-d	H-b, C-d

Notes:

This table does not represent a complete inventory of sites and operations that contribute or have contributed to contamination in Portland Harbor, particularly operations at historical facilities. However, the understanding of current sources is adequate for the purposes of the RI/FS.

[a] The information contained in this table is based on information obtained by LWG from DEQ files as of July 2006 and correspondence with USEPA reflecting conditions as of September 2008, USEPA comments on the Draft RI in July 2010, and information provided in the September 2010 DEQ Milestone Report. Some modifications have been made at sites with information provided by LWG through July 2011. Information on sites upriver of RM 11 is limited to LWG review of ECSI.

[b] Sites for which SWPCP plans are on file with LWG, obtained from DEQ files in 2005.

[c] This site has an active individual NPDES permit with a direct discharge to the river. See Table 4.4-5 for additional information.

[d] A portion of this site discharges stormwater to a shared conveyance system.

Pathway - the potential for impacting in-water media rated as follows:

a: the pathway is known to be a contaminant migration pathway - the pathway discharges to the river and there are COIs associated with the pathway
b: likely a complete pathway
c: insufficient data to make determination
d: not a complete pathway
Historical/Current: Available information indicates if the predominant impact to in-water media is historical (H) or current (C).

COI - contaminant of interest
DEQ - Oregon Department of Environmental Quality
ECSI # - DEQ Environmental Cleanup Site Inventory number
LWG - Lower Willamette Group
N/A - not applicable, pathway is not present at site (e.g., riverbank at an inland site)
NAPL - nonaqueous-phase liquid; available information indicates the presence of historical or current NAPL (Y/N)
NPDES - National Pollutant Discharge Elimination System
RI/FS - remedial investigation/feasibility study
RM - river mile
SWPCP - stormwater pollution control plan
USEPA - U.S. Environmental Protection Agency

Table 10.2-14a. Summary Statistics for Bulk Solids and OC-Normalized Sediment, Sediment Trap, and Particulate Surface Water Concentrations.

Analyte	Solids Type	Units	N	Mean	Median	Minimum	Maximum	Standard Deviation
OC-Normalized Concentrations								
Total PCBs	Sediment Trap	mg/kg	65	12.9	0.871	0.00680	531	69.2
	Surface Sediment	mg/kg	968	18.6	1.15	0.0213	2910	138.00
	Surface Water Particles	mg/kg	81	0.664	0.390	0.0244	11.8	1.35
Total PCDD/Fs	Sediment Trap	mg/kg	55	0.0170	0.00752	0.000192	0.295	0.0404
	Surface Sediment	mg/kg	211	0.187	0.0316	0.000349	16.5	1.17
	Surface Water Particles	mg/kg	47	0.0946	0.0760	0.0107	0.349	0.0711
DDx	Sediment Trap	mg/kg	64	0.432	0.215	0.0154	7.18	0.913
	Surface Sediment	mg/kg	1034	9.65	0.425	0.00524	2290	88.6
	Surface Water Particles	mg/kg	53	0.746	0.202	0.0100	7.80	1.35
Total PAHs	Sediment Trap	mg/kg	64	98.7	22.3	1.88	2200	317
	Surface Sediment	mg/kg	1162	1190	69.2	0.465	192000	7550
	Surface Water Particles	mg/kg	48	27.5	18.5	0.480	255	43.1
Bis(2-ethylhexyl)phthalate	Sediment Trap	mg/kg	62	9.56	6.39	1.62	49.4	9.25
	Surface Sediment	mg/kg	1121	43.6	5.08	0.0470	22700	683
	Surface Water Particles	mg/kg	13	11.7	10.7	5.85	19.8	4.76
Total Chlordanes	Sediment Trap	mg/kg	57	0.288	0.0257	0.00279	11.0	1.48
	Surface Sediment	mg/kg	1029	0.438	0.0429	0.000446	87.5	3.35
	Surface Water Particles	mg/kg	48	0.0412	0.0201	0.000337	0.434	0.0711
Aldrin	Sediment Trap	mg/kg	58	0.0108	0.00677	0.00110	0.0567	0.0114
	Surface Sediment	mg/kg	980	0.114	0.00989	0.000224	27.4	0.955
	Surface Water Particles	mg/kg	53	0.00348	0.00255	0.000357	0.0175	0.00347
Dieldrin	Sediment Trap	mg/kg	57	0.0219	0.0137	0.000872	0.244	0.0404
	Surface Sediment	mg/kg	1024	0.0758	0.0105	0.000596	8.44	0.453
	Surface Water Particles	mg/kg	53	0.0267	0.00760	0.000320	0.258	0.0505
Bulk Solids Concentrations								
Total PCBs	Sediment Trap	mg/kg	69	0.281	0.0225	0.000925	11.1	1.45
	Surface Sediment	mg/kg	1137	0.185	0.0195	0.00065	35.4	1.26
	Surface Water Particles	mg/kg	107	0.0334	0.0142	0.000564	0.740	0.0752
Total PCDD/Fs	Sediment Trap	mg/kg	56	0.000415	0.000212	0.00000516	0.00610	0.000844
	Surface Sediment	mg/kg	216	0.00248	0.000391	0.00000248	0.264	0.0181
	Surface Water Particles	mg/kg	70	0.00418	0.00264	0.000246	0.0273	0.00478

Table 10.2-14a. Summary Statistics for Bulk Solids and OC-Normalized Sediment, Sediment Trap, and Particulate Surface Water Concentrations.

Analyte	Solids Type	Units	N	Mean	Median	Minimum	Maximum	Standard Deviation
DDx	Sediment Trap	mg/kg	67	0.0109	0.00600	0.000355	0.150	0.0192
	Surface Sediment	mg/kg	1162	0.259	0.00651	0.0000270	84.9	2.90
	Surface Water Particles	mg/kg	79	0.0246	0.0121	0.00100	0.446	0.0608
Total PAHs	Sediment Trap	mg/kg	66	2.71	0.494	0.0770	58.1	8.63
	Surface Sediment	mg/kg	1549	26.6	1.10	0.00330	7260	230
	Surface Water Particles	mg/kg	71	1.31	0.524	0.0111	12.4	1.85
Bis(2-ethylhexyl)phthalate	Sediment Trap	mg/kg	65	0.270	0.180	0.0350	1.70	0.302
	Surface Sediment	mg/kg	1135	0.798	0.0820	0.00100	440	13.2
	Surface Water Particles	mg/kg	13	0.559	0.486	0.190	1.48	0.337
Total Chlordanes	Sediment Trap	mg/kg	59	0.00629	0.000650	0.000150	0.230	0.0308
	Surface Sediment	mg/kg	1136	0.00477	0.000850	0.0000176	0.669	0.0319
	Surface Water Particles	mg/kg	72	0.00134	0.00121	0.0000126	0.00545	0.000894
Aldrin	Sediment Trap	mg/kg	59	0.000263	0.000205	0.0000325	0.00110	0.000228
	Surface Sediment	mg/kg	986	0.00159	0.000135	0.00000333	0.691	0.0226
	Surface Water Particles	mg/kg	79	0.000188	0.0000738	0.0000134	0.00278	0.000383
Dieldrin	Sediment Trap	mg/kg	59	0.000557	0.000340	0.0000225	0.00650	0.00109
	Surface Sediment	mg/kg	1030	0.00105	0.000165	0.00000834	0.356	0.0121
	Surface Water Particles	mg/kg	79	0.000586	0.000480	0.0000120	0.00208	0.000425
Arsenic	Sediment Trap	mg/kg	66	4.43	4.40	1.48	9.09	1.28
	Surface Sediment	mg/kg	1182	4.98	3.68	0.700	132	7.40
	Surface Water Particles	mg/kg	146	15.9	7.35	1.25	131	23.0
Chromium	Sediment Trap	mg/kg	66	32.1	32.0	10.8	59.5	8.30
	Surface Sediment	mg/kg	1179	36.1	29.0	4.07	819	52.8
	Surface Water Particles	mg/kg	143	30.4	27.5	3.24	82.9	16.9
Copper	Sediment Trap	mg/kg	66	44.2	43.3	15.2	93.6	12.1
	Surface Sediment	mg/kg	1195	62.3	37.8	6.19	2830	128
	Surface Water Particles	mg/kg	145	67.4	62.2	8.75	185	29.9
Zinc	Sediment Trap	mg/kg	66	132	115	63.4	332	56.4
	Surface Sediment	mg/kg	1199	151	107	9.70	4220	197
	Surface Water Particles	mg/kg	132	190	162	8.24	923	131

Table 10.2-14a. Summary Statistics for Bulk Solids and OC-Normalized Sediment, Sediment Trap, and Particulate Surface Water Concentrations.

Analyte	Solids Type	Units	N	Mean	Median	Minimum	Maximum	Standard Deviation
Tributyltin Ion	Sediment Trap	mg/kg	56	0.00627	0.00245	0.0000600	0.0810	0.0149
	Surface Sediment	mg/kg	227	0.343	0.0170	0.0000395	46.0	3.12
	Surface Water Particles	mg/kg	147	0.1203	0.0500	0.00500	2.20	0.234

Notes:

All statistical analyses performed using software package Statistica version 7.1.

Table 10.2-14b. Study Area-Wide Statistical Comparison of OC-Normalized Sediment, Sediment Trap, and Particulate Surface Water Concentrations.

			Mann-Whitney U Statistics					
			Rank Sum					
Analyte	**Group 1**	**Group 2**	**Group 1**	**Group 2**	**U**	**Z**	**p-level**	**Interpretation**
Total PCBs (OC-Normalized)	Surface Sediment	Surface Water Particles	531370	19356	16035	8.85	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	4798	5933	1477	-4.55	**0.000005**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	507180	26882	24737	2.89	**0.0039**	**Reject H0 (concentrations are not equivalent)**
Total PCDD/Fs (OC-Normalized)	Surface Sediment	Surface Water Particles	25440	7971	3074	-4.07	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	3593	1660	120	7.87	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	31410	4101	2561	6.38	**0.00**	**Reject H0 (concentrations are not equivalent)**
DDx (OC-Normalized)	Surface Sediment	Surface Water Particles	570500	20828	19397	3.59	**0.000**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	3205	3698	1618	0.43	0.66932	Accept H0 (concentrations are equivalent)
	Surface Sediment	Sediment Trap	580742	22610	20530	5.10	**0.00000**	**Reject H0 (concentrations are not equivalent)**
Total PAHs (OC-Normalized)	Surface Sediment	Surface Water Particles	719189	13466	12290	6.57	**0.000000**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	2420	3908	1244	-1.72	0.086	Accept H0 (concentrations are equivalent)
	Surface Sediment	Sediment Trap	728337	23815	21735	5.60	**0.000000**	**Reject H0 (concentrations are not equivalent)**
Bis(2-ethylhexyl)phthalate (OC-Normalized)	Surface Sediment	Surface Water Particles	632941	10604	4060	-2.75	**0.0060**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	674	2176	223	2.52	**0.0118**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	658290	42046	29409	-2.04	**0.0414**	**Reject H0 (concentrations are not equivalent)**
Total Chlordanes (OC-Normalized)	Surface Sediment	Surface Water Particles	564872	15632	14456	4.86	**0.0000**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	2329	3236	1153	-1.38	0.167	Accept H0 (concentrations are equivalent)
	Surface Sediment	Sediment Trap	567356	22886	21233	3.51	**0.0004**	**Reject H0 (concentrations are not equivalent)**
Aldrin (OC-Normalized)	Surface Sediment	Surface Water Particles	522458	11604	10173	7.47	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	1987	4229	556	-5.79	**0.000000**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	514295	24946	23235	2.34	0.0194	Accept H0 (concentrations are equivalent)

Table 10.2-14b. Study Area-Wide Statistical Comparison of OC-Normalized Sediment, Sediment Trap, and Particulate Surface Water Concentrations.

			Mann-Whitney U Statistics					
			Rank Sum					
Analyte	**Group 1**	**Group 2**	**Group 1**	**Group 2**	**U**	**Z**	**p-level**	**Interpretation**
Dieldrin (OC-Normalized)	Surface Sediment	Surface Water Particles	554205	26298	24867	1.03	**0.3041**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	2669	3436	1238	-1.63	0.103	Accept H0 (concentrations are equivalent)
	Surface Sediment	Sediment Trap	553737	31085	28937	-0.11	0.914	Accept H0 (concentrations are equivalent)
Arsenic (Bulk)	Surface Sediment	Surface Water Particles	730670	151787	31517	-12.5	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	18435	4143	1932	7.0	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	728114	51262	28961	-3.53	**0.00042**	**Reject H0 (concentrations are not equivalent)**
Chromium (Bulk)	Surface Sediment	Surface Water Particles	782997	91506	81210	0.72	**0.4737680000**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	14302	7643	4006	-1.75	**0.0794**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	726790	48845	31180	-2.72	**0.0066**	**Reject H0 (concentrations are not equivalent)**
Copper (Bulk)	Surface Sediment	Surface Water Particles	752908	145562	38298	-11.0	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	18251	4115	1904	7.0	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	744865	50826	30255	-3.19	**0.0014**	**Reject H0 (concentrations are not equivalent)**
Zinc (Bulk)	Surface Sediment	Surface Water Particles	768427	118019	49027	-7.2	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	14632	5070	2859	3.94	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	752954	47791	33554	-2.08	**0.037**	**Reject H0 (concentrations are not equivalent)**
Tributyltin Ion (Bulk)	Surface Sediment	Surface Water Particles	35817	34308	9939	-6.6	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Water Particles	Sediment Trap	18816	1890	294	10.2	**0.00**	**Reject H0 (concentrations are not equivalent)**
	Surface Sediment	Sediment Trap	36117	4069	2473	7.08	**0.00**	**Reject H0 (concentrations are not equivalent)**

Notes:

All statistical tests performed using software package Statistica version 7.1.

The non-parametric Mann-Whitney U tests used for concentration comparisons for all analytes.

H_0 (null hypothesis): the distributions of two populations are equal.

$\alpha = 0.05$ (reject H_0 for $p < 0.05$)