APPENDIX J
GROUNDWATER DATA SUMMARY TABLES

Appendix J –

Nearshore Cleanup Sites Groundwater Data Tables

Introduction:

The groundwater tables presented in this appendix were used to evaluate the groundwater quality at East Waterway (EW) nearshore cleanup sites. Groundwater discharge is a potentially complete pathway for transport of contaminants. Groundwater flow in the surrounding basin is generally toward the EW, although the direction varies locally depending on the nature of subsurface materials, hydrostratigraphy, and proximity to the EW. Near the EW, tidal action influences groundwater flow directions, rates, and water quality. These tables should be reviewed in conjunction with the text references below for full context and data interpretation.

Text References:

This appendix was referenced in the following sections of the *East Waterway Operable Unit Revised Draft Supplemental Remedial Investigation Report – Section 9: Source and Pathway Characterization*:

- Section 9.1.3 – Groundwater
- Section 9.4.4.1 – Groundwater Pathway Overview (multiple references)
- Section 9.4.4.2 – Groundwater Pathway and Nearshore Cleanup Sites (multiple references)

Table Reference:

This appendix was referenced in the following tables of the *East Waterway Operable Unit Revised Draft Supplemental Remedial Investigation Report – Section 9: Source and Pathway Characterization*:

- Table 9-21 - Summary of Harbor Island Nearshore Groundwater Quality
- Table 9-22 - Summary of Terminal 102 Groundwater Quality
- Table 9-23 – Summary of USCG (Pier 35) Groundwater Quality
- Table 9-24 - Summary of GATX (Pier 34) Nearshore Groundwater and Seep Quality
- Table 9-25 – Summary of Terminal 30 Nearshore Groundwater Quality
- Table 9-26 - Summary of Terminal 25 Groundwater Quality
- Table 9-27 - Summary of Terminal 104 Downgradient Groundwater Quality

Map Reference:

This appendix was referenced in the following maps of the *East Waterway Operable Unit Revised Draft Supplemental Remedial Investigation Report – Section 9: Source and Pathway Characterization*:

- Map 9-20 – Southern Nearshore Cleanup Sites
- Map 9-21 – Middle Harbor Island Cleanup Sites
- Map 9-22 – Northern Harbor Island Cleanup Sites
- Map 9-23 – Pier 34 and Pier 35 Nearshore Cleanup Sites
- Map 9-24 – Terminal 30 Nearshore Cleanup Sites

Appendix J Tables Key

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Site	Table	Table Title
Harbor Island	J-1	Harbor Island Summary
	J-2	Summary of Harbor Island Nearshore Groundwater Quality - Well HI-1
	J-3	Summary of Harbor Island Nearshore Groundwater Quality - Well HI-2
	J-4	Summary of Harbor Island Nearshore Groundwater Quality - Well HI-3
	J-5	Summary of Harbor Island Nearshore Groundwater Quality - Well HI-4
	J-6	Summary of Harbor Island Nearshore Groundwater Quality - Well HI-5
	J-7	Summary of Harbor Island Nearshore Groundwater Quality - Well HI-12
	J-8	Summary of Harbor Island Nearshore Groundwater Quality - Well HI-16
Terminal 102	J-9	Summary of Terminal 102 Groundwater Data
Pier 35 USCG	J-10	Summary of Pier 35 (U.S. Coast Guard) Groundwater Data
Terminal 34 (GATX)	J-11	Summary of Terminal 34 Groundwater Quality Data (All Compliance Monitoring Transects)
	J-12	Summary of Terminal 34 Groundwater Quality Along Transect 1
	J-13	Summary of Terminal 34 Groundwater Quality Along Transect 2
	J-14	Summary of Terminal 34 Groundwater Quality Along Transect 3
	J-15	Summary of Terminal 34 Groundwater Quality Along Transect 4
	J-16	Summary of Terminal 34 Groundwater Quality Along Transect 5
Terminal 25	J-17	Summary of T25 Groundwater Data
	J-18	Summary of Terminal 25 Groundwater Data - AQ-MW-1
	J-19	Summary of Terminal 25 Groundwater Data - AQ-MW-2
	J-20	Summary of Terminal 25 Groundwater Data - AQ-MW-3
	J-21	Summary of Terminal 25 Groundwater Data - AQ-MW-4
	J-22	Summary of Terminal 25 Historical Groundwater Data
Terminal 104	J-23	Summary of Downgradient Groundwater Data at Terminal 104
Terminal 30	J-24	Summary of Terminal 30 Nearshore Groundwater Monitoring Data (All Monitoring Wells)
	J-25	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-84 and MW-84B
	J-26	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-84A
	J-27	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-85 and MW-85A
	J-28	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-85B
	J-29	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-86 and MW-86B
	J-30	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-86C
	J-31	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-87 and MW-87A
	J-32	Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-87B
Summary	J-33	Well Depths
	J-34	Salinity
	J-35	Screening Values

Table J-1. Summary of Harbor Island Groundwater Quality Data (All Nearshore Wells)

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							Location ID	HI-1[D] (See Table J-2)		HI-2[D] (See Table J-3)		HI-3[D] (See Table J-4)		HI-4[D] (See Table J-5)		HI-5[D] (See Table J-6)	
Chemical	Unit	Groundwater Reference Values [2]	Marine AWQC [6] Chronic	Marine AWQC [6] Acute	NTR Human Health [7]	ROD-Specified Cleanup Goals		Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]
Total Metals																	
Arsenic	µg/L	27.9	36	69	0.14	36		0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8		0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9		0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Lead	µg/L	11	8.1	210	NA	5.8		0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025		0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4600	7.9		NA	0 of 3	NA	0 of 3	NA	0 of 3	NA	0 of 3	NA	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2		0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3		NA	0 of 3	NA	0 of 3	NA	0 of 3	NA	0 of 3	NA	0 of 3
Zinc	µg/L	33	81	90	NA	76.6		0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Cyanide [3]																	
Available Cyanide	µg/L	NA	NA	NA	NA	1		NA	0 of 3	NA	0 of 3	NA	0 of 3	NA	0 of 3	NA	0 of 3
Total Cyanide*	µg/L	2.8 [5]	2.8	9.1	220000	1		**2 of 2**	**2 of 2**	**1 of 2**	**1 of 2**	0 of 2	0 of 2	0 of 2	0 of 2	**1 of 2**	**1 of 2**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42		NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42		NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Benzene	µg/L	180	NA	NA	71	71		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4		NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.85	8.8		NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Semi-volatile Organic Compounds																	
bis(2-Ethylhexyl)phthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	0 of 3 [8]	0 of 3 [8]
Butylbenzylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	0 of 3	0 of 3
Diethylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	0 of 3	NA
Dimethylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	0 of 3	NA
Di-n-Butylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Octyl phthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	0 of 3	NA
Polychlorinated Biphenyls																	
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03		NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03		NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1

Table J-1. Summary of Harbor Island Groundwater Quality Data (All Nearshore Wells)

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							Location ID	HI-12 (See Table J-7)		HI-16[D] (See Table J-8)		Summary of All Well Locations [4]				
Chemical	Unit	Groundwater Reference Values [2]	Marine AWQC [6]		NTR Human Health [7]	ROD-Specified Cleanup Goals		Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values	Detections in Excess of Marine AWQC		Detections in Excess of NTR Human Health	Detections in Excess of Site-Specific Cleanup Goal
			Chronic	Acute									Chronic	Acute		
Total Metals																
Arsenic	µg/L	27.9	36	69	0.14	36		0 of 3	0 of 3	0 of 3	0 of 3	0 of 7	0 of 7	0 of 7	**4 of 7**	0 of 7
Cadmium	µg/L	2.6	9.3	42	NA	8		0 of 3	0 of 3	0 of 3	0 of 3	0 of 7	0 of 7	0 of 7	NA	0 of 7
Copper	µg/L	123	3.1	4.8	NA	2.9		0 of 3	**2 of 3**	0 of 3	0 of 3	0 of 7	**1 of 7**	0 of 7	NA	**1 of 7**
Lead	µg/L	11	8.1	210	NA	5.8		0 of 3	0 of 3	0 of 3	**1 of 3**	0 of 7	0 of 7	0 of 7	NA	**1 of 7**
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025		0 of 3	0 of 3	0 of 3	0 of 3	0 of 7	0 of 7	0 of 7	0 of 7	0 of 7
Nickel	µg/L	NA	8.2	74	4600	7.9		NA	0 of 3	NA	0 of 3	NA	0 of 7	0 of 7	0 of 7	0 of 7
Silver	µg/L	1.5	NA	1.9	NA	1.2		0 of 3	0 of 3	0 of 3	0 of 3	0 of 7	NA	0 of 7	NA	0 of 7
Thallium	µg/L	NA	NA	NA	6.3	6.3		NA	0 of 3	NA	0 of 3	NA	NA	NA	0 of 7	0 of 7
Zinc	µg/L	33	81	90	NA	76.6		**3 of 3**	**1 of 3**	0 of 3	0 of 3	**1 of 7**	**1 of 7**	0 of 7	NA	**1 of 7**
Cyanide [3]																
Available Cyanide	µg/L	NA	NA	NA	NA	1		NA	0 of 3	NA	0 of 3	NA	NA	NA	NA	0 of 7
Total Cyanide*	µg/L	2.8 [5]	2.8	9.1	220000	1		**1 of 2**	**1 of 2**	0 of 2	0 of 2	**4 of 7**	**4 of 7**	**1 of 7**	0 of 7	**4 of 7**
Volatile Organic Compounds																
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42		NA	0 of 1	NA	0 of 1	NA	NA	NA	NA	0 of 7
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42		NA	0 of 1	NA	0 of 1	NA	NA	NA	0 of 7	0 of 7
Benzene	µg/L	180	NA	NA	71	71		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	0 of 7	0 of 7
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4		NA	0 of 1	NA	0 of 1	NA	NA	NA	0 of 7	0 of 7
Tetrachloroethene	µg/L	NA	NA	NA	8.85	8.8		NA	0 of 1	NA	0 of 1	NA	NA	NA	NA	0 of 7
Semi-volatile Organic Compounds																
bis(2-Ethylhexyl)phthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	0 of 1	NA	NA	NA	0 of 1
Butylbenzylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	0 of 1	NA	NA	NA	0 of 1
Diethylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	0 of 1	NA	NA	NA	0 of 0
Dimethylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	0 of 1	NA	NA	NA	0 of 0
Di-n-Butylphthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	0 of 0
Di-n-Octyl phthalate	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	0 of 1	NA	NA	NA	0 of 0
Polychlorinated Biphenyls																
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	NA	0 of 7
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	NA	0 of 7
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	NA	0 of 7
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	NA	0 of 7
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	NA	0 of 7
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	NA	0 of 7
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03		0 of 1	0 of 1	0 of 1	0 of 1	0 of 7	NA	NA	NA	0 of 7
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03		NA	0 of 1	NA	0 of 1	NA	NA	NA	NA	0 of 7
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03		NA	0 of 1	NA	0 of 1	NA	NA	NA	NA	0 of 7

Table J-1. Summary of Harbor Island Groundwater Quality Data (All Nearshore Wells)

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or no partitioning estimate is available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

* = Value based on total cyanide measurements, not on available or free cyanide.

D = Deep well

[1] Values listed for each well location represent the number of detected exceedances of the specified value divided by the number of valid sample results available for that well. Wells with exceedances are bolded and underlined.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] The ROD-specified cleanup goal was based on the toxicity of available cyanide; whereas initial sampling was for total cyanide. Additional cyanide speciation work was conducted to evaluate the quantity of available cyanide.

[4] The summary value represents the number of well locations with a detected exceedance (during at least one sampling event) of the indicated value, divided by the total number of wells. Parameters with exceedances are bolded and underlined. The well with the identified exceedance is listed in parentheses.

[5] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. Testing for available cyanide was introduced beginning in December 2006. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

[8] Bis(2-ethylhexyl)phthalate was not detected in subsequent sampling and does not currently exceed reference values.

Table J-2. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-1

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [3] (µg/L) Chronic	Marine AWQC [3] (µg/L) Acute	NTR Human Health [4] (µg/L)	ROD-Specified Cleanup Goal (µg/L)	Location ID / Sample ID / Sample Date: HI-1[D] HI-1-0310 3/24/2010 Value	HI-1[D] HI-1-1010 10/21/2010 Value	HI-1[D] HI-1-0611 6/29/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health (µg/L)	Chemicals Detected Above ROD-Specified Cleanup Goal
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	36	**1.08**	**0.06**	**0.1 J**	3	0 of 3	0 of 3	0 of 3	**1 of 3 [4]**	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8	**0.016 J**	**0.021**	0.02 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9	**0.30 J+**	**0.161**	**0.16**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Lead	µg/L	11	8.1	210	NA	5.8	**0.045 J+**	**0.076**	**0.07 J+**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025	0.00049 U	**0.00039**	0.00031 U	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4,600	7.9	**0.36**	**0.31**	**0.28**	3	NA	0 of 3	0 of 3	0 of 3	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2	**0.006 J**	**0.01**	0.020 U	3	0 of 3	NA	0 of 3	NA	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3	0.007 U	0.03 U	0.0200 U	3	NA	NA	NA	0 of 3	0 of 3
Zinc	µg/L	33	81	90	NA	76.6	**0.75 J+**	**0.91**	**0.67 J+**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Cyanide [2]															
Available Cyanide	µg/L	NA	NA	NA	NA	1	2 UJ	2 U	2 U	3	NA	NA	NA	NA	0 of 3
Total Cyanide	µg/L	2.8 [2]	2.8	9.1	220,000	1	**5.4**	**3.2**	--	2	**2 of 2**	**2 of 2**	0 of 2	0 of 2	**2 of 2**
Volatile Organic Compounds															
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42	0.50 U	--	--	1	NA	NA	NA	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Benzene	µg/L	180	NA	NA	71	71	0.50 U	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.9	8.8	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Polychlorinated Biphenyls															
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03	0.0099 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Total PCBs	µg/L	NA	0.03	10	0.00017	0.03	NA	--	--	0	NA	0 of 1	0 of 1	0 of 1	0 of 1

Table J-2. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-1

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = Detection above reporting limits

D = Deep well

J = Estimated concentration

R = Results rejected

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[3] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[4] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text **= Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text **= Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds ROD-Specified Cleanup Goal

Table J-3. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-2

Note: Formatted for ledger-size printing

							Location ID	HI-2[D]	HI-2[D]	HI-2[D]						
							Sample ID	HI-02-0310	HI-02-1010	HI-02-0611						
							Sample Date	3/24/2010	10/21/2010	6/29/2011						
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [3] (µg/L)		NTR Human Health [4] (µg/L)	ROD-Specified Cleanup Goal (µg/L)		Value	Value	Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC		Chemicals Detected Above NTR Human Health (µg/L)	Chemicals Detected Above ROD-Specified Cleanup Goal
			Chronic	Acute									Chronic	Acute		
Metals (Total)																
Arsenic	µg/L	27.9	36	69	0.14	36		**1.43**	**1.36**	**0.85**	3	0 of 3	0 of 3	0 of 3	**3 of 3 [4]**	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8		0.009 U	**0.016**	0.019 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9		0.048 U	**0.071**	0.086 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Lead	µg/L	11	8.1	210	NA	5.8		0.013 U	**0.057**	**0.212**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025		0.00022 U	**0.00022**	0.00032 U	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4,600	7.9		**0.17 J**	**0.84**	**0.25**	3	NA	0 of 3	0 of 3	0 of 3	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2		0.020 U	**0.009**	0.005 U	3	0 of 3	NA	0 of 3	NA	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3		0.030 U	0.03 U	0.020 U	3	NA	NA	NA	0 of 3	0 of 3
Zinc	µg/L	33	81	90	NA	76.6		0.34 U	**0.71**	**0.9**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Cyanide [2]																
Available Cyanide	µg/L	NA	NA	NA	NA	1		2 UJ	2 U	2 U	3	NA	NA	NA	NA	0 of 3
Total Cyanide	µg/L	2.8 [4]	2.8	9.1	220,000	1		4.5 J	4.7 U	--	2	**1 of 2**	**1 of 2**	0 of 2	0 of 2	**1 of 2**
Volatile Organic Compounds																
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42		0.50 U	--	--	1	NA	NA	NA	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42		0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Benzene	µg/L	180	NA	NA	71	71		0.50 U	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4		0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.9	8.8		0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Polychlorinated Biphenyls																
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03		0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03		0.01 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03		0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03		0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03		0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03		0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03		0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03		0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03		0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Total PCBs	µg/L	NA	0.03	10	0.00017	0.03		NA	--	--	0	NA	0 of 0	0 of 0	0 of 0	0 of 0

Table J-3. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-2

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = Detection above reporting limits

D = Deep well

J = Estimated concentration

R = Results rejected

SR = Metal results suspect due to brackish water influence

U = Analyte was not detected above reporting limit

Metals results for March and June 2006 analyzed for total metals using reductive precipitate preparation.

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[3] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[4] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = Exceeds Marine AWQC Chronic Reference Value

Red Bold Text = Exceeds Marine AWQC Acute and Chronic Reference Value

= Exceeds NTR Human Health Reference Value

= Exceeds ROD-Specified Cleanup Goal

Table J-4. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-3

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [3] (µg/L) Chronic	Marine AWQC [3] (µg/L) Acute	NTR Human Health [4] (µg/L)	ROD-Specified Cleanup Goal (µg/L)	Location ID Sample ID Sample Date HI-3[D] HI-3-0310 3/24/2010 Value	HI-3[D] HI-3-1010 10/22/2010 Value	HI-3[D] HI-3-0611 6/29/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health (µg/L)	Chemicals Detected Above ROD-Specified Cleanup Goal
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	36	0.05 U	**0.1**	**0.05 J**	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8	**0.178**	**0.92**	**0.874**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9	**0.101 J+**	**0.152**	**0.206**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Lead	µg/L	11	8.1	210	NA	5.8	**0.046 J+**	**0.212**	**0.159**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025	0.00035 U	**0.00028**	0.00033 U	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4,600	7.9	**0.12 J**	0.4 U	**0.29**	3	NA	0 of 3	0 of 3	0 of 3	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2	0.020 U	**0.004**	0.005 U	3	0 of 3	NA	0 of 3	NA	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3	0.004 U	0.03 U	0.020 U	3	NA	NA	NA	0 of 3	0 of 3
Zinc	µg/L	33	81	90	NA	76.6	**0.81 J+**	**2.58**	**3.71**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Cyanide [2]															
Available Cyanide	µg/L	NA	NA	NA	NA	1	2 UJ	2 U	2 U	3	NA	NA	NA	NA	0 of 3
Total Cyanide	µg/L	2.8 [5]	2.8	9.1	220,000	1	5 U	4.7 U	--	2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Volatile Organic Compounds															
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42	0.50 U	--	--	1	NA	NA	NA	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Benzene	µg/L	180	NA	NA	71	71	0.50 U	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.9	8.8	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Polychlorinated Biphenyls															
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03	0.0099 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03	0.014 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03	0.0061 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Total PCBs	µg/L	NA	0.03	10	0.00017	0.03	NA	--	--	0	NA	0 of 0	0 of 0	0 of 0	0 of 0

Table J-4. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-3

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = Detection above reporting limits

D = Deep Well

J = Estimated concentration

R = Results rejected

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[3] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[4] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds ROD-Specified Cleanup Goal

Table J-5. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-4

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [3] (µg/L) Chronic	Marine AWQC [3] (µg/L) Acute	NTR Human Health [4] (µg/L)	ROD-Specified Cleanup Goal (µg/L)	Location ID / Sample ID / Sample Date	HI-4[D] HI-04-0310 4/5/2010	HI-4[D] HI-04-1010 10/22/2010	HI-4[D] HI-04-0611 6/29/2011	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health (µg/L)	Chemicals Detected Above ROD-Specified Cleanup Goal
Metals (Total)																
Arsenic	µg/L	27.9	36	69	0.14	36		0.27 U	**0.44**	**0.08 J**	3	0 of 3	0 of 3	0 of 3	**1 of 3[4]**	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8		**0.023 J+**	**0.026**	**0.03**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9		**0.39 J+**	**0.23**	**0.18**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Lead	µg/L	11	8.1	210	NA	5.8		**0.032 J+**	**0.02**	**0.245**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025		0.00017 U	**0.00017**	0.00029 U	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4,600	7.9		**0.61**	**1.88**	0.07 U	3	NA	0 of 3	0 of 3	0 of 3	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2		0.004 U	**0.004**	0.020 U	3	0 of 3	NA	0 of 3	NA	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3		0.040 U	0.02 U	0.0200 U	3	NA	NA	NA	0 of 3	0 of 3
Zinc	µg/L	33	81	90	NA	76.6		**1.44 J+**	**0.76**	**1.97 J+**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Cyanide [2]																
Available Cyanide	µg/L	NA	NA	NA	NA	1		2 U	2 U	2 U	3	NA	NA	NA	NA	0 of 3
Total Cyanide	µg/L	2.8 [5]	2.8	9.1	220,000	1		10 U	4.7 U	NA	2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Volatile Organic Compounds																
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42		0.50 U	--	--	1	NA	NA	NA	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42		0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Benzene	µg/L	180	NA	NA	71	71		0.50 U	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4		0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.9	8.8		0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Polychlorinated Biphenyls																
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03		0.0049 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03		0.023 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03		0.0049 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03		0.0049 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03		0.0049 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03		0.0049 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03		0.0049 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03		0.0049 U	--	--	1	NA	NA	NA	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03		0.0049 U	--	--	1	NA	NA	NA	NA	0 of 1
Total PCBs	µg/L	NA	0.03	10	0.00017	0.03		NA	--	--	0	NA	0 of 0	0 of 0	0 of 0	0 of 0

Table J-5. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-4

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = Detection above reporting limits

D = Deep well

J = Estimated concentration

R = Results rejected

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[3] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[4] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Green Bold Text = Exceeds Marine AWQC Chronic Reference Value

Red Bold Text = Exceeds Marine AWQC Acute and Chronic Reference Value

= Exceeds NTR Human Health Reference Value

= Exceeds ROD-Specified Cleanup Goal

Table J-6. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-5

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [3] (µg/L) Chronic	Marine AWQC [3] (µg/L) Acute	NTR Human Health [4] (µg/L)	ROD-Specified Cleanup Goal (µg/L)	Location ID / Sample ID / Sample Date: HI-5[D] HI-5-0310 3/25/2010 Value	HI-5[D] HI-5-1010 10/22/2010 Value	HI-5[D] HI-5-0611 6/30/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health (µg/L)	Chemicals Detected Above ROD-Specified Cleanup Goal
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	36	0.50 U	**0.06**	5.00 U	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8	0.020 U	0.02 U	0.034 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9	**0.134 J+**	**0.099**	0.646 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Lead	µg/L	11	8.1	210	NA	5.8	0.018 U	**0.018**	0.151 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025	**0.00172**	**0.00153**	**0.00116**	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4,600	7.9	0.6 U	0.6 U	0.55 U	3	NA	0 of 3	0 of 3	0 of 3	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2	0.020 U	0.02 U	0.200 U	3	0 of 3	NA	0 of 3	NA	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3	0.030 U	0.03 U	0.08 U	3	NA	NA	NA	0 of 3	0 of 3
Zinc	µg/L	33	81	90	NA	76.6	0.29 U	**0.25**	1.22 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Cyanide [2]															
Available Cyanide	µg/L	NA	NA	NA	NA	1	2 UJ	**0.85**	2 U	3	NA	NA	NA	NA	0 of 3
Total Cyanide	µg/L	2.8 [5]	2.8	9.1	220,000	1	**13.8**	4.7 U	NA	2	**1 of 2 [2]**	**1 of 2**	**1 of 2**	0 of 2	**1 of 2**
Volatile Organic Compounds															
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42	0.50 U	--	NA	1	NA	NA	NA	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42	0.50 U	--	NA	1	NA	NA	NA	0 of 1	0 of 1
Benzene	µg/L	180	NA	NA	71	71	0.50 U	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.9	8.8	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Semi-volatile Organic Compounds															
bis(2-Ethylhexyl)phthalate	µg/L	0.28	NA	NA	5.9	700	**7.3 [5]**	0.96 U	0.98 U	2	0 of 3 **[5]**	NA	NA	0 of 3 **[5]**	0 of 3
Butylbenzylphthalate	µg/L	0.52	NA	NA	NA	7000	0.2 U	0.2 U	0.20 U	2	0 of 3	NA	NA	NA	0 of 3
Diethylphthalate	µg/L	484	NA	NA	NA	NA	**0.033 J**	0.2 U	**0.029 J**	2	0 of 3	NA	NA	NA	NA
Dimethylphthalate	µg/L	143	NA	NA	2900000	NA	0.058 U	0.2 U	0.20 U	2	0 of 3	NA	NA	0 of 3	NA
Di-n-Butylphthalate	µg/L	NA	NA	NA	NA	NA	0.061 U	**0.043**	**0.035 J**	2.000	NA	NA	NA	NA	NA
Di-n-Octyl phthalate	µg/L	0.3	NA	NA	NA	NA	0.2 U	0.2 U	0.20 U	2	0 of 3	NA	NA	NA	NA
Polychlorinated Biphenyls															
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03	0.005 UJ	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03	0.01 UJ	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03	0.005 UJ	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03	0.005 UJ	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03	0.005 UJ	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03	0.005 UJ	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03	0.005 UJ	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03	0.005 UJ	--	--	1	NA	NA	NA	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03	0.005 UJ	--	--	1	NA	NA	NA	NA	0 of 1
Total PCBs	µg/L	NA	0.03	10	0.00017	0.03	NA	--	--	0	NA	0 of 0	0 of 0	0 of 0	0 of 0

Table J-6. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-5

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = Detection above reporting limits

D = Deep well

J = Estimated concentration

R = Results rejected

SR = Metal results suspect due to brackish water influence

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[3] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[4] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

[5] Bis(2-ethylhexyl)phthalate was not detected in subsequent sampling and does not currently exceed reference values.

= Exceeds Groundwater Reference Value

Blue Bold Text = Exceeds Marine AWQC Chronic Reference Value

Red Bold Text = Exceeds Marine AWQC Acute and Chronic Reference Value

= Exceeds NTR Human Health Reference Value

= Exceeds ROD-Specified Cleanup Goal

Table J-7. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-12

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [3] (µg/L) Chronic	Marine AWQC [3] (µg/L) Acute	NTR Human Health [4] (µg/L)	ROD-Specified Cleanup Goal (µg/L)	Location ID / Sample ID / Sample Date: HI-12 / HI-12-0310 / 3/24/2010 Value	HI-12 / HI-12-1010 / 10/21/2010 Value	HI-12 / HI-12-0611 / 6/29/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value	Chemicals Detected Above Marine AWQC: Chronic	Chemicals Detected Above Marine AWQC: Acute	Chemicals Detected Above NTR Human Health (µg/L)	Chemicals Detected Above ROD-Specified Cleanup Goal
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	36	0.24 U	**0.72**	**0.21**	3	0 of 3	0 of 3	0 of 3	**2 of 3 [4]**	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8	**0.409**	**0.251**	**0.334**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9	**2.54**	**4.32**	**3.6**	3	0 of 3	**2 of 3**	0 of 3	NA	**2 of 3**
Lead	µg/L	11	8.1	210	NA	5.8	**0.284 J+**	**0.455**	**0.251**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025	0.00094 U	**0.0013**	**0.0013**	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4,600	7.9	**3.12**	**2.15**	**4.25**	3	NA	0 of 3	0 of 3	0 of 3	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2	**0.029**	**0.046**	**0.022**	3	0 of 3	NA	0 of 3	NA	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3	0.025 U	**0.025**	0.012 U	3	NA	NA	NA	0 of 3	0 of 3
Zinc	µg/L	33	81	90	NA	76.6	**69**	**51.1**	**86.1**	3	**3 of 3**	**1 of 3**	0 of 3	NA	**1 of 3**
Cyanide [2]															
Available Cyanide	µg/L	NA	NA	NA	NA	1	2 UJ	2 U	2 U	3	NA	NA	NA	NA	0 of 3
Total Cyanide	µg/L	2.8 [5]	2.8	9.1	220,000	1	**5.1**	4.7 U	NA	2	**1 of 2**	**1 of 2**	0 of 2	0 of 2	**1 of 2**
Volatile Organic Compounds															
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42	0.50 U	--	--	1	NA	NA	NA	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Benzene	µg/L	180	NA	NA	71	71	0.50 U	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.9	8.8	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Polychlorinated Biphenyls															
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03	0.01 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Total PCBs	µg/L	NA	0.03	10	0.00017	0.03	NA	--	--	0	NA	0 of 0	0 of 0	0 of 0	0 of 0

Table J-7. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-12

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = Detection above reporting limits

J = Estimated concentration

R = Results rejected

SR = Metal results suspect due to brackish water influence

U = Analyte was not detected above reporting limit

X = Qualifier unidentified in source report.

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[3] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[4] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds ROD-Specified Cleanup Goal

Table J-8. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-16

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [3] (µg/L) Chronic	Marine AWQC [3] (µg/L) Acute	NTR Human Health [4] (µg/L)	ROD-Specified Cleanup Goal (µg/L)	Location ID / Sample ID / Sample Date: HI-16[D] HI-16-0310 3/25/2010 Value	HI-16[D] HI-16-1010 10/22/2010 Value	HI-16[D] HI-16-0611 6/29/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value	Chemicals Detected Above Marine AWQC: Chronic	Chemicals Detected Above Marine AWQC: Acute	Chemicals Detected Above NTR Human Health (µg/L)	Chemicals Detected Above ROD-Specified Cleanup Goal
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	36	0.06 U	**0.08**	1.00 U	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Cadmium	µg/L	2.6	9.3	42	NA	8	0.008 U	**0.13**	**0.07**	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Copper	µg/L	123	3.1	4.8	NA	2.9	0.018 U	**0.113**	0.164 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Lead	µg/L	11	8.1	210	NA	5.8	**0.030 J+**	**0.091**	**6.49**	3	0 of 3	0 of 3	0 of 3	NA	**1 of 3**
Mercury	µg/L	0.0052	0.025	1.8	0.15	0.025	0.00023 U	**0.00034**	0.00031 U	3	0 of 3	0 of 3	0 of 3	0 of 3	0 of 3
Nickel	µg/L	NA	8.2	74	4,600	7.9	**0.14 J**	**0.42**	0.3 U	3	NA	0 of 3	0 of 3	0 of 3	0 of 3
Silver	µg/L	1.5	NA	1.9	NA	1.2	0.020 U	**0.006**	0.040 U	3	0 of 3	NA	0 of 3	NA	0 of 3
Thallium	µg/L	NA	NA	NA	6.3	6.3	0.030 U	0.03 U	0.040 U	3	NA	NA	NA	0 of 3	0 of 3
Zinc	µg/L	33	81	90	NA	76.6	0.1 U	**1.4**	0.79 U	3	0 of 3	0 of 3	0 of 3	NA	0 of 3
Cyanide [2]															
Available Cyanide	µg/L	NA	NA	NA	NA	1	2 U	2 U	2 U	3	NA	NA	NA	NA	0 of 3
Total Cyanide	µg/L	2.8 [5]	2.8	9.1	220,000	1	5 U	4.7 U	NA	2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Volatile Organic Compounds															
1,1,1-Trichloroethane	µg/L	NA	NA	NA	NA	42	0.50 U	--	--	1	NA	NA	NA	NA	0 of 1
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	42	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Benzene	µg/L	180	NA	NA	71	71	**0.070 J**	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Carbon Tetrachloride	µg/L	NA	NA	NA	4.4	4.4	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Tetrachloroethene	µg/L	NA	NA	NA	8.9	8.8	0.50 U	--	--	1	NA	NA	NA	0 of 1	0 of 1
Polychlorinated Biphenyls								--	--						
Aroclor 1016	µg/L	0.44	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1221	µg/L	1.17	NA	NA	NA	0.03	0.015 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1232	µg/L	1.17	NA	NA	NA	0.03	0.012 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1242	µg/L	0.27	NA	NA	NA	0.03	0.0082 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1248	µg/L	0.27	NA	NA	NA	0.03	0.0077 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1254	µg/L	0.16	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1260	µg/L	0.058	NA	NA	NA	0.03	0.005 U	--	--	1	0 of 1	NA	NA	NA	0 of 1
Aroclor 1262	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Aroclor 1268	µg/L	NA	NA	NA	NA	0.03	0.005 U	--	--	1	NA	NA	NA	NA	0 of 1
Total PCBs	µg/L	NA	0.03	10	0.00017	0.03	NA	--	--	0	NA	0 of 0	0 of 0	0 of 0	0 of 0

Table J-8. Summary of Harbor Island Nearshore Groundwater Quality - Well HI-16

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

D = Deep well

J = Estimated concentration

R = Results rejected

SR = Metal results suspect due to brackish water influence

U = Analyte was not detected above reporting limit

X = Qualifier unidentified in source report.

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Initial groundwater sampling was performed using total cyanide test methods, though the toxicity criteria on which the cleanup goal was established are based on free (available) cyanide. The groundwater reference value for available cyanide (2.8 µg/L) is based on the Washington chronic marine criterion (WAC 173-201A) for weak acid dissociable cyanide.

[3] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[4] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text **= Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text **= Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds ROD-Specified Cleanup Goal

Table J-9. Summary of Terminal 102 Groundwater Data

Note: Formatted for ledger-size printing

						Location ID	GP-2	GP-5	GP-6	GP-7	GP-8	GP-9						
						Sample ID	GP-2	GP-5	GP-6	GP-7	GP-8	GP-9						
						Sample Date	10/31/1996	10/31/1996	10/31/1996	10/31/1996	10/31/1996	10/31/1996						
Constituent	Units	Groundwater Reference Value [1]	Marine AWQC [2] Chronic	Marine AWQC [2] Acute	NTR [3] Human Health	Site Cleanup Level: MTCA Method A Groundwater Criteria (µg/L) [4]	Value	Value	Value	Value	Value	Value	Number of Valid Sample Results	Chemicals Detected Above Preliminary Reference Value	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health	Chemicals Detected Above Site Cleanup Level
Diesel WTPH-D	µg/L	500 [1]	NA	NA	NA	1,000	100 U	100 U	100 U	100 U	100 U	100 U	6	0 of 6	NA	NA	NA	0 of 6

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

U = Analyte was not detected above reporting limit

[1] Current MTCA Method A cleanup level of 500 µg/L is used as a surrogate value for evaluating total petroleum hydrocarbon data. None of the measured values exceeded the current cleanup level. These values are intended only for preliminary use in this initial evaluation, as the reference values do not take into account site-specific fate and transport processes that likely limit the potential for sediment recontamination to occur.

[2] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[3] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[4] The groundwater cleanup level for diesel at the time the independent cleanup action was initiated was 1,000 µg/L.

= Exceeds Groundwater Reference Value

Blue Bold Text **= Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text **= Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Site Cleanup Level

Table J-10. Summary of Pier 35 (U.S. Coast Guard) Groundwater Data

Note: Formatted for ledger-size printing

							Location ID	MW-1C-03	MW-1C-03	MW-2-03	MW-2-03	SB-SC-02
							Sample Date	10/2/2003	11/21/2004	10/2/2003	11/21/2004	11/21/2004
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [8] (µg/L) Chronic	Marine AWQC [8] (µg/L) Acute	NTR Human Health [2] (µg/L)	Site-specific Cleanup Goal [9] (µg/L)		Value	Value	Value	Value	Value
Metals (Dissolved)												
Arsenic	µg/L	27.9	36	69	0.14	5		5 U	**10**	5 U	**17**	**7**
Cadmium	µg/L	2.6	9.3	42	NA	5		5 U	5 U	5 U	5 U	5 U
Copper	µg/L	123	3.1	4.8	NA	592b		10 U	10 U	10 U	10 U	10 U
Chromium	µg/L	306 [3]	50	1,100	NA	50		10 U	10 U	10 U	10 U	10 U
Lead	µg/L	11	8.1	210	NA	15		2 U	**2**	2 U	**4**	**4**
Mercury	µg/L	0.0052	0.025	1.8	0.15	2		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Nickel	µg/L	NA	8.2	74	4,600	NA		10 U	10 U	10 U	10 U	**30**
Zinc	µg/L	33	81	90	NA	4,800b		1 U	**2**	**1**	**2**	**2**
Petroleum Hydrocarbons												
Mineral Spirits/Stoddard Solvent	µg/L	NA	NA	NA	NA	500		100 U	100 U	100 U	100 U	100 U
Gasoline Range Hydrocarbons	µg/L	1,000 [4]	NA	NA	NA	1000		**350**	**340**	**210**	100 U	100 U
Kerosene/Jet Fuel	µg/L	NA	NA	NA	NA	NA		20000 U	20000 U	20000 U	20000 U	20000 U
Diesel Range Hydrocarbons	µg/L	500 [4]	NA	NA	NA	500		20000 U	20000 U	20000 U	20000 U	20000 U
Heavy Oil	µg/L	500 [4]	NA	NA	NA	500		50000 U	50000 U	50000 U	50000 U	50000 U
Volatile Organic Compounds												
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	0.768b		**6.6** *	**1.0** U	1.0 U	1.0 U	1.0 U
Xylenes	µg/L	NA [5]	NA	NA	NA	1000		**1.1**	**1.4**	**5.3**	1.0 U	1.0 U
Isopropylbenzene	µg/L	NA [5]	NA	NA	NA	800b		**2.1**	**1.5**	1.0 U	1.0 U	1.0 U
n-Propylbenzene	µg/L	NA [5]	NA	NA	NA	320b		**8.9**	**7.2**	1.0 U	1.0 U	1.0 U
4-Chlorotoluene	µg/L	NA [5]	NA	NA	NA	160b		**2**	1.0 U	1.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	µg/L	NA [5]	NA	NA	NA	400b		**18**	**10**	**1.5**	1.0 U	1.0 U
tert-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b		**11**	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4 Trimethylbenzene	µg/L	NA [5]	NA	NA	NA	400b		**11**	**2**	**4.0**	1.0 U	1.0 U
sec-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b		**3.7**	**4.6**	1.0 U	1.0 U	1.0 U
Isopropyltoluene	µg/L	NA [5]	NA	NA	NA	400b		**3.1**	1.0 U	1.0 U	1.0 U	1.0 U
n-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b		**12.0**	**5.8**	**1.3**	1.0 U	1.0 U
Naphthalene	µg/L	54	NA	NA	NA	160		**3.9**	1.0 U	**2.3**	1.0 U	1.0 U
Other EPA 8260 VOCs [6]	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA
Semivolatile Organic Compounds	µg/L	Table 6-2	NA	NA	NA	--		--	--	--	NA [7]	--

Table J-10. Summary of Pier 35 (U.S. Coast Guard) Groundwater Data

Note: Formatted for ledger-size printing

						Location ID	SB-SC-03	SB-SC-05	SB-SC-07	SB-SC-08
						Sample Date	11/21/2004	11/21/2004	11/21/2004	11/21/2004
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [8] (µg/L) Chronic	Marine AWQC [8] (µg/L) Acute	NTR Human Health [2] (µg/L)	Site-specific Cleanup Goal [9] (µg/L)	Value	Value	Value	Value
Metals (Dissolved)										
Arsenic	µg/L	27.9	36	69	0.14	5	--	180	13	--
Cadmium	µg/L	2.6	9.3	42	NA	5	--	5 U	5 U	--
Copper	µg/L	123	3.1	4.8	NA	592b	--	10 U	10 U	--
Chromium	µg/L	306 [3]	50	1,100	NA	50	--	10 U	10 U	--
Lead	µg/L	11	8.1	210	NA	15	--	**5**	2 U	--
Mercury	µg/L	0.0052	0.025	1.8	0.15	2	--	0.5 U	0.5 U	--
Nickel	µg/L	NA	8.2	74	4,600	NA	--	20	10 U	--
Zinc	µg/L	33	81	90	NA	4,800b	--	1 U	1 U	--
Petroleum Hydrocarbons										
Mineral Spirits/Stoddard Solvent	µg/L	NA	NA	NA	NA	500	100 U	100 U	100 U	100 U
Gasoline Range Hydrocarbons	µg/L	1,000 [4]	NA	NA	NA	1000	100 U	100 U	100 U	100 U
Kerosene/Jet Fuel	µg/L	NA	NA	NA	NA	NA	20000 U	20000 U	20000 U	20000 U
Diesel Range Hydrocarbons	µg/L	500 [4]	NA	NA	NA	500	20000 U	20000 U	20000 U	20000 U
Heavy Oil	µg/L	500 [4]	NA	NA	NA	500	50000 U	50000 U	50000 U	50000 U
Volatile Organic Compounds										
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	0.768b	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes	µg/L	NA [5]	NA	NA	NA	1000	1.0 U	1.0 U	1.0 U	1.0 U
Isopropylbenzene	µg/L	NA [5]	NA	NA	NA	800b	1.0 U	1.0 U	1.0 U	1.0 U
n-Propylbenzene	µg/L	NA [5]	NA	NA	NA	320b	1.0 U	1.0 U	1.0 U	1.0 U
4-Chlorotoluene	µg/L	NA [5]	NA	NA	NA	160b	1.0 U	1.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	µg/L	NA [5]	NA	NA	NA	400b	1.0 U	1.0 U	1.0 U	1.0 U
tert-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4 Trimethylbenzene	µg/L	NA [5]	NA	NA	NA	400b	1.0 U	1.0 U	1.0 U	1.0 U
sec-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyltoluene	µg/L	NA [5]	NA	NA	NA	400b	1.0 U	1.0 U	1.0 U	1.0 U
n-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b	1.0 U	1.0 U	1.0 U	1.0 U
Naphthalene	µg/L	54	NA	NA	NA	160	1.0 U	1.0 U	1.0 U	1.0 U
Other EPA 8260 VOCs [6]	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds	µg/L	Table 6-2	NA	NA	NA	--	--	--	NA [7]	--

Table J-10. Summary of Pier 35 (U.S. Coast Guard) Groundwater Data

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Location ID Sample Date												
Constituent	**Unit**	**Groundwater Reference Value [1]**	**Marine AWQC [8] (µg/L)**		**NTR Human Health [2] (µg/L)**	**Site-specific Cleanup Goal [9] (µg/L)**	**Number of Valid Sample Results**	**Chemicals Detected Above Groundwater Reference Value [1]**	**Chemicals Detected Above Marine AWQC**		**Chemicals Detected Above NTR Human Health [2]**	**Chemicals Detected Above Site-specific Cleanup Goal**
			Chronic	**Acute**					**Chronic**	**Acute**		
Metals (Dissolved)												
Arsenic	µg/L	27.9	36	69	0.14	5	7	0 of 7	**1 of 7**	**1 of 7**	**5 of 7 [2]**	**5 of 7**
Cadmium	µg/L	2.6	9.3	42	NA	5	7	0 of 7	0 of 7	0 of 7	NA	0 of 7
Copper	µg/L	123	3.1	4.8	NA	592b	7	0 of 7	0 of 7	0 of 7	NA	0 of 7
Chromium	µg/L	306 [3]	50	1,100	NA	50	7	0 of 7	0 of 7	0 of 7	NA	0 of 7
Lead	µg/L	11	8.1	210	NA	15	7	0 of 7	0 of 7	0 of 7	NA	0 of 7
Mercury	µg/L	0.0052	0.025	1.8	0.15	2	7	0 of 7	0 of 7	0 of 7	0 of 7	0 of 7
Nickel	µg/L	NA	8.2	74	4,600	NA	7	NA	**2 of 7**	0 of 7	0 of 7	NA
Zinc	µg/L	33	81	90	NA	4,800b	7	0 of 7	0 of 7	0 of 7	NA	0 of 7
Petroleum Hydrocarbons												
Mineral Spirits/Stoddard Solvent	µg/L	NA	NA	NA	NA	500	9	NA	NA	NA	NA	0 of 9
Gasoline Range Hydrocarbons	µg/L	1,000 [4]	NA	NA	NA	1000	9	0 of 9	NA	NA	NA	0 of 9
Kerosene/Jet Fuel	µg/L	NA	NA	NA	NA	NA	9	NA	NA	NA	NA	NA
Diesel Range Hydrocarbons	µg/L	500 [4]	NA	NA	NA	500	9	0 of 9	NA	NA	NA	0 of 9
Heavy Oil	µg/L	500 [4]	NA	NA	NA	500	9	0 of 9	NA	NA	NA	0 of 9
Volatile Organic Compounds												
1,1,2-Trichloroethane	µg/L	NA	NA	NA	42	0.768b	9	NA	NA	NA	0 of 9	**1 of 9***
Xylenes	µg/L	NA [5]	NA	NA	NA	1000	9	NA	NA	NA	NA	0 of 9
Isopropylbenzene	µg/L	NA [5]	NA	NA	NA	800b	9	NA	NA	NA	NA	0 of 9
n-Propylbenzene	µg/L	NA [5]	NA	NA	NA	320b	9	NA	NA	NA	NA	0 of 9
4-Chlorotoluene	µg/L	NA [5]	NA	NA	NA	160b	9	NA	NA	NA	NA	0 of 9
1,3,5-Trimethylbenzene	µg/L	NA [5]	NA	NA	NA	400b	9	NA	NA	NA	NA	0 of 9
tert-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b	9	NA	NA	NA	NA	0 of 9
1,2,4 Trimethylbenzene	µg/L	NA [5]	NA	NA	NA	400b	9	NA	NA	NA	NA	0 of 9
sec-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b	9	NA	NA	NA	NA	0 of 9
Isopropyltoluene	µg/L	NA [5]	NA	NA	NA	400b	9	NA	NA	NA	NA	0 of 9
n-Butylbenzene	µg/L	NA [5]	NA	NA	NA	320b	9	NA	NA	NA	NA	0 of 9
Naphthalene	µg/L	54	NA	NA	NA	160	9	0 of 9	NA	NA	NA	0 of 9
Other EPA 8260 VOCs [6]	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds	µg/L	Table 6-2	NA	NA	NA	--	NA	NA	NA	NA	NA	NA

Table J-10. Summary of Pier 35 (U.S. Coast Guard) Groundwater Data

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Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

ND = Non-detect at detection limit indicated

* = This compound was not detected in subsequent resampling of this well and the result is considered suspect.

b = MTCA Method B criteria

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

[3] Represents total chromium.

[4] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[5] Selected gasoline-associated volatile organic compounds (alkylbenzenes) were detected in well MW-1C-03 during two sampling events. These compounds were not detected during resampling at MW-2C-03, nor were they detected in five geoprobe groundwater sampling locations placed in upgradient and downgradient locations (relative to the MW-1C-03 location). Based on these findings, no complete pathway exists to the EW for these compounds. No additional reference values were defined for these compounds.

[6] None of the EPA 8260 VOC compounds or EPA 8270 SVOC compounds, other than those indicated in Table J-10, were detected in any of the groundwater samples analyzed.

[7] All semivolatile organic compounds were reported as non-detect.

[8] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[9] MTCA Method A cleanup level, unless otherwise specified.

	= Exceeds Groundwater Reference Value
Blue Bold Text	**= Exceeds Marine AWQC Chronic Reference Value**
Red Bold Text	**= Exceeds Marine AWQC Acute and Chronic Reference Value**
	= Exceeds NTR Human Health Reference Value
	= Exceeds Site-Specific Cleanup Goal

Table J-11. Summary of Terminal 34 Groundwater Quality Data (All Compliance Monitoring Transects)

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							Location ID	Transect 1 (B-1 and S-1) See Table J-12		Transect 2 (B-2 and S-2) See Table J-13	
Chemical	Unit	Groundwater Reference Values [1,5] (µg/L)	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µ/L)	Site-Specific Cleanup Goal for Seeps or Nearshore Wells [2] (µg/L)	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]
Total Metals										
Arsenic	µg/L	27.9	36	69	0.14	2.1*	No	No	No	No
Copper	µg/L	123	3.1	4.8	NA	2.9*	No	No	No	No
Lead	µg/L	11	8.1	210	NA	5.6	No	No	No	No
Petroleum Hydrocarbons										
Gasoline Range Hydrocarbons	µg/L	1,000 [5]	NA	NA	NA	1,000	No	No	No	No
Diesel Range Hydrocarbons	µg/L	500 [5]	NA	NA	NA	1,000	Yes	No	Yes	No
BTEX Compounds										
Benzene	µg/L	180 [6]	NA	NA	71	700	No	No	No	No
Ethylbenzene	µg/L	NA	NA	NA	29,000	430	NA	No	NA	No
m,p-Xylenes	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylenes	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [6]	NA	NA	200,000	5,000	No	No	No	No
PAH Compounds										
Acenaphthene	µg/L	2.6	NA	NA	NA	710	No	No	Yes	No
Acenaphthylene	µg/L	11	NA	NA	NA	NA	No	NA	No	NA
Anthracene	µg/L	11	NA	NA	110,000	NA	No	NA	No	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93	No	No	No	No
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93	No	No	No	No
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93	No	No	No	No
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	No	NA	No	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93	No	No	No	No
Chrysene	µg/L	3.18	NA	NA	0.031	0.93	No	No	No	No
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93	No	No	No	No
Fluoranthene	µg/L	2.3	NA	NA	370	16	No	No	No	No
Fluorene	µg/L	2	NA	NA	14,000	1,400	No	No	No	No
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93	No	No	No	No
Naphthalene	µg/L	54	NA	NA	NA	2,470	No	No	No	No
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	No	NA	No	NA
Pyrene	µg/L	14	NA	NA	11,000	6,480	No	No	No	No

Table J-11. Summary of Terminal 34 Groundwater Quality Data (All Compliance Monitoring Transects)

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							Location ID	Transect 3 (GMW-12 and S-3) See Table J-14		Transect 4 (CW-1 and S-4) See Table J-15		Transect 5 (Well B-11) See Table J-16	
Chemical	Unit	Groundwater Reference Values [1,5] (µg/L)	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µ/L)	Site-Specific Cleanup Goal for Seeps or Nearshore Wells [2] (µg/L)		Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]
Total Metals													
Arsenic	µg/L	27.9	36	69	0.14	2.1*		No	No	No	No	No	No
Copper	µg/L	123	3.1	4.8	NA	2.9*		No	No	No	No	No	No*
Lead	µg/L	11	8.1	210	NA	5.6		No	No	No	No	No	No
Petroleum Hydrocarbons													
Gasoline Range Hydrocarbons	µg/L	1,000 [5]	NA	NA	NA	1,000		No	No	No	No	No	No
Diesel Range Hydrocarbons	µg/L	500 [5]	NA	NA	NA	1,000		Yes	No	Yes	No	No	No
BTEX Compounds													
Benzene	µg/L	180 [6]	NA	NA	71	700		No	No	No	No	No	No
Ethylbenzene	µg/L	NA	NA	NA	29,000	430		NA	No	NA	No	NA	No
m,p-Xylenes	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA
o-Xylenes	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [6]	NA	NA	200,000	5,000		No	No	No	No	No	No
PAH Compounds													
Acenaphthene	µg/L	2.6	NA	NA	NA	710		No	No	Yes	No	No	No
Acenaphthylene	µg/L	11	NA	NA	NA	NA		No	NA	No	No	No	NA
Anthracene	µg/L	11	NA	NA	110,000	NA		No	NA	No	No	No	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93		No	No	No	No	No	No
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93		No	No	No	No	No	No
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93		No	No	No	No	No	No
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA		No	NA	No	No	No	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93		No	No	No	No	No	No
Chrysene	µg/L	3.18	NA	NA	0.031	0.93		No	No	No	No	No	No
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93		No	No	No	No	No	No
Fluoranthene	µg/L	2.3	NA	NA	370	16		No	No	Yes	No	No	No
Fluorene	µg/L	2	NA	NA	14,000	1,400		No	No	Yes	No	No	No
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93		No	No	No	No	No	No
Naphthalene	µg/L	54	NA	NA	NA	2,470		No	No	Yes	No	No	No
Phenanthrene	µg/L	4.8	NA	NA	NA	NA		No	NA	Yes	No	No	NA
Pyrene	µg/L	14	NA	NA	11,000	6,480		No	No	No	No	No	No

Table J-11. Summary of Terminal 34 Groundwater Quality Data (All Compliance Monitoring Transects)

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							Location ID					
							Summary of All Five Transects [4]					
Chemical	Unit	Groundwater Reference Values [1,5] (µg/L)	Marine AWQC [6] (µg/L)		NTR Human Health [7] (µ/L)	Site-Specific Cleanup Goal for Seeps or Nearshore Wells [2] (µg/L)	Detections in Excess of Reference Values	Detections in Excess of Marine AWQC		Detections in Excess of NTR Human Health [7]	Detections in Excess of Site-Specific Cleanup Goal
			Chronic	Acute				Chronic	Acute		
Total Metals											
Arsenic	µg/L	27.9	36	69	0.14	2.1*	0 of 5	0 of 5	0 of 5	**2 of 5 [7]**	0 of 5
Copper	µg/L	123	3.1	4.8	NA	2.9*	0 of 5	0 of 5*	0 of 5*	NA	0 of 5*
Lead	µg/L	11	8.1	210	NA	5.6	0 of 5	0 of 5	0 of 5	NA	0 of 5
Petroleum Hydrocarbons											
Gasoline Range Hydrocarbons	µg/L	1,000 [5]	NA	NA	NA	1,000	0 of 5	NA	NA	NA	0 of 5
Diesel Range Hydrocarbons	µg/L	500 [5]	NA	NA	NA	1,000	**4 of 5**	NA	NA	NA	0 of 5
BTEX Compounds											
Benzene	µg/L	180 [6]	NA	NA	71	700	0 of 5	NA	NA	0 of 5	0 of 5
Ethylbenzene	µg/L	NA	NA	NA	29,000	430	NA	NA	NA	0 of 5	0 of 5
m,p-Xylenes	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylenes	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [6]	NA	NA	200,000	5,000	0 of 5	NA	NA	0 of 5	0 of 5
PAH Compounds											
Acenaphthene	µg/L	2.6	NA	NA	NA	710	**2 of 5**	NA	NA	NA	0 of 5
Acenaphthylene	µg/L	11	NA	NA	NA	NA	0 of 5	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	NA	0 of 5	NA	NA	0 of 5	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93	0 of 5	NA	NA	0 of 5	0 of 5
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93	0 of 5	NA	NA	0 of 5	0 of 5
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93	0 of 5	NA	NA	0 of 5	0 of 5
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0 of 5	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93	0 of 5	NA	NA	0 of 5	0 of 5
Chrysene	µg/L	3.18	NA	NA	0.031	0.93	0 of 5	NA	NA	0 of 5	0 of 5
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93	0 of 5	NA	NA	0 of 5	0 of 5
Fluoranthene	µg/L	2.3	NA	NA	370	16	**1 of 5**	NA	NA	0 of 5	0 of 5
Fluorene	µg/L	2	NA	NA	14,000	1,400	**1 of 5**	NA	NA	0 of 5	0 of 5
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93	0 of 5	NA	NA	0 of 5	0 of 5
Naphthalene	µg/L	54	NA	NA	NA	2,470	**1 of 5**	NA	NA	NA	0 of 5
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	**1 of 5**	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	6,480	0 of 5	NA	NA	0 of 5	0 of 5

Table J-11. Summary of Terminal 34 Groundwater Quality Data (All Compliance Monitoring Transects)

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Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or no partitioning estimate is available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

* = Cleanup goals for metals in seeps included comparison to background surface water metals concentrations. Detected values in nearshore seeps and nearshore wells did not exceed measured values in surface water.

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations. These are applicable to seeps or, if no seep data are available, to the nearest groundwater well.

[2] Groundwater cleanup goals are applicable to groundwater discharges to the sediment bioactive zone and to surface water.

[3] Cleanup trigger levels were used as part of the compliance monitoring program to determine whether to continue operating the groundwater treatment system. Refer to Tables J-12 to J-16 for a summary of those values.

[4] Conclusions are presented for each transect consistent with the compliance monitoring framework established in the Compliance Monitoring Plan.

[5] The current MTCA Method A groundwater cleanup levels for petroleum are used as a surrogate for evaluating total petroleum hydrocarbon data.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

Table J-12. Summary of Terminal 34 Groundwater Quality Along Transect 1

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								Sample Type	Nearshore Seep		Upland Groundwater		Transect Findings [4]					
								Location ID	S-1	S-1	B-1	B-1						
								Sample Date	9/16/1997	11/3/1998	4/18/2003	8/11/2003						
			Marine AWQC [7]			Site-Specific Cleanup Levels Applicable to Transect								Exceeds Marine AWQC			Transect Exceeds Site-Specific Cleanup Levels	
Chemical Name	Units	Groundwater Reference Values [1] (µg/L)	Chronic (µg/L)	Acute (µg/L)	NTR Human Health [8] (µg/L)	Trigger Level for Seep [2] (µg/L)	Trigger Level for Compliance Wells [3] (µg/L)		Value	Value	Value	Value	Seep or Nearest Well Exceeds Reference Value	Chronic	Acute	Exceeds NTR Human Health	Seep Trigger Level	Upland Well Trigger Level
Metals (Dissolved)																		
Arsenic	µg/L	27.9	36	69	0.14	2.1*	21		5 U	**1 ***	11 U	1 U	No	No	No	**Yes [8]**	No	No
Copper	µg/L	123	3.1	4.8	NA	2.9*	29		4 U	4 U	**7 ***	2 U	No	No	No	NA	No	No
Lead	µg/L	11	8.1	210	NA	5.6	56		5 U	1 U	1 U	1 U	No	No	No	NA	No	No
Petroleum Hydrocarbons																		
Gasoline Range Hydrocarbons	µg/L	1,000 [5]	NA	NA	NA	1000	10000		250 U	250 U	250 U	250 U	No	NA	NA	NA	No	No
Diesel Range Hydrocarbons	µg/L	500 [5]	NA	NA	NA	1000	10000		250 U	250 U	**2800**	**2700**	**Yes**	NA	NA	NA	No	No
BTEX Compounds																		
Benzene	µg/L	180 [6]	NA	NA	71	700	700		1 U	1 U	1 U	1 U	No	NA	NA	No	No	No
Ethylbenzene	µg/L	NA	NA	NA	29000	430	430		1 U	1 U	1 U	1 U	NA	NA	NA	No	No	No
m,p-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [6]	NA	NA	200000	5000	5000		1 U	1 U	1 U	1 U	No	NA	NA	No	No	No
PAH Compounds																		
Acenaphthene	µg/L	2.6	NA	NA	NA	710	710		1.8 U	1.8 U	--	1.8 U	No	NA	NA	NA	No	No
Acenaphthylene	µg/L	11	NA	NA	NA	NA	NA		5.3 U	5.3 U	--	5.3 U	No	NA	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	NA	NA		0.66 U	0.66 U	--	0.66 U	No	NA	NA	No	NA	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93	9.3		0.05 U	0.05 U	--	0.05 U	No	NA	NA	No	No	No
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93	9.3		0.07 U	0.07 U	--	0.07 U	No	NA	NA	No	No	No
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93	9.3		0.04 U	0.04 U	--	0.1 U	No	NA	NA	No	No	No
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	NA		0.11 U	0.11 U	--	0.11 U	No	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93	9.3		0.06 U	0.06 U	--	0.06 U	No	NA	NA	No	No	No
Chrysene	µg/L	3.18	NA	NA	0.031	0.93	9.3		0.15 U	0.15 U	--	0.15 U	No	NA	NA	No	No	No
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93	9.3		0.1 U	0.1 U	--	0.1 U	No	NA	NA	No	No	No
Fluoranthene	µg/L	2.3	NA	NA	370	16	160		0.49 U	0.49 U	--	0.49 U	No	NA	NA	No	No	No
Fluorene	µg/L	2	NA	NA	14000	1400	1400		0.46 U	0.46 U	--	0.46 U	No	NA	NA	No	No	No
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93	9.3		0.07 U	0.07 U	--	0.07 U	No	NA	NA	No	No	No
Naphthalene	µg/L	54	NA	NA	NA	2470	2470		2.5 U	2.5 U	--	**2.5**	No	NA	NA	NA	No	No
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	NA		0.64 U	0.64 U	--	0.64 U	No	NA	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11000	6480	6480		0.27 U	0.27 U	--	0.27 U	No	NA	NA	No	No	No

Table J-12. Summary of Terminal 34 Groundwater Quality Along Transect 1

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or no partitioning estimate is available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

* = Cleanup goals for seeps included comparison to background surface water metals concentrations. Detected values in nearshore seeps and nearshore wells did not exceed measured values in surface water.

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations. These are applicable to seeps or, if no seep data are available, to the nearest groundwater well.

[2] Groundwater cleanup goals are applicable to groundwater discharges to the sediment bioactive zone and to surface water.

[3] Cleanup trigger levels were used as part of the compliance monitoring program to determine whether to continue operating the groundwater treatment system.

[4] Conclusions are presented for each transect consistent with the compliance monitoring framework established in the Cleanup Action Plan.

[5] No exceedances of groundwater reference values were noted for specific petroleum-associated constituents. Additionally, nearshore petroleum concentrations in groundwater were less than the MTCA Method A cleanup levels, which represent conservative reference values for total petroleum hydrocarbon data.

[6] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of toxicity-based groundwater reference values for volatile organic compounds.

[7] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[8] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

	= Exceeds Groundwater Reference Value
Blue Bold Text	**= Exceeds Marine AWQC Chronic Reference Value**
Red Bold Text	**= Exceeds Marine AWQC Acute and Chronic Reference Value**
	= Exceeds NTR Human Health Reference Value
	= Exceeds Site-Specific Cleanup Levels

Table J-13. Summary of Terminal 34 Groundwater Quality Along Transect 2

Note: Formatted for ledger-size printing

								Sample Type	Nearshore Seep		Upland Groundwater		Transect Findings [4]					
								Location ID	S-2	S-2	B-2	B-2						
								Sample Date	4/18/2003	8/11/2003	4/18/2003	8/11/2003						
			Marine AWQC [7]			Site-Specific Cleanup Levels Applicable to Transect								Exceeds Marine AWQC			Transect Exceeds Site-Specific Cleanup Levels	
Chemical Name	Units	Groundwater Reference Values [1] (µg/L)	Chronic (µg/L)	Acute (µg/L)	NTR Human Health [8] (µg/L)	Trigger Level for Seep [2] (µg/L)	Trigger Level for Compliance Wells [3] (µg/L)		Value	Value	Value	Value	Seep or Nearest Well Exceeds Reference Value	Chronic	Acute	Exceeds NTR Human Health	Seep Trigger Level	Upland Well Trigger Level
Metals (Dissolved)																		
Arsenic	µg/L	27.9	36	69	0.14	2.1*	21		5 U	10 U	1 U	**3**	No	No	No	No	No	No
Copper	µg/L	123	3.1	4.8	NA	2.9*	29		4 *	10 U	**2**	2 U	No	No*	No	NA	No	No
Lead	µg/L	11	8.1	210	NA	5.6	56		5 U	10 U	1 U	1 U	No	No	No	NA	No	No
Petroleum Hydrocarbons																		
Gasoline Range Hydrocarbons	µg/L	1,000 [6]	NA	NA	NA	1000	10000		250 U	250 U	250 U	250 U	No	NA	NA	NA	No	No
Diesel Range Hydrocarbons	µg/L	500 [6]	NA	NA	NA	1000	10000		250 U	250 U	**2000**	**1000**	**Yes**	NA	NA	NA	No	No
BTEX Compounds																		
Benzene	µg/L	180 [7]	NA	NA	71	700	700		1 U	1 U	1 U	1 U	No	NA	NA	No	No	No
Ethylbenzene	µg/L	NA	NA	NA	29000	430	430		1 U	1 U	1 U	1 U	NA	NA	NA	No	No	No
m,p-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [7]	NA	NA	200000	5000	5000		1 U	1 U	1 U	1 U	No	NA	NA	No	No	No
PAH Compounds																		
Acenaphthene	µg/L	2.6	NA	NA	NA	710	710		1.8 U	1.8 U	--	**4.8**	**Yes**	NA	NA	NA	No	No
Acenaphthylene	µg/L	11	NA	NA	NA	NA	NA		5.3 U	5.3 U	--	5.3 U	No	NA	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	NA	NA		0.66 U	0.66 U	--	0.66 U	No	NA	NA	No	NA	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93	9.3		0.05 U	0.05 U	--	0.05 U	No	NA	NA	No	No	No
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93	9.3		0.07 U	0.07 U	--	0.07 U	No	NA	NA	No	No	No
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93	9.3		0.1 U	0.1 U	--	0.1 U	No	NA	NA	No	No	No
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	NA		0.11 U	0.11 U	--	0.11 U	No	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93	9.3		0.06 U	0.06 U	--	0.06 U	No	NA	NA	No	No	No
Chrysene	µg/L	3.18	NA	NA	0.031	0.93	9.3		0.15 U	0.15 U	--	0.15 U	No	NA	NA	No	No	No
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93	9.3		0.1 U	0.1 U	--	0.1 U	No	NA	NA	No	No	No
Fluoranthene	µg/L	2.3	NA	NA	370	16	160		0.49 U	0.49 U	--	0.56 U	No	NA	NA	No	No	No
Fluorene	µg/L	2	NA	NA	14000	1400	1400		0.46 U	0.46 U	--	0.46 U	No	NA	NA	No	No	No
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93	9.3		0.07 U	0.07 U	--	0.07 U	No	NA	NA	No	No	No
Napthalene	µg/L	54	NA	NA	NA	2470	2470		2.5 U	2.5 U	--	2.5 U	No	NA	NA	NA	No	No
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	NA		0.64 U	0.64 U	--	0.64 U	No	NA	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11000	6480	6480		0.27 U	0.27 U	--	**0.62**	No	NA	NA	No	No	No

Table J-13. Summary of Terminal 34 Groundwater Quality Along Transect 2

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or no partitioning estimate is available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

* = Cleanup goals for seeps included comparison to background surface water metals concentrations. Detected values in nearshore seeps and nearshore wells did not exceed measured values in surface water.

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations. These are applicable to seeps or, if no seep data are available, to the nearest groundwater well.

[2] Groundwater cleanup goals are applicable to groundwater discharges to the sediment bioactive zone and to surface water.

[3] Cleanup trigger levels were used as part of the compliance monitoring program to determine whether to continue operating the groundwater treatment system.

[4] Conclusions are presented for each transect consistent with the compliance monitoring framework established in the Cleanup Action Plan.

[5] No exceedances of groundwater reference values were noted for specific petroleum-associated constituents. Additionally, nearshore petroleum concentrations in groundwater were less than the MTCA Method A cleanup levels, which represent conservative reference values for total petroleum hydrocarbon data.

[6] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of toxicity-based groundwater reference values for volatile organic compounds.

[7] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[8] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Site-Specific Cleanup Levels

Table J-14. Summary of Terminal 34 Groundwater Quality Along Transect 3

Note: Formatted for ledger-size printing

							Sample Type	Nearshore Seep	Upland Groundwater			Transect Findings [4]					
							Location ID	S-3	GMW-12	GMW-12	GMW-12						
							Sample Date	3/31/1998	4/18/2003	8/11/2003	8/11/2003						
			Marine AWQC [7]			Site-Specific Cleanup Levels Applicable to Transect							Exceeds Marine AWQC			Transect Exceeds Site-Specific Cleanup Levels	
Chemical Name	Units	Groundwater Reference Values [1] (µg/L)	Chronic (µg/L)	Acute (µg/L)	NTR Human Health [8] (µg/L)	Trigger Level for Seep [2] (µg/L)	Trigger Level for Compliance Wells [3] (µg/L)	Value	Value	Value	Value	Seep or Nearest Well Exceeds Reference Value	Chronic	Acute	Exceeds NTR Human Health	Seep Trigger Level	Upland Well Trigger Level
Metals (Dissolved)																	
Arsenic	µg/L	27.9	36	69	0.14	2.1*	21	5 U	1 U	**1**	**1**	No	No	No	No	No	No
Copper	µg/L	123	3.1	4.8	NA	2.9*	29	2 U	2 U	2 U	2 U	No	No	No	NA	No	No
Lead	µg/L	11	8.1	210	NA	5.6	56	1 U	1 U	1 U	1 U	No	No	No	NA	No	No
Petroleum Hydrocarbons																	
Gasoline Range Hydrocarbons	µg/L	1,000 [6]	NA	NA	NA	1000	10000	250 U	250 U	250 U	250 U	No	NA	NA	NA	No	No
Diesel Range Hydrocarbons	µg/L	500 [6]	NA	NA	NA	1000	10000	250 U	**610**	**1300**	**1400**	No	NA	NA	NA	No	No
BTEX Compounds																	
Benzene	µg/L	180 [7]	NA	NA	71	700	700	1 U	1 U	1 U	1 U	No	NA	NA	No	No	No
Ethylbenzene	µg/L	NA	NA	NA	29000	430	430	1 U	1 U	1 U	1 U	NA	NA	NA	No	No	No
m,p-Xylene	µg/L	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [7]	NA	NA	200000	5000	5000	1 U	1 U	1 U	1 U	No	NA	NA	No	No	No
PAH Compounds																	
Acenaphthene	µg/L	2.6	NA	NA	NA	710	710	1.8 U	--	1.8 U	1.8 U	No	NA	NA	NA	No	No
Acenaphthylene	µg/L	11	NA	NA	NA	NA	NA	5.3 U	--	5.4 U	5.3 U	No	NA	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	NA	NA	0.66 U	--	0.68 U	0.66 U	No	NA	NA	No	NA	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93	9.3	0.05 U	--	0.05 U	0.05 U	No	NA	NA	No	No	No
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93	9.3	0.07 U	--	0.07 U	0.07 U	No	NA	NA	No	No	No
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93	9.3	0.04 U	--	0.1 U	0.1 U	No	NA	NA	No	No	No
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	NA	0.11 U	--	0.11 U	0.11 U	No	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93	9.3	0.06 U	--	0.06 U	0.06 U	No	NA	NA	No	No	No
Chrysene	µg/L	3.18	NA	NA	0.031	0.93	9.3	0.15 U	--	0.15 U	0.15 U	No	NA	NA	No	No	No
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93	9.3	0.1 U	--	0.1 U	0.1 U	No	NA	NA	No	No	No
Fluoranthene	µg/L	2.3	NA	NA	370	16	160	0.49 U	--	0.5 U	0.49 U	No	NA	NA	No	No	No
Fluorene	µg/L	2	NA	NA	14000	1400	1400	0.46 U	--	0.47 U	0.46 U	No	NA	NA	No	No	No
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93	9.3	0.07 U	--	0.07 U	0.07 U	No	NA	NA	No	No	No
Napthalene	µg/L	54	NA	NA	NA	2470	2470	2.5 U	--	2.6 U	2.5 U	No	NA	NA	NA	No	No
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	NA	0.64 U	--	0.66 U	0.64 U	No	NA	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11000	6480	6480	0.27 U	--	**0.69**	**0.62**	No	NA	NA	No	No	No

Table J-14. Summary of Terminal 34 Groundwater Quality Along Transect 3

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or no partitioning estimate is available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

* = Cleanup goals for seeps included comparison to background surface water metals concentrations. Detected values in nearshore seeps and nearshore wells did not exceed measured values in surface water.

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations. These are applicable to seeps or, if no seep data are available, to the nearest groundwater well.

[2] Groundwater cleanup goals are applicable to groundwater discharges to the sediment bioactive zone and to surface water.

[3] Cleanup trigger levels were used as part of the compliance monitoring program to determine whether to continue operating the groundwater treatment system.

[4] Conclusions are presented for each transect consistent with the compliance monitoring framework established in the Cleanup Action Plan.

[5] No exceedances of groundwater reference values were noted for specific petroleum-associated constituents. Additionally, nearshore petroleum concentrations in groundwater were less than the MTCA Method A cleanup levels, which represent conservative reference values for total petroleum hydrocarbon data.

[6] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of toxicity-based groundwater reference values for volatile organic compounds.

[7] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[8] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Site-Specific Cleanup Levels

Table J-15. Summary of Terminal 34 Groundwater Quality Along Transect 4

Note: Formatted for ledger-size printing

								Sample Type	Nearshore Seep		Upland Groundwater		Transect Findings [4]					
								Location ID	S-4	S-4	CW-1	CW-1						
								Sample Date	7/13/1999	10/29/1999	4/18/2003	8/11/2003						
			Marine AWQC [7]			Site-Specific Cleanup Levels Applicable to Transect								Exceeds Marine AWQC			Transect Exceeds Site-Specific Cleanup Levels	
Chemical Name	Units	Groundwater Reference Values [1] (µg/L)	Chronic (µg/L)	Acute (µg/L)	NTR Human Health [8] (µg/L)	Trigger Level for Seep [2] (µg/L)	Trigger Level for Compliance Wells [3] (µg/L)		Value	Value	Value	Value	Seep or Nearest Well Exceeds Reference Value	Chronic	Acute	Exceeds NTR Human Health	Seep Trigger Level	Upland Well Trigger Level
Metals (Dissolved)																		
Arsenic	µg/L	27.9	36	69	0.14	2.1*	21		**1**	5 U	**8 ***	**9 ***	No	No	No	**Yes [8]**	No	No
Copper	µg/L	123	3.1	4.8	NA	2.9*	29		2 U	4 U	2 U	**2**	No	No	No	NA	No	No
Lead	µg/L	11	8.1	210	NA	5.6	56		5 U	5 U	1 U	1	No	No	No	NA	No	No
Petroleum Hydrocarbons																		
Gasoline Range Hydrocarbons	µg/L	800 [6]	NA	NA	NA	1000	10000		250 U	250 U	2500 U	**460**	No	NA	NA	NA	No	No
Diesel Range Hydrocarbons	µg/L	500 [6]	NA	NA	NA	1000	10000		**340**	250 U	**5400**	**4800**	**Yes**	NA	NA	NA	No	No
BTEX Compounds																		
Benzene	µg/L	180 [7]	NA	NA	71	700	700		1 U	1 U	**29**	**18**	No	NA	NA	No	No	No
Ethylbenzene	µg/L	NA	NA	NA	29000	430	430		1 U	1 U	10 U	**3.4**	NA	NA	NA	No	No	No
m,p-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	10 U	**3.5**	NA	NA	NA	NA	NA	NA
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	10 U	**1.5**	NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [7]	NA	NA	200000	5000	5000		1 U	1 U	10 U	**1.2**	No	NA	NA	No	No	No
PAH Compounds																		
Acenaphthene	µg/L	2.6	NA	NA	NA	710	710		1.8 U	1.8 U	--	**24**	**Yes**	NA	NA	NA	No	No
Acenaphthylene	µg/L	11	NA	NA	NA	NA	NA		5.3 U	5.3 U	--	5.5 U	No	NA	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	NA	NA		0.66 U	0.66 U	--	**1.8**	No	NA	NA	No	NA	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93	9.3		0.05 U	0.05 U	--	0.05 U	No	NA	NA	No	No	No
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93	9.3		0.07 U	0.07 U	--	0.07 U	No	NA	NA	No	No	No
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93	9.3		0.04 U	0.04 U	--	0.1 U	No	NA	NA	No	No	No
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	NA		0.11 U	0.11 U	--	0.11 U	No	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93	9.3		0.06 U	0.06 U	--	0.06 U	No	NA	NA	No	No	No
Chrysene	µg/L	3.18	NA	NA	0.031	0.93	9.3		0.15 U	0.15 U	--	0.15 U	No	NA	NA	No	No	No
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93	9.3		0.1 U	0.1 U	--	0.1 U	No	NA	NA	No	No	No
Fluoranthene	µg/L	2.3	NA	NA	370	16	160		0.49 U	0.49 U	--	**2.7**	**Yes**	NA	NA	No	No	No
Fluorene	µg/L	2	NA	NA	14000	1400	1400		0.46 U	0.46 U	--	**16**	**Yes**	NA	NA	No	No	No
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93	9.3		0.07 U	0.07 U	--	0.07 U	No	NA	NA	No	No	No
Napthalene	µg/L	54	NA	NA	NA	2470	2470		2.5 U	2.5 U	--	**93**	**Yes**	NA	NA	NA	No	No
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	NA		0.64 U	0.64 U	--	**11**	**Yes**	NA	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11000	6480	6480		**0.21 J**	0.27 U	--	**1.6**	No	NA	NA	No	No	No

Table J-15. Summary of Terminal 34 Groundwater Quality Along Transect 4

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or no partitioning estimate is available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

* = Cleanup goals for seeps included comparison to background surface water metals concentrations. Detected values in nearshore seeps and nearshore wells did not exceed measured values in surface water.

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations. These are applicable to seeps or, if no seep data are available, to the nearest groundwater well.

[2] Groundwater cleanup goals are applicable to groundwater discharges to the sediment bioactive zone and to surface water.

[3] Cleanup trigger levels were used as part of the compliance monitoring program to determine whether to continue operating the groundwater treatment system.

[4] Conclusions are presented for each transect consistent with the compliance monitoring framework established in the Cleanup Action Plan.

[5] No exceedances of groundwater reference values were noted for specific petroleum-associated constituents. Additionally, nearshore petroleum concentrations in groundwater were less than the MTCA Method A cleanup levels, which represent conservative reference values for total petroleum hydrocarbon data.

[7] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of toxicity-based groundwater reference values for volatile organic compounds.

[7] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[8] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Green Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Site-Specific Cleanup Levels

Table J-16. Summary of Terminal 34 Groundwater Quality Along Transect 5

Note: Formatted for ledger-size printing

								Sample Type	Upland Groundwater		Transect Findings [4]					
								Location ID	B-11	B-11						
								Sample Date	4/18/2003	8/11/2003						
			Marine AWQC [7]			Site-Specific Cleanup Levels Applicable to Transect						Exceeds Marine AWQC			Transect Exceeds Site-Specific Cleanup Levels	
Chemical Name	Units	Groundwater Reference Values [1] (µg/L)	Chronic (µg/L)	Acute (µg/L)	NTR Human Health [8] (µg/L)	Trigger Level for Seep [2] (µg/L)	Trigger Level for Compliance Wells [3] (µg/L)		Value	Value	Seep or Nearest Well Exceeds Reference Value	Chronic	Acute	Exceeds NTR Human Health	Seep Trigger Level	Upland Well Trigger Level
Metals (Dissolved)																
Arsenic	µg/L	27.9	36	69	0.14	2.1*	21		1 U	2 U	No	No	No	No	No	No
Copper	µg/L	123	3.1	4.8	NA	2.9*	29		**6 ***	**7 ***	No	No*	No*	NA	No	No
Lead	µg/L	11	8.1	210	NA	5.6	56		**3**	2 U	No	No	No	NA	No	No
Petroleum Hydrocarbons																
Gasoline Range Hydrocarbons	µg/L	1,000 [6]	NA	NA	NA	1000	10000		250 U	250 U	No	NA	NA	NA	No	No
Diesel Range Hydrocarbons	µg/L	500 [6]	NA	NA	NA	1000	10000		**420**	**380**	No	NA	NA	NA	No	No
BTEX Compounds																
Benzene	µg/L	180 [7]	NA	NA	71	700	700		1 U	1 U	No	NA	NA	No	No	No
Ethylbenzene	µg/L	NA	NA	NA	29000	430	430		1 U	1 U	NA	NA	NA	No	No	No
m,p-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	NA	NA	NA	NA	NA	NA
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA		1 U	1 U	NA	NA	NA	NA	NA	NA
Toluene	µg/L	737 [7]	NA	NA	200000	5000	5000		1 U	1 U	No	NA	NA	No	No	No
PAH Compounds																
Acenaphthene	µg/L	2.6	NA	NA	NA	710	710		--	1.8 U	No	NA	NA	NA	No	No
Acenaphthylene	µg/L	11	NA	NA	NA	NA	NA		--	5.4 U	No	NA	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	NA	NA		--	0.67 U	No	NA	NA	No	NA	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.93	9.3		--	0.05 U	No	NA	NA	No	No	No
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.93	9.3		--	0.07 U	No	NA	NA	No	No	No
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0.93	9.3		--	0.1 U	No	NA	NA	No	No	No
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	NA		--	0.11 U	No	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0.93	9.3		--	0.06 U	No	NA	NA	No	No	No
Chrysene	µg/L	3.18	NA	NA	0.031	0.93	9.3		--	0.15 U	No	NA	NA	No	No	No
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.93	9.3		--	0.1 U	No	NA	NA	No	No	No
Fluoranthene	µg/L	2.3	NA	NA	370	16	160		--	0.49 U	No	NA	NA	No	No	No
Fluorene	µg/L	2	NA	NA	14000	1400	1400		--	0.46 U	No	NA	NA	No	No	No
Indeno(1,2,3-cd)pyrene	µg/L	0.028	NA	NA	0.031	0.93	9.3		--	0.07 U	No	NA	NA	No	No	No
Napthalene	µg/L	54	NA	NA	NA	2470	2470		--	2.5 U	No	NA	NA	NA	No	No
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	NA		--	0.65 U	No	NA	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11000	6480	6480		--	0.27 U	No	NA	NA	No	No	No

Table J-16. Summary of Terminal 34 Groundwater Quality Along Transect 5

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or no partitioning estimate is available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

* = Cleanup goals for seeps included comparison to background surface water metals concentrations. Detected values in nearshore seeps and nearshore wells did not exceed measured values in surface water.

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations. These are applicable to seeps or, if no seep data are available, to the nearest groundwater well.

[2] Groundwater cleanup goals are applicable to groundwater discharges to the sediment bioactive zone and to surface water.

[3] Cleanup trigger levels were used as part of the compliance monitoring program to determine whether to continue operating the groundwater treatment system.

[4] Conclusions are presented for each transect consistent with the compliance monitoring framework established in the Cleanup Action Plan.

[5] No exceedances of groundwater reference values were noted for specific petroleum-associated constituents. Additionally, nearshore petroleum concentrations in groundwater were less than the MTCA Method A cleanup levels, which represent conservative reference values for total petroleum hydrocarbon data.

[6] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of toxicity-based groundwater reference values for volatile organic compounds.

[7] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[8] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Site-Specific Cleanup Levels

Table J-17. Summary of T25 Groundwater Data

Note: Formatted for ledger-size printing

					Location ID	AQ-MW-1 (See Table J-18)		AQ-MW-2 (See Table J-19)	
Chemical	Unit	Groundwater Reference Values [1,2,3]	Marine AWQC [4] Chronic	Marine AWQC [4] Acute	NTR Human Health [5]	Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal	Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal
Conventional Parameters (mg/L)									
Total suspended solids	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Metals, Dissolved (µg/L)									
Arsenic	µg/L	27.9	36	69	0.14	0 of 4	0 of 4	0 of 4	0 of 4
Cadmium	µg/L	2.6	9.3	42	NA	0 of 4	0 of 4	0 of 4	0 of 4
Chromium	µg/L	306	50	1100	NA	0 of 4	NA	0 of 4	NA
Copper	µg/L	123	3.1	4.8	NA	0 of 4	0 of 4	0 of 4	0 of 4
Lead	µg/L	11	8.1	210	0.15	0 of 4	NA	0 of 4	NA
Mercury	µg/L	0.0052	0.025	1.8	4600	0 of 4	NA	0 of 4	NA
Nickel	µg/L	NA	8.2	74	NA	NA	0 of 4	NA	0 of 4
Silver	µg/L	1.5	NA	1.9	6.3	0 of 4	0 of 4	0 of 4	0 of 4
Zinc	µg/L	33	81	90	NA	0 of 4	0 of 4	0 of 4	0 of 4
Petroleum Hydrocarbons									
Total Petroleum Hydrocarbons	µg/L	NA [2]	NA	NA	NA	NA	NA	NA	NA
BTEX Compounds									
Benzene	µg/L	180 [3]	NA	NA	71	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	29,000	NA	NA	NA	NA
Toluene	µg/L	737 [3]	NA	NA	200,000	NA	NA	NA	NA
Total Xylenes	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics (µg/L)									
1,2,4-Trichlorobenzene	µg/L	1.1	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17000	0 of 4	0 of 4	0 of 4	0 of 4
1,4-Dichlorobenzene	µg/L	7.1	NA	NA	NA	0 of 4	NA	0 of 4	NA
2,4-Dimethylphenol	µg/L	2	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
2-Methylphenol (o-Cresol)	µg/L	7.1	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
4-Methylphenol (p-Cresol)	µg/L	77	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Benzoic acid	µg/L	2243	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Benzyl alcohol	µg/L	182	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Bis(2-ethylhexyl)phthalate	µg/L	0.28	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Butylbenzyl phthalate	µg/L	0.52	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Diethyl phthalate	µg/L	484	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Dimethyl phthalate	µg/L	143	NA	NA	NA	0 of 4	NA	0 of 4	NA
Di-n-butyl phthalate	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	µg/L	0.3	NA	NA	NA	0 of 4	NA	0 of 4	NA
Hexachlorobenzene	µg/L	0.11	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	µg/L	3.9	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Hexachloroethane	µg/L	NA	NA	NA	NA	NA	0 of 4	NA	0 of 4
N-Nitrosodiphenylamine	µg/L	1.8	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Pentachlorophenol	µg/L	5.3	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Phenol	µg/L	78	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4

Table J-17. Summary of T25 Groundwater Data

Note: Formatted for ledger-size printing

					Location ID	AQ-MW-1 (See Table J-18)		AQ-MW-2 (See Table J-19)	
Chemical	**Unit**	**Groundwater Reference Values [1,2,3]**	**Marine AWQC [4]**		**NTR Human Health [5]**	**Detections in Excess of Reference Values**	**Detections in Excess of Cleanup Goal**	**Detections in Excess of Reference Values**	**Detections in Excess of Cleanup Goal**
			Chronic	**Acute**					
Polycyclic Aromatic Hydrocarbons (µg/L)									
1-Methylnaphthalene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	µg/L	13	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Acenaphthene	µg/L	2.6	NA	NA	NA	**4 of 4**	0 of 4	0 of 4	0 of 4
Acenaphthylene	µg/L	11	NA	NA	NA	0 of 4	NA	0 of 4	NA
Anthracene	µg/L	11	NA	NA	110,000	0 of 4	0 of 4	0 of 4	0 of 4
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0 of 4	NA	0 of 4	NA
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0 of 4	NA	0 of 4	NA
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0 of 3	NA	0 of 3	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0 of 3	NA	0 of 3	NA
Total Benzofluoranthene[a]	µg/L	0.19	NA	NA	0.062	0 of 1	NA	0 of 1	NA
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	0 of 4	NA	0 of 4	NA
Chrysene	µg/L	3.18	NA	NA	0.031	0 of 4	NA	0 of 4	NA
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0 of 4	NA	0 of 4	NA
Dibenzofuran	µg/L	1.3	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Fluoranthene	µg/L	2.3	NA	NA	14,000	0 of 4	0 of 4	0 of 4	0 of 4
Fluorene	µg/L	2	NA	NA	370	0 of 4	0 of 4	0 of 4	0 of 4
Indeno(1,2,3-c,d)pyrene	µg/L	0.028	NA	NA	0.031	0 of 4	NA	0 of 4	NA
Naphthalene	µg/L	54	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Phenanthrene	µg/L	4.8	NA	NA	NA	0 of 4	NA	0 of 4	NA
Pyrene	µg/L	14	NA	NA	11,000	0 of 4	0 of 4	0 of 4	0 of 4
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	µg/L	NA	NA	NA	0.217	NA	NA	NA	NA
Total Naphthalenes (U = 1/2)	µg/L	67	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
PCB Aroclors (µg/L)									
Aroclor 1016	µg/L	0.44	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Aroclor 1221	µg/L	1.17	NA	NA	NA	0 of 4	NA	0 of 4	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA	0 of 4	NA	0 of 4	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA	0 of 4	NA	0 of 4	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA	0 of 4	NA	0 of 4	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA	0 of 4	0 of 4	0 of 4	0 of 4
Aroclor 1260	µg/L	0.058	NA	NA	NA	0 of 4	NA	0 of 4	NA
Total PCB Aroclors (U = 1/2)	µg/L	NA	0.03	10	0.00017	NA	NA	NA	NA

Table J-17. Summary of T25 Groundwater Data

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						Location ID	AQ-MW-3 (See Table J-20)		AQ-MW-4 (See Table J-21)		Historical Upland MW (See Table J-22)	
Chemical	Unit	Groundwater Reference Values [1,2,3]	Marine AWQC [4] Chronic	Marine AWQC [4] Acute	NTR Human Health [5]		Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal	Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal	Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal
Conventional Parameters (mg/L)												
Total suspended solids	mg/L	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA
Metals, Dissolved (µg/L)												
Arsenic	µg/L	27.9	36	69	0.14		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Cadmium	µg/L	2.6	9.3	42	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Chromium	µg/L	306	50	1100	NA		0 of 8	NA	0 of 4	NA	NA	NA
Copper	µg/L	123	3.1	4.8	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Lead	µg/L	11	8.1	210	0.15		0 of 8	NA	0 of 4	NA	NA	NA
Mercury	µg/L	0.0052	0.025	1.8	4600		0 of 8	NA	0 of 4	NA	NA	NA
Nickel	µg/L	NA	8.2	74	NA		NA	0 of 8	NA	0 of 4	NA	NA
Silver	µg/L	1.5	NA	1.9	6.3		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Zinc	µg/L	33	81	90	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Petroleum Hydrocarbons												
Total Petroleum Hydrocarbons	µg/L	NA [2]	NA	NA	NA		NA	NA	NA	NA	NA	0 of 4
BTEX Compounds												
Benzene	µg/L	180 [3]	NA	NA	71		NA	NA	NA	NA	0 of 4	0 of 4
Ethylbenzene	µg/L	NA	NA	NA	29,000		NA	NA	NA	NA	NA	0 of 4
Toluene	µg/L	737 [3]	NA	NA	200,000		NA	NA	NA	NA	0 of 4	0 of 4
Total Xylenes	µg/L	NA	NA	NA	NA		NA	NA	NA	NA	NA	0 of 4
Semivolatile Organics (µg/L)												
1,2,4-Trichlorobenzene	µg/L	1.1	NA	NA	NA		0 of 8	0 of 8	0 of 4	NA	NA	NA
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17000		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
1,4-Dichlorobenzene	µg/L	7.1	NA	NA	NA		0 of 8	NA	0 of 4	NA	NA	NA
2,4-Dimethylphenol	µg/L	2	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
2-Methylphenol (o-Cresol)	µg/L	7.1	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
4-Methylphenol (p-Cresol)	µg/L	77	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Benzoic acid	µg/L	2243	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Benzyl alcohol	µg/L	182	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Bis(2-ethylhexyl)phthalate	µg/L	0.28	NA	NA	NA		**1 of 8**	0 of 8	0 of 4	0 of 4	NA	NA
Butylbenzyl phthalate	µg/L	0.52	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Diethyl phthalate	µg/L	484	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Dimethyl phthalate	µg/L	143	NA	NA	NA		0 of 8	NA	0 of 4	NA	NA	NA
Di-n-butyl phthalate	µg/L	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	µg/L	0.3	NA	NA	NA		0 of 8	NA	0 of 4	NA	NA	NA
Hexachlorobenzene	µg/L	0.11	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	µg/L	3.9	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Hexachloroethane	µg/L	NA	NA	NA	NA		NA	0 of 8	NA	0 of 4	NA	NA
N-Nitrosodiphenylamine	µg/L	1.8	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Pentachlorophenol	µg/L	5.3	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Phenol	µg/L	78	NA	NA	NA		0 of 8	0 of 8	0 of 4	0 of 4	NA	NA

Table J-17. Summary of T25 Groundwater Data

Note: Formatted for ledger-size printing

					Location ID	AQ-MW-3 (See Table J-20)		AQ-MW-4 (See Table J-21)		Historical Upland MW (See Table J-22)	
Chemical	Unit	Groundwater Reference Values [1,2,3]	Marine AWQC [4] Chronic	Marine AWQC [4] Acute	NTR Human Health [5]	Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal	Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal	Detections in Excess of Reference Values	Detections in Excess of Cleanup Goal
Polycyclic Aromatic Hydrocarbons (µg/L)											
1-Methylnaphthalene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	µg/L	13	NA	NA	NA	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Acenaphthylene	µg/L	11	NA	NA	NA	0 of 8	NA	0 of 4	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0 of 8	NA	0 of 4	NA	NA	NA
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0 of 8	NA	0 of 4	NA	NA	NA
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0 of 6	NA	0 of 3	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0 of 6	NA	0 of 3	NA	NA	NA
Total Benzofluoranthene[a]	µg/L	0.19	NA	NA	0.062	0 of 2	NA	0 of 1	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	0 of 8	NA	0 of 4	NA	NA	NA
Chrysene	µg/L	3.18	NA	NA	0.031	0 of 8	NA	0 of 4	NA	NA	NA
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0 of 8	NA	0 of 4	NA	NA	NA
Dibenzofuran	µg/L	1.3	NA	NA	NA	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Fluorene	µg/L	2	NA	NA	370	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Indeno(1,2,3-c,d)pyrene	µg/L	0.028	NA	NA	0.031	0 of 8	NA	0 of 4	NA	NA	NA
Naphthalene	µg/L	54	NA	NA	NA	0 of 8	NA	0 of 4	0 of 4	NA	NA
Phenanthrene	µg/L	4.8	NA	NA	NA	0 of 8	NA	0 of 4	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	µg/L	NA	NA	NA	0.217	NA	NA	NA	NA	NA	NA
Total Naphthalenes (U = 1/2)	µg/L	67	NA	NA	NA	0 of 8	0 of 8	0 of 4	0 of 4	NA	NA
PCB Aroclors (µg/L)											
Aroclor 1016	µg/L	0.44	NA	NA	NA	0 of 8	0 of 8	0 of 4	0 of 4	0 of 1	NA
Aroclor 1221	µg/L	1.17	NA	NA	NA	0 of 8	NA	0 of 4	NA	0 of 1	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA	0 of 8	NA	0 of 4	NA	0 of 1	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA	0 of 8	NA	0 of 4	NA	0 of 1	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA	0 of 8	NA	0 of 4	NA	0 of 1	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA	0 of 8	0 of 8	0 of 4	0 of 4	0 of 1	NA
Aroclor 1260	µg/L	0.058	NA	NA	NA	0 of 8	NA	0 of 4	NA	0 of 1	NA
Total PCB Aroclors (U = 1/2)	µg/L	NA	0.03	10	0.00017	NA	NA	NA	NA	0 of 1	NA

Table J-17. Summary of T25 Groundwater Data

Note: Formatted for ledger-size printing

			Location ID			Summary of All Well Locations [5]			
			Marine AWQC [4]				Detections in Excess of Marine AWQC		
Chemical	Unit	Groundwater Reference Values [1,2,3]	Chronic	Acute	NTR Human Health [5]	Detections in Excess of Reference Values	Chronic	Acute	Detections in Excess of NTR Human Health
Conventional Parameters (mg/L)									
Total suspended solids	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Metals, Dissolved (µg/L)									
Arsenic	µg/L	27.9	36	69	0.14	0 of 4	0 of 4	0 of 4	**4 of 4 [5]**
Cadmium	µg/L	2.6	9.3	42	NA	0 of 4	0 of 4	0 of 4	NA
Chromium	µg/L	306	50	1100	NA	0 of 4	0 of 4	0 of 4	NA
Copper	µg/L	123	3.1	4.8	NA	0 of 4	0 of 4	0 of 4	NA
Lead	µg/L	11	8.1	210	0.15	0 of 4	0 of 4	0 of 4	0 of 4
Mercury	µg/L	0.0052	0.025	1.8	4600	0 of 4	0 of 4	0 of 4	0 of 4
Nickel	µg/L	NA	8.2	74	NA	NA	0 of 4	0 of 4	NA
Silver	µg/L	1.5	NA	1.9	6.3	0 of 4	NA	0 of 4	0 of 4
Zinc	µg/L	33	81	90	NA	0 of 4	0 of 4	0 of 4	NA
Petroleum Hydrocarbons									
Total Petroleum Hydrocarbons	µg/L	NA [2]	NA	NA	NA	NA	NA	NA	NA
BTEX Compounds									
Benzene	µg/L	180 [3]	NA	NA	71	0 of 1	NA	NA	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	NA	NA	NA	0 of 1
Toluene	µg/L	737 [3]	NA	NA	200,000	0 of 1	NA	NA	0 of 1
Total Xylenes	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics (µg/L)									
1,2,4-Trichlorobenzene	µg/L	1.1	NA	NA	NA	0 of 4	NA	NA	NA
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17000	0 of 4	NA	NA	0 of 4
1,4-Dichlorobenzene	µg/L	7.1	NA	NA	NA	0 of 4	NA	NA	NA
2,4-Dimethylphenol	µg/L	2	NA	NA	NA	0 of 4	NA	NA	NA
2-Methylphenol (o-Cresol)	µg/L	7.1	NA	NA	NA	0 of 4	NA	NA	NA
4-Methylphenol (p-Cresol)	µg/L	77	NA	NA	NA	0 of 4	NA	NA	NA
Benzoic acid	µg/L	2243	NA	NA	NA	0 of 4	NA	NA	NA
Benzyl alcohol	µg/L	182	NA	NA	NA	0 of 4	NA	NA	NA
Bis(2-ethylhexyl)phthalate	µg/L	0.28	NA	NA	NA	**1 of 4**	NA	NA	NA
Butylbenzyl phthalate	µg/L	0.52	NA	NA	NA	0 of 4	NA	NA	NA
Diethyl phthalate	µg/L	484	NA	NA	NA	0 of 4	NA	NA	NA
Dimethyl phthalate	µg/L	143	NA	NA	NA	0 of 4	NA	NA	NA
Di-n-butyl phthalate	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	µg/L	0.3	NA	NA	NA	0 of 4	NA	NA	NA
Hexachlorobenzene	µg/L	0.11	NA	NA	NA	0 of 4	NA	NA	NA
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	µg/L	3.9	NA	NA	NA	0 of 4	NA	NA	NA
Hexachloroethane	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	µg/L	1.8	NA	NA	NA	0 of 4	NA	NA	NA
Pentachlorophenol	µg/L	5.3	NA	NA	NA	0 of 4	NA	NA	NA
Phenol	µg/L	78	NA	NA	NA	0 of 4	NA	NA	NA

Table J-17. Summary of T25 Groundwater Data

Note: Formatted for ledger-size printing

			Location ID			Summary of All Well Locations [5]			
			Marine AWQC [4]				Detections in Excess of Marine AWQC		
Chemical	Unit	Groundwater Reference Values [1,2,3]	Chronic	Acute	NTR Human Health [5]	Detections in Excess of Reference Values	Chronic	Acute	Detections in Excess of NTR Human Health
Polycyclic Aromatic Hydrocarbons (µg/L)									
1-Methylnaphthalene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	µg/L	13	NA	NA	NA	0 of 4	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	**1 of 4**	NA	NA	NA
Acenaphthylene	µg/L	11	NA	NA	NA	0 of 4	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	0 of 4	NA	NA	0 of 4
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0 of 4	NA	NA	0 of 4
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0 of 4	NA	NA	0 of 4
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	0 of 4	NA	NA	0 of 4
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	0 of 4	NA	NA	0 of 4
Total Benzofluoranthene[a]	µg/L	0.19	NA	NA	0.062	0 of 4	NA	NA	0 of 4
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	0 of 4	NA	NA	NA
Chrysene	µg/L	3.18	NA	NA	0.031	0 of 4	NA	NA	0 of 4
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0 of 4	NA	NA	0 of 4
Dibenzofuran	µg/L	1.3	NA	NA	NA	0 of 4	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	0 of 4	NA	NA	0 of 4
Fluorene	µg/L	2	NA	NA	370	0 of 4	NA	NA	0 of 4
Indeno(1,2,3-c,d)pyrene	µg/L	0.028	NA	NA	0.031	0 of 4	NA	NA	0 of 4
Naphthalene	µg/L	54	NA	NA	NA	0 of 4	NA	NA	NA
Phenanthrene	µg/L	4.8	NA	NA	NA	0 of 4	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	0 of 4	NA	NA	0 of 4
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	µg/L	NA	NA	NA	0.217	NA	NA	NA	0 of 4
Total Naphthalenes (U = 1/2)	µg/L	67	NA	NA	NA	0 of 4	NA	NA	NA
PCB Aroclors (µg/L)									
Aroclor 1016	µg/L	0.44	NA	NA	NA	0 of 5	NA	NA	NA
Aroclor 1221	µg/L	1.17	NA	NA	NA	0 of 5	NA	NA	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA	0 of 5	NA	NA	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA	0 of 5	NA	NA	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA	0 of 5	NA	NA	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA	0 of 5	NA	NA	NA
Aroclor 1260	µg/L	0.058	NA	NA	NA	0 of 5	NA	NA	NA
Total PCB Aroclors (U = 1/2)	µg/L	NA	0.03	10	0.00017	NA	0 of 4	0 of 4	0 of 4

Table J-17. Summary of T25 Groundwater Data

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[3] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for derivation of groundwater reference values for selected volatile organic compounds.

[4] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[5] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds MTCA Method C Cleanup Level

Table J-18. Summary of Terminal 25 Groundwater Data - AQ-MW-1

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]	Location ID / Sample Date / Sample Type: AQ-MW-1 10/28/2011 N	AQ-MW-1 2/6/2012 N	AQ-MW-1 5/21/2012 N	AQ-MW-1 7/31/2012 N	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health
Conventional Parameters (mg/L)														
Total suspended solids	mg/L	NA	NA	NA	NA	**4.7**	**7.7**	**7.2**	**5.2**	4	NA	NA	NA	NA
Metals, Dissolved (µg/L)														
Arsenic	µg/L	27.9	36	69	0.14	100 U	4 UJ	**3**	**6**	4	0 of 4	0 of 4	0 of 4	**2 of 4 [3]**
Cadmium	µg/L	2.6	9.3	42	NA	4 U	4 U	4 U	4 U	4	0 of 4	0 of 4	0 of 4	NA
Chromium	µg/L	306	50	1100	NA	10 U	10 U	10 U	10 U	4	0 of 4	0 of 4	0 of 4	NA
Copper	µg/L	123	3.1	4.8	NA	4 U	4 U	4 U	4 U	4	0 of 4	0 of 4	0 of 4	NA
Lead	µg/L	11	8.1	210	0.15	40 U	2 U	0.5 U	1 U	4	0 of 4	0 of 4	0 of 4	0 of 4
Mercury	µg/L	0.0052	0.025	1.8	4600	0.1 U	0.1 U	0.1 U	0.1 U	4	0 of 4	0 of 4	0 of 4	0 of 4
Nickel	µg/L	NA	8.2	74	NA	20 U	20 U	20 UJ	20 U	4	NA	0 of 4	0 of 4	NA
Silver	µg/L	1.5	NA	1.9	6.3	6 U	6 U	6 U	6 U	4	0 of 4	NA	0 of 4	0 of 4
Zinc	µg/L	33	81	90	NA	20 U	20 U	20 U	20 U	4	0 of 4	0 of 4	0 of 4	NA
Semivolatile Organics (µg/L)														
1,2,4-Trichlorobenzene	µg/L	1.1	NA	NA	NA	1 UJ	1 U	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17000	1 UJ	1 U	1 UJ	1 UJ	4	0 of 4	NA	NA	0 of 4
1,4-Dichlorobenzene	µg/L	7.1	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
2,4-Dimethylphenol	µg/L	2	NA	NA	NA	1 UJ	1 UJ	1 U	1 U	4	0 of 4	NA	NA	NA
2-Methylphenol (o-Cresol)	µg/L	7.1	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
4-Methylphenol (p-Cresol)	µg/L	77	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Benzoic acid	µg/L	2243	NA	NA	NA	10 U	10 U	10 U	10 U	4	0 of 4	NA	NA	NA
Benzyl alcohol	µg/L	182	NA	NA	NA	5 UJ	5 U	5 U	5 UJ	4	0 of 4	NA	NA	NA
Bis(2-ethylhexyl)phthalate	µg/L	0.28	NA	NA	NA	1 U	1 U	1 U	1.1 U	4	0 of 4	NA	NA	NA
Butylbenzyl phthalate	µg/L	0.52	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Diethyl phthalate	µg/L	484	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Dimethyl phthalate	µg/L	143	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Di-n-butyl phthalate	µg/L	NA	NA	NA	NA	1 U	1 U	1 U	1 U	4	NA	NA	NA	NA
Di-n-octyl phthalate	µg/L	0.3	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Hexachlorobenzene	µg/L	0.11	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	µg/L	3.9	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
Hexachloroethane	µg/L	NA	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	NA	NA	NA	NA
N-Nitrosodiphenylamine	µg/L	1.8	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Pentachlorophenol	µg/L	5.3	NA	NA	NA	5 U	5 U	5 UJ	5 U	4	0 of 4	NA	NA	NA
Phenol	µg/L	78	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (µg/L)														
1-Methylnaphthalene	µg/L	NA	NA	NA	NA	**0.3 J**	**0.76 J**	**1.9 J**	**0.55**	4	NA	NA	NA	NA
2-Methylnaphthalene	µg/L	13	NA	NA	NA	**0.097 J**	**0.11 J**	**0.11 J**	**0.017**	4	0 of 4	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	**2.7**	**5.6 J**	**7.6 J**	**4.7**	4	**4 of 4**	NA	NA	NA
Acenaphthylene	µg/L	11	NA	NA	NA	**0.0068 J**	**0.022 J**	**0.014 J**	**0.0096 J**	4	0 of 4	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	**0.054 J**	**0.11**	**0.066 J**	**0.062**	4	0 of 4	NA	NA	0 of 4
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	**0.0073 J**	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	--	0.01 U	0.01 UJ	0.01 U	3	0 of 3	NA	NA	0 of 3
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	--	0.01 U	0.01 U	0.01 U	3	0 of 3	NA	NA	0 of 3
Total Benzofluoranthene[a]	µg/L	0.19	NA	NA	0.062	**0.023 J**	--	--	--	1	0 of 1	NA	NA	0 of 1

Table J-18. Summary of Terminal 25 Groundwater Data - AQ-MW-1

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]	Location ID / Sample Date / Sample Type	AQ-MW-1 10/28/2011 N	AQ-MW-1 2/6/2012 N	AQ-MW-1 5/21/2012 N	AQ-MW-1 7/31/2012 N	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA		**0.0069 J**	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Chrysene	µg/L	3.18	NA	NA	0.031		**0.0066 J**	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031		**0.0099 J**	0.01 UJ	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Dibenzofuran	µg/L	1.3	NA	NA	NA		**0.16**	**0.5 J**	**1 J**	**0.68**	4	0 of 4	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000		**0.17 J**	**0.29**	**0.15 J**	**0.2**	4	0 of 4	NA	NA	0 of 4
Fluorene	µg/L	2	NA	NA	370		**0.17**	**0.49**	**0.96 J**	**0.4**	4	0 of 4	NA	NA	0 of 4
Indeno(1,2,3-c,d)pyrene	µg/L	0.028	NA	NA	0.031		**0.0095 J**	0.01 U	0.01 U	0.01 U	4	0 of 4	NA	NA	0 of 4
Naphthalene	µg/L	54	NA	NA	NA		**1.9**	**2.4 J**	**2.8 J**	**0.23**	4	0 of 4	NA	NA	NA
Phenanthrene	µg/L	4.8	NA	NA	NA		**0.06 J**	**0.22**	**0.45 J**	**0.35**	4	0 of 4	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000		**0.11 J**	**0.16**	**0.089 J**	**0.12**	4	0 of 4	NA	NA	0 of 4
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	µg/L	NA	NA	NA	0.217		**0.01 J**	0.01 UJ	0.01 UJ	0.01 U	4	NA	NA	NA	0 of 4
Total Naphthalenes (U = 1/2)	µg/L	67	NA	NA	NA		**2.297 J**	**3.27 J**	**4.81 J**	**0.797**	4	0 of 4	NA	NA	NA
PCB Aroclors (µg/L)															
Aroclor 1016	µg/L	0.44	NA	NA	NA		1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1221	µg/L	1.17	NA	NA	NA		1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA		1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA		1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA		1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA		1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1260	µg/L	0.058	NA	NA	NA		1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Total PCB Aroclors (U = 1/2)	µg/L	NA	0.03	10	0.00017		1 U	1 U	0.01 U	0.01 U	4	NA	0 of 4	0 of 4	0 of 4

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009) or updated value as part of this SRI

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[3] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds MTCA Method C Cleanup Level

Table J-19. Summary of Terminal 25 Groundwater Data - AQ-MW-2

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]	Location ID / Sample Date / Sample Type: AQ-MW-2 10/28/2011 N	AQ-MW-2 2/6/2012 N	AQ-MW-2 5/21/2012 N	AQ-MW-2 7/31/2012 N	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health
Conventional Parameters (mg/L)														
Total suspended solids	mg/L	NA	NA	NA	NA	1.2 U	**4.6**	**4.3**	2 U	4	NA	NA	NA	NA
Metals, Dissolved (µg/L)														
Arsenic	µg/L	27.9	36	69	0.14	50 U	**3 J**	1 U	**1**	4	0 of 4	0 of 4	0 of 4	**2 of 4 [3]**
Cadmium	µg/L	2.6	9.3	42	NA	2 U	2 U	2 U	2 U	4	0 of 4	0 of 4	0 of 4	NA
Chromium	µg/L	306	50	1100	NA	5 U	5 U	5 U	5 U	4	0 of 4	0 of 4	0 of 4	NA
Copper	µg/L	123	3.1	4.8	NA	2 U	2 U	2 U	2 U	4	0 of 4	0 of 4	0 of 4	NA
Lead	µg/L	11	8.1	210	0.15	20 U	0.5 U	0.1 U	0.2 U	4	0 of 4	0 of 4	0 of 4	0 of 4
Mercury	µg/L	0.0052	0.025	1.8	4600	0.1 U	0.1 U	0.1 U	0.1 U	4	0 of 4	0 of 4	0 of 4	0 of 4
Nickel	µg/L	NA	8.2	74	NA	10 U	10 U	10 U	10 U	4	NA	0 of 4	0 of 4	NA
Silver	µg/L	1.5	NA	1.9	6.3	3 U	3 U	3 U	3 U	4	0 of 4	NA	0 of 4	0 of 4
Zinc	µg/L	33	81	90	NA	10 U	10 U	10 U	10 U	4	0 of 4	0 of 4	0 of 4	NA
Semivolatile Organics (µg/L)														
1,2,4-Trichlorobenzene	µg/L	1.1	NA	NA	NA	1 UJ	1 U	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17000	1 UJ	1 U	1 UJ	1 UJ	4	0 of 4	NA	NA	0 of 4
1,4-Dichlorobenzene	µg/L	7.1	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
2,4-Dimethylphenol	µg/L	2	NA	NA	NA	1 UJ	1 UJ	1 U	1 U	4	0 of 4	NA	NA	NA
2-Methylphenol (o-Cresol)	µg/L	7.1	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
4-Methylphenol (p-Cresol)	µg/L	77	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Benzoic acid	µg/L	2243	NA	NA	NA	10 U	10 U	10 U	10 U	4	0 of 4	NA	NA	NA
Benzyl alcohol	µg/L	182	NA	NA	NA	5 UJ	5 U	5 U	5 UJ	4	0 of 4	NA	NA	NA
Bis(2-ethylhexyl)phthalate	µg/L	0.28	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Butylbenzyl phthalate	µg/L	0.52	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Diethyl phthalate	µg/L	484	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Dimethyl phthalate	µg/L	143	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Di-n-butyl phthalate	µg/L	NA	NA	NA	NA	1 U	1 U	1 U	1 U	4	NA	NA	NA	NA
Di-n-octyl phthalate	µg/L	0.3	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Hexachlorobenzene	µg/L	0.11	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	µg/L	3.9	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
Hexachloroethane	µg/L	NA	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	NA	NA	NA	NA
N-Nitrosodiphenylamine	µg/L	1.8	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Pentachlorophenol	µg/L	5.3	NA	NA	NA	5 U	5 U	5 UJ	5 U	4	0 of 4	NA	NA	NA
Phenol	µg/L	78	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (µg/L)														
1-Methylnaphthalene	µg/L	NA	NA	NA	NA	**0.0055 J**	0.01 UJ	0.01 UJ	0.01 U	4	NA	NA	NA	NA
2-Methylnaphthalene	µg/L	13	NA	NA	NA	**0.007 J**	0.01 UJ	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	**0.047 J**	**0.047 J**	**0.063 J**	**0.047**	4	0 of 4	NA	NA	NA
Acenaphthylene	µg/L	11	NA	NA	NA	0.01 UJ	**0.018 J**	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	**0.0055 J**	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	--	0.01 U	0.01 UJ	0.01 U	3	0 of 3	NA	NA	0 of 3
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	--	0.01 U	0.01 U	0.01 U	3	0 of 3	NA	NA	0 of 3
Total Benzofluoranthene[a]	µg/L	0.19	NA	NA	0.062	0.02 UJ	--	--	--	1	0 of 1	NA	NA	0 of 1

Table J-19. Summary of Terminal 25 Groundwater Data - AQ-MW-2

Note: Formatted for ledger-size printing

						Location ID	AQ-MW-2	AQ-MW-2	AQ-MW-2	AQ-MW-2					
						Sample Date	10/28/2011	2/6/2012	5/21/2012	7/31/2012					
						Sample Type	N	N	N	N					
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]		Value	Value	Value	Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA		0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Chrysene	µg/L	3.18	NA	NA	0.031		0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031		0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Dibenzofuran	µg/L	1.3	NA	NA	NA		0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000		**0.007 J**	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Fluorene	µg/L	2	NA	NA	370		0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Indeno(1,2,3-c,d)pyrene	µg/L	0.028	NA	NA	0.031		0.01 UJ	0.01 U	0.01 U	0.01 U	4	0 of 4	NA	NA	0 of 4
Naphthalene	µg/L	54	NA	NA	NA		**0.1 J**	0.013 UJ	**0.0059 J**	0.01 U	4	0 of 4	NA	NA	NA
Phenanthrene	µg/L	4.8	NA	NA	NA		0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000		0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	µg/L	NA	NA	NA	0.217		0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	4	NA	NA	NA	0 of 4
Total Naphthalenes (U = 1/2)	µg/L	67	NA	NA	NA		**0.1125 J**	0.013 UJ	**0.0159 J**	0.01 U	4	0 of 4	NA	NA	NA
PCB Aroclors (µg/L)															
Aroclor 1016	µg/L	0.44	NA	NA	NA		1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1221	µg/L	1.17	NA	NA	NA		1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA		1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA		1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA		1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA		1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1260	µg/L	0.058	NA	NA	NA		1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Total PCB Aroclors (U = 1/2)	µg/L	NA	0.03	10	0.00017		1.1 U	1 U	0.01 U	0.01 U	4	NA	0 of 4	0 of 4	0 of 4

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[3] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds MTCA Method A Cleanup Level

Table J-20. Summary of Terminal 25 Groundwater Data - AQ-MW-3

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]	Location ID / Sample Date / Sample Type: AQ-MW-3 10/28/2011 N	AQ-MW-3 10/28/2011 FD	AQ-MW-3 2/6/2012 N	AQ-MW-3 2/6/2012 FD	AQ-MW-3 5/21/2012 N	AQ-MW-3 5/21/2012 FD	AQ-MW-3 7/31/2012 N	AQ-MW-3 7/31/2012 FD	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC: Chronic	Chemicals Detected Above Marine AWQC: Acute	Chemicals Detected Above NTR Human Health
						Value	Value	Value	Value	Value	Value	Value	Value					
Conventional Parameters (mg/L)																		
Total suspended solids	mg/L	NA	NA	NA	NA	**6.9**	**2.8**	**3.8**	**2.3**	**3.7**	**6.3**	1 U	1 U	8	NA	NA	NA	NA
Metals, Dissolved (µg/L)																		
Arsenic	µg/L	27.9	36	69	0.14	50 U	50 U	**2 J**	**1 J**	1 U	1 U	**0.6**	**0.5**	8	0 of 8	0 of 8	0 of 8	**4 of 8 [3]**
Cadmium	µg/L	2.6	9.3	42	NA	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	8	0 of 8	0 of 8	0 of 8	NA
Chromium	µg/L	306	50	1100	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	8	0 of 8	0 of 8	0 of 8	NA
Copper	µg/L	123	3.1	4.8	NA	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	8	0 of 8	0 of 8	0 of 8	NA
Lead	µg/L	11	8.1	210	0.15	20 U	20 U	0.5 U	0.5 U	0.1 U	0.1 U	0.2 U	0.2 U	8	0 of 8	0 of 8	0 of 8	0 of 8
Mercury	µg/L	0.0052	0.025	1.8	4600	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	8	0 of 8	0 of 8	0 of 8	0 of 8
Nickel	µg/L	NA	8.2	74	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	8	NA	0 of 8	0 of 8	NA
Silver	µg/L	1.5	NA	1.9	6.3	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	8	0 of 8	NA	0 of 8	0 of 8
Zinc	µg/L	33	81	90	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	8	0 of 8	0 of 8	0 of 8	NA
Semivolatile Organics (µg/L)																		
1,2,4-Trichlorobenzene	µg/L	1.1	NA	NA	NA	1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	8	0 of 8	NA	NA	NA
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17000	1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	8	0 of 8	NA	NA	0 of 8
1,4-Dichlorobenzene	µg/L	7.1	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	8	0 of 8	NA	NA	NA
2,4-Dimethylphenol	µg/L	2	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
2-Methylphenol (o-Cresol)	µg/L	7.1	NA	NA	NA	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
4-Methylphenol (p-Cresol)	µg/L	77	NA	NA	NA	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Benzoic acid	µg/L	2243	NA	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	8	0 of 8	NA	NA	NA
Benzyl alcohol	µg/L	182	NA	NA	NA	5 UJ	5 UJ	5 U	5 U	5 U	5 U	5 UJ	5 UJ	8	0 of 8	NA	NA	NA
Bis(2-ethylhexyl)phthalate	µg/L	0.28	NA	NA	NA	1 U	1 U	1 U	**2**	1 U	1 U	1 U	1 U	8	**1 of 8**	NA	NA	NA
Butylbenzyl phthalate	µg/L	0.52	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Diethyl phthalate	µg/L	484	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Dimethyl phthalate	µg/L	143	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Di-n-butyl phthalate	µg/L	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8	NA	NA	NA	NA
Di-n-octyl phthalate	µg/L	0.3	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Hexachlorobenzene	µg/L	0.11	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	µg/L	3.9	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	8	0 of 8	NA	NA	NA
Hexachloroethane	µg/L	NA	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	8	NA	NA	NA	NA
N-Nitrosodiphenylamine	µg/L	1.8	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Pentachlorophenol	µg/L	5.3	NA	NA	NA	5 U	5 U	5 U	5 U	5 UJ	5 UJ	5 U	5 U	8	0 of 8	NA	NA	NA
Phenol	µg/L	78	NA	NA	NA	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	8	0 of 8	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (µg/L)																		
1-Methylnaphthalene	µg/L	NA	NA	NA	NA	**0.0039 J**	**0.0054 J**	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	NA	NA	NA	NA
2-Methylnaphthalene	µg/L	13	NA	NA	NA	**0.0054 J**	**0.0072 J**	0.01 UJ	0.01 UJ	**0.02 J**	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	**0.0098 J**	**0.011 J**	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Acenaphthylene	µg/L	11	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	0.01 UJ	**0.0068 J**	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	--	--	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	6	0 of 6	NA	NA	0 of 6
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	6	0 of 6	NA	NA	0 of 6
Total Benzofluoranthene[a]	µg/L	0.19	NA	NA	0.062	0.02 UJ	0.02 UJ	--	--	--	--	--	--	2	0 of 2	NA	NA	0 of 2

Table J-20. Summary of Terminal 25 Groundwater Data - AQ-MW-3

Note: Formatted for ledger-size printing

Location ID						AQ-MW-3	AQ-MW-3	AQ-MW-3	AQ-MW-3	AQ-MW-3	AQ-MW-3	AQ-MW-3	AQ-MW-3					
Sample Date						10/28/2011	10/28/2011	2/6/2012	2/6/2012	5/21/2012	5/21/2012	7/31/2012	7/31/2012					
Sample Type						N	FD	N	FD	N	FD	N	FD					
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]	Value	Value	Value	Value	Value	Value	Value	Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Chrysene	µg/L	3.18	NA	NA	0.031	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Dibenzofuran	µg/L	1.3	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Fluoranthene	µg/L	2.3	NA	NA	14,000	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Fluorene	µg/L	2	NA	NA	370	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Indeno(1,2,3-c,d)pyrene	µg/L	0.028	NA	NA	0.031	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Naphthalene	µg/L	54	NA	NA	NA	**0.059 J**	0.024 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Phenanthrene	µg/L	4.8	NA	NA	NA	**0.0062 J**	**0.0061 J**	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	0 of 8
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	µg/L	NA	NA	NA	0.217	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	0.01 U	8	NA	NA	NA	0 of 8
Total Naphthalenes (U = 1/2)	µg/L	67	NA	NA	NA	**0.0683 J**	**0.0246 J**	0.01 UJ	0.01 UJ	**0.03 J**	0.01 UJ	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
PCB Aroclors (µg/L)																		
Aroclor 1016	µg/L	0.44	NA	NA	NA	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Aroclor 1221	µg/L	1.17	NA	NA	NA	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Aroclor 1260	µg/L	0.058	NA	NA	NA	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	0 of 8	NA	NA	NA
Total PCB Aroclors (U = 1/2)	µg/L	NA	0.03	10	0.00017	1 U	1 U	1 U	1 U	0.01 U	0.01 U	0.01 U	0.01 U	8	NA	0 of 8	0 of 8	0 of 8

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[3] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = Exceeds Marine AWQC Chronic Reference Value

Red Bold Text = Exceeds Marine AWQC Acute and Chronic Reference Value

= Exceeds NTR Human Health Reference Value

= Exceeds MTCA Method A Cleanup Level

Table J-21. Summary of Terminal 25 Groundwater Data - AQ-MW-4

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]	Location ID / Sample Date / Sample Type: AQ-MW-4 10/28/2011 N	AQ-MW-4 2/6/2012 N	AQ-MW-4 5/21/2012 N	AQ-MW-4 7/31/2012 N	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC: Chronic	Chemicals Detected Above Marine AWQC: Acute	Chemicals Detected Above NTR Human Health
Conventional Parameters (mg/L)														
Total suspended solids	mg/L	NA	NA	NA	NA	**25.6**	**1.3**	**2.1**	1 U	4	NA	NA	NA	NA
Metals, Dissolved (µg/L)														
Arsenic	µg/L	27.9	36	69	0.14	50 U	**8 J**	**1**	**0.6**	4	0 of 4	0 of 4	0 of 4	**3 of 4 [3]**
Cadmium	µg/L	2.6	9.3	42	NA	2 U	2 U	2 U	2 U	4	0 of 4	0 of 4	0 of 4	NA
Chromium	µg/L	306	50	1100	NA	5 U	5 U	5 U	5 U	4	0 of 4	0 of 4	0 of 4	NA
Copper	µg/L	123	3.1	4.8	NA	2 U	2 U	2 U	2 U	4	0 of 4	0 of 4	0 of 4	NA
Lead	µg/L	11	8.1	210	0.15	20 U	1 U	0.1 U	0.2 U	4	0 of 4	0 of 4	0 of 4	0 of 4
Mercury	µg/L	0.0052	0.025	1.8	4600	0.1 U	0.1 U	0.1 U	0.1 U	4	0 of 4	0 of 4	0 of 4	0 of 4
Nickel	µg/L	NA	8.2	74	NA	10 U	10 U	10 U	10 U	4	NA	0 of 4	0 of 4	NA
Silver	µg/L	1.5	NA	1.9	6.3	3 U	3 U	3 U	3 U	4	0 of 4	NA	0 of 4	0 of 4
Zinc	µg/L	33	81	90	NA	10 U	10 U	10 U	10 U	4	0 of 4	0 of 4	0 of 4	NA
Semivolatile Organics (µg/L)														
1,2,4-Trichlorobenzene	µg/L	1.1	NA	NA	NA	1 UJ	1 U	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17000	1 UJ	1 U	1 UJ	1 UJ	4	0 of 4	NA	NA	0 of 4
1,4-Dichlorobenzene	µg/L	7.1	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
2,4-Dimethylphenol	µg/L	2	NA	NA	NA	1 UJ	1 UJ	1 U	1 U	4	0 of 4	NA	NA	NA
2-Methylphenol (o-Cresol)	µg/L	7.1	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
4-Methylphenol (p-Cresol)	µg/L	77	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Benzoic acid	µg/L	2243	NA	NA	NA	10 U	10 U	10 U	10 U	4	0 of 4	NA	NA	NA
Benzyl alcohol	µg/L	182	NA	NA	NA	5 UJ	5 U	5 U	5 UJ	4	0 of 4	NA	NA	NA
Bis(2-ethylhexyl)phthalate	µg/L	0.28	NA	NA	NA	1 U	1 U	1 U	5.1 U	4	0 of 4	NA	NA	NA
Butylbenzyl phthalate	µg/L	0.52	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Diethyl phthalate	µg/L	484	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Dimethyl phthalate	µg/L	143	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Di-n-butyl phthalate	µg/L	NA	NA	NA	NA	1 U	1 U	1 U	1 U	4	NA	NA	NA	NA
Di-n-octyl phthalate	µg/L	0.3	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Hexachlorobenzene	µg/L	0.11	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	µg/L	3.9	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	0 of 4	NA	NA	NA
Hexachloroethane	µg/L	NA	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	4	NA	NA	NA	NA
N-Nitrosodiphenylamine	µg/L	1.8	NA	NA	NA	1 U	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Pentachlorophenol	µg/L	5.3	NA	NA	NA	5 U	5 U	5 UJ	5 U	4	0 of 4	NA	NA	NA
Phenol	µg/L	78	NA	NA	NA	1 UJ	1 U	1 U	1 U	4	0 of 4	NA	NA	NA
Polycyclic Aromatic Hydrocarbons (µg/L)														
1-Methylnaphthalene	µg/L	NA	NA	NA	NA	**0.027 J**	**0.036 J**	**0.0055 J**	**0.0058 J**	4	NA	NA	NA	NA
2-Methylnaphthalene	µg/L	13	NA	NA	NA	**0.028 J**	0.01 UJ	**0.085 J**	**0.007 J**	4	0 of 4	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	**0.026 J**	**0.012 J**	**0.0062 J**	**0.0069 J**	4	0 of 4	NA	NA	NA
Acenaphthylene	µg/L	11	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	**0.0064 J**	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(a)anthracene	µg/L	0.32	NA	NA	0.031	0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(a)pyrene	µg/L	0.01	NA	NA	0.031	0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Benzo(b)fluoranthene	µg/L	0.09	NA	NA	0.031	--	0.01 U	0.01 UJ	0.01 U	3	0 of 3	NA	NA	0 of 3
Benzo(k)fluoranthene	µg/L	0.1	NA	NA	0.031	--	0.01 U	0.01 U	0.01 U	3	0 of 3	NA	NA	0 of 3
Total Benzofluoranthene[a]	µg/L	0.19	NA	NA	0.062	0.02 UJ	--	--	--	1	0 of 1	NA	NA	0 of 1

Table J-21. Summary of Terminal 25 Groundwater Data - AQ-MW-4

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [2] (µg/L) Chronic	Marine AWQC [2] (µg/L) Acute	NTR Human Health [3]	Location ID / Sample Date / Sample Type: AQ-MW-4 10/28/2011 N	AQ-MW-4 2/6/2012 N	AQ-MW-4 5/21/2012 N	AQ-MW-4 7/31/2012 N	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Chrysene	µg/L	3.18	NA	NA	0.031	0.01 UJ	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Dibenzo(a,h)anthracene	µg/L	0.029	NA	NA	0.031	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Dibenzofuran	µg/L	1.3	NA	NA	NA	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	4	0 of 4	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	**0.03 J**	**0.012**	0.01 UJ	**0.007 J**	4	0 of 4	NA	NA	0 of 4
Fluorene	µg/L	2	NA	NA	370	**0.017 J**	0.01 U	0.01 UJ	0.01 U	4	0 of 4	NA	NA	0 of 4
Indeno(1,2,3-c,d)pyrene	µg/L	0.028	NA	NA	0.031	0.01 UJ	0.01 U	0.01 U	0.01 U	4	0 of 4	NA	NA	0 of 4
Naphthalene	µg/L	54	NA	NA	NA	**0.062 J**	0.017 UJ	**0.0083 J**	**0.0085 J**	4	0 of 4	NA	NA	NA
Phenanthrene	µg/L	4.8	NA	NA	NA	**0.042 J**	**0.018**	**0.0098 J**	**0.011**	4	0 of 4	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	**0.015 J**	**0.01**	0.01 UJ	**0.0061 J**	4	0 of 4	NA	NA	0 of 4
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	µg/L	NA	NA	NA	0.217	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	4	NA	NA	NA	0 of 4
Total Naphthalenes (U = 1/2)	µg/L	67	NA	NA	NA	**0.117 J**	**0.05 J**	**0.0988 J**	**0.0213 J**	4	0 of 4	NA	NA	NA
PCB Aroclors (µg/L)														
Aroclor 1016	µg/L	0.44	NA	NA	NA	1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1221	µg/L	1.17	NA	NA	NA	1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA	1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA	1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA	1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA	1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Aroclor 1260	µg/L	0.058	NA	NA	NA	1.1 U	1 U	0.01 U	0.01 U	4	0 of 4	NA	NA	NA
Total PCB Aroclors (U = 1/2)	µg/L	NA	0.03	10	0.00017	1.1 U	1 U	0.01 U	0.01 U	4	NA	0 of 4	0 of 4	0 of 4

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[3] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds MTCA Method A Cleanup Level

Table J-22. Summary of Terminal 25 Historical Groundwater Data

Note: Formatted for ledger-size printing

						Location ID	MW-1	MW-2	MW-3	MW-4	LW-1	LW-2	LW-3	B97-GW [6]					
			Marine AWQC [4] (µg/L)			Sample Date	10/19/1989	10/19/1989	10/19/1989	10/19/1989	1/5/1990	1/5/1990	1/5/1990	8/5/2010			Chemicals Detected Above Marine AWQC		
Constituent	Unit	Groundwater Reference Value [1,2,3]	Chronic	Acute	NTR Human Health [5] (µg/L)		Value	Value	Value	Value	Value	Value	Value	Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [1]	Chronic	Acute	Chemicals Detected Above NTR Human Health
Petroleum Hydrocarbons																			
Total Petroleum Hydrocarbons	µg/L	NA [1,2]	NA	NA	NA		1,000 U	1,000 U	1,000 U	1,000 U	10,000 U	10,000 U	10,000 U	[6]	7	NA	NA	NA	NA
BTEX Compounds																			
Benzene	µg/L	180 [3]	NA	NA	71		1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	4	0 of 4	NA	NA	0 of 4
Ethylbenzene	µg/L	NA	NA	NA	29,000		1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	4	NA	NA	NA	0 of 4
Toluene	µg/L	737 [3]	NA	NA	200,000		1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	4	0 of 4	NA	NA	0 of 4
Total Xylenes	µg/L	NA	NA	NA	NA		**1.3**	**1.1**	1.0 U	1.0 U	**--**	**--**	**--**	**--**	4	NA	NA	NA	NA
Polychlorinated Biphenyls [6]																			
Aroclor 1016	µg/L	0.44	NA	NA	NA		--	--	--	--	--	--	--	0.047 U	1	0 of 1	NA	NA	NA
Aroclor 1221	µg/L	1.17	NA	NA	NA		--	--	--	--	--	--	--	0.047 U	1	0 of 1	NA	NA	NA
Aroclor 1232	µg/L	1.17	NA	NA	NA		--	--	--	--	--	--	--	0.047 U	1	0 of 1	NA	NA	NA
Aroclor 1242	µg/L	0.27	NA	NA	NA		--	--	--	--	--	--	--	0.047 U	1	0 of 1	NA	NA	NA
Aroclor 1248	µg/L	0.27	NA	NA	NA		--	--	--	--	--	--	--	0.047 U	1	0 of 1	NA	NA	NA
Aroclor 1254	µg/L	0.16	NA	NA	NA		--	--	--	--	--	--	--	0.047 U	1	0 of 1	NA	NA	NA
Aroclor 1260	µg/L	0.058	NA	NA	NA		**--**	**--**	**--**	**--**	**--**	**--**	**--**	0.047 U	1	0 of 1	NA	NA	NA

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

U = Analyte was not detected above reporting limit

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data. The groundwater cleanup level for petroleum at the time the independent cleanup action was initiated was 1,000 µg/L.

[3] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for derivation of groundwater reference values for selected volatile organic compounds.

[4] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[5] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health

[6] One temporary soil boring was analyzed for groundwater quality on behalf of the Seatttle Department of Transportation in the vicinity of PCB-contaminated soils identified during a construction project. Groundwater PCB data available from this PCB boring are included, though the location is more than 850 feet from the EW.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds MTCA Method A Cleanup Level

Table J-23. Summary of Downgradient Groundwater Data at Terminal 104

Note: Formatted for ledger-size printing

							Location ID	MW-4	MW-4	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5
							Sample Date	12/19/1991	4/22/1992	6/12/1992	10/27/1992	2/10/1993	12/19/1991	4/22/1992	6/12/1992
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Site-specific Cleanup Goal [8] (µg/L)		Value	Value	Value	Value	Value	Value	Value	Value
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	5		--	--	--	--	--	--	--	--
Barium	µg/L	NA	NA	NA	NA	NA		--	--	--	--	--	--	--	--
Cadmium	µg/L	2.6	9.3	42	NA	5		--	--	--	--	--	--	--	--
Chromium	µg/L	306 (T)	50	1,100	NA	50		--	--	--	--	--	--	--	--
Lead	µg/L	11	8.1	210	NA	15		**3 (D)**	--	--	--	--	1 U, (D)	--	--
Mercury	µg/L	0.0052	0.025	1.8	0.15	2		--	--	--	--	--	--	--	--
Selenium	µg/L	NA	NA	NA	NA	180c		--	--	--	--	--	--	--	--
Silver	µg/L	1.5	NA	1.9	NA	180c		--	--	--	--	--	--	--	--
Petroleum Hydrocarbons															
Total Petroleum Hydrocarbons	µg/L	NA	NA	NA	NA	NA		**1800**	--	250 U	250 U	250 U	**150**	--	250 U
Gasoline Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	1000		**--**	50 U	--	--	--	**--**	50 U	--
Diesel Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		**--**	--	--	--	--	**--**	--	--
Lube Oil Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		**--**	--	--	--	--	**--**	--	--
Volatile Organic Compounds															
Benzene	µg/L	NA	NA	NA	NA	5		1 U	0.5 U	10 U	0.2 U	0.5 U	1 U	0.5 U	10 U
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17,000	1,600c		**--**	--	--	--	--	**--**	--	--
1,1-Dichloroethane	µg/L	NA	NA	NA	NA	1,800c		**--**	--	--	--	--	**--**	--	--
cis-1,2-Dichloroethene	µg/L	136	NA	NA	NA	180c		**--**	--	--	--	--	**--**	--	--
trans-1,2-Dichloroethene	µg/L	NA	NA	NA	NA	350c		**--**	--	--	--	--	**--**	--	--
Ethylbenzene	µg/L	NA	NA	NA	29,000	700		1 U	1 U	10 U	0.2 U	0.5 U	1 U	1 U	10 U
Toluene	µg/L	737	NA	NA	200,000	1,000		1 U	1 U	**74**	0.2 U	0.5 U	1 U	1 U	10 U
Trichlorothene (TCE)	µg/L	2,200	NA	NA	81	5		**--**	--	--	--	--	**--**	--	--
m,p-Xylenes	µg/L	NA	NA	NA	NA	35,000c		1 U	--	**71**	0.2 U	0.5 U	1 U	--	10 U
o-Xylenes	µg/L	NA	NA	NA	NA	35,000c		1 U	--	**15**	0.2 U	0.5 U	1 U	--	10 U
Total Xylenes	µg/L	NA	NA	NA	NA	1000		--	J-19 U	--	--	--	--	1 U	--
Other EPA 8260 VOCs [3]	µg/L	NA	NA	NA	NA	NA		**--**	--	--	--	--	**--**	--	--
PAH Compounds [4]	µg/L	[1]	NA	NA	NA	0.1		**--**	--	--	--	--	**--**	--	--
PCBs [5]	µg/L	[1]	0.03	10	0.00017	0.1		--	--	--	--	--	--	--	--

Table J-23. Summary of Downgradient Groundwater Data at Terminal 104

Note: Formatted for ledger-size printing

							Location ID	MW-5	MW-5	MW-6	MW-6	MW-6	MW-6	MW-6	P-10
							Sample Date	10/27/1992	2/10/1993	12/19/1991	4/22/1992	6/12/1992	10/27/1992	2/10/1993	1/10/2005
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Site-specific Cleanup Goal [8] (µg/L)		Value	Value	Value	Value	Value	Value	Value	Value
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	5		--	--	--	--	--	--	--	**4.7**
Barium	µg/L	NA	NA	NA	NA	NA		--	--	--	--	--	--	--	**52**
Cadmium	µg/L	2.6	9.3	42	NA	5		--	--	--	--	--	--	--	4.4 U
Chromium	µg/L	306 (T)	50	1,100	NA	50		--	--	--	--	--	--	--	**13**
Lead	µg/L	11	8.1	210	NA	15		--	--	1 U, (D)	--	--	--	--	**4.1**
Mercury	µg/L	0.0052	0.025	1.8	0.15	2		--	--	--	--	--	--	--	0.5 U
Selenium	µg/L	NA	NA	NA	NA	180c		--	--	--	--	--	--	--	5.6 U
Silver	µg/L	1.5	NA	1.9	NA	180c		--	--	--	--	--	--	--	11 U
Petroleum Hydrocarbons										--					
Total Petroleum Hydrocarbons	µg/L	NA	NA	NA	NA	NA		250 U	250 U	**4300**	--	250 U	250 U	250 U	--
Gasoline Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	1000		--	--	--	50 U	--	--	--	100 U
Diesel Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		--	--	--	--	--	--	--	260 U
Lube Oil Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		--	--	--	--	--	--	--	410 U
Volatile Organic Compounds															
Benzene	µg/L	NA	NA	NA	NA	5		0.2 U	0.5 U	1 U	0.5 U	10 U	0.2 U	0.5 U	0.2 U
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17,000	1,600c		--	--	--	--	--	--	--	0.2 U
1,1-Dichloroethane	µg/L	NA	NA	NA	NA	1,800c		--	--	--	--	--	--	--	0.2 U
cis-1,2-Dichloroethene	µg/L	136	NA	NA	NA	180c		--	--	--	--	--	--	--	0.2 U
trans-1,2-Dichloroethene	µg/L	NA	NA	NA	NA	350c		--	--	--	--	--	--	--	0.2 U
Ethylbenzene	µg/L	NA	NA	NA	29,000	700		0.2 U	0.5 U	1 U	1 U	10 U	0.2 U	0.5 U	0.2 U
Toluene	µg/L	737	NA	NA	200,000	1,000		0.2 U	0.5 U	1 U	1 U	10 U	0.2 U	0.5 U	**0.75**
Trichlorothene (TCE)	µg/L	2,200	NA	NA	81	5		--	--	--	--	--	--	--	0.2 U
m,p-Xylenes	µg/L	NA	NA	NA	NA	35,000c		0.2 U	0.5 U	1 U	--	10 U	0.2 U	0.5 U	**0.52**
o-Xylenes	µg/L	NA	NA	NA	NA	35,000c		0.2 U	0.5 U	1 U	--	10 U	0.2 U	0.5 U	0.2 U
Total Xylenes	µg/L	NA	NA	NA	NA	1000		--	--	--	1 U	--	--	--	
Other EPA 8260 VOCs [3]	µg/L	NA	NA	NA	NA	NA		--	--	--	--	--	--	--	NA
PAH Compounds [4]	µg/L	[1]	NA	NA	NA	0.1		--	--	--	--	--	--	--	0.0098 U
PCBs [5]	µg/L	[1]	0.03	10	0.00017	0.1		--	--	--	--	--	--	--	--

Table J-23. Summary of Downgradient Groundwater Data at Terminal 104

Note: Formatted for ledger-size printing

							Location ID	P-11	P-12	P-13	MW-13	MW-13	MW-13	MW-15	MW-15
							Sample Date	1/10/2005	1/10/2005	1/10/2005	2/23/2006	6/22/2006	11/3/2006	2/23/2006	6/23/2006
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Site-specific Cleanup Goal [8] (µg/L)		Value	Value	Value	Value	Value	Value	Value	Value
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	5		3.3 U	3.3 U	3.3 U	4.4 U	3.3 U	3.3 U	**4.6**	**5.1**
Barium	µg/L	NA	NA	NA	NA	NA		28 U	**32**	28 U	28 U	28 U	28 U	28 U	28 U
Cadmium	µg/L	2.6	9.3	42	NA	5		4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
Chromium	µg/L	306 (T)	50	1,100	NA	50		11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Lead	µg/L	11	8.1	210	NA	15		1.1 U	**2.5**	**1.8**	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Mercury	µg/L	0.0052	0.025	1.8	0.15	2		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Selenium	µg/L	NA	NA	NA	NA	180c		5.6 U	5.6 U	5.6 U	5.6 U	10 U	8.3 U	11 U	5.6 U
Silver	µg/L	1.5	NA	1.9	NA	180c		11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
Petroleum Hydrocarbons															
Total Petroleum Hydrocarbons	µg/L	NA	NA	NA	NA	NA		--	--	--	--	--	--	--	--
Gasoline Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	1000		100 U	100 U	100 U	100 U	--	--	100 U	--
Diesel Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		270 U	250 U	260 U	260 U	--	--	260 U	--
Lube Oil Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		430 U	400 U	410 U	410 U	--	--	420 U	--
Volatile Organic Compounds															
Benzene	µg/L	NA	NA	NA	NA	5		0.2 U	0.2 U	0.2 U	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17,000	1,600c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethane	µg/L	NA	NA	NA	NA	1,800c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	µg/L	136	NA	NA	NA	180c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.4**	0.2 U	0.2 U
trans-1,2-Dichloroethene	µg/L	NA	NA	NA	NA	350c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethylbenzene	µg/L	NA	NA	NA	29,000	700		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	0.2 U	0.2 U
Toluene	µg/L	737	NA	NA	200,000	1,000		**0.49**	**0.27**	**0.38**	0.2 U	0.2 U	--	0.2 U	0.2 U
Trichlorothene (TCE)	µg/L	2,200	NA	NA	81	5		0.2 U	0.2 U	0.2 U	**0.89**	**1.4**	**4**	0.2 U	0.2 U
m,p-Xylenes	µg/L	NA	NA	NA	NA	35,000c		0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	--	0.4 U	0.4 U
o-Xylenes	µg/L	NA	NA	NA	NA	35,000c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	0.2 U	0.2 U
Total Xylenes	µg/L	NA	NA	NA	NA	1000									
Other EPA 8260 VOCs [3]	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
PAH Compounds [4]	µg/L	[1]	NA	NA	NA	0.1		0.0096 U	0.0098 U	0.0096 U	0.0097 U	--	--	0.0098 U	--
PCBs [5]	µg/L	[1]	0.03	10	0.00017	0.1		--	--	--	0.049 U	--	--	0.048 U	--

Table J-23. Summary of Downgradient Groundwater Data at Terminal 104

Note: Formatted for ledger-size printing

							Location ID	MW-15	MW-16	MW-16	MW-17	MW-17	SW-6	SW-7	SW-8
							Sample Date	11/2/2006	6/23/2006	11/2/2006	6/23/2006	11/3/2006	12/13/2006	12/13/2006	12/13/2006
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Site-specific Cleanup Goal [8] (µg/L)		Value	Value	Value	Value	Value	Value	Value	Value
Metals (Total)															
Arsenic	µg/L	27.9	36	69	0.14	5		**5.5**	3.3 U	3.3 U	3.3 U	3.3 U	3 U	3 U	3 U
Barium	µg/L	NA	NA	NA	NA	NA		28 U	28 U	28 U	28 U	28 U	25 U	25 U	25 U
Cadmium	µg/L	2.6	9.3	42	NA	5		4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4 U	4 U	4 U
Chromium	µg/L	306 (T)	50	1,100	NA	50		11 U	11 U	11 U	11 U	11 U	10 U	10 U	10 U
Lead	µg/L	11	8.1	210	NA	15		1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1 U
Mercury	µg/L	0.0052	0.025	1.8	0.15	2		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Selenium	µg/L	NA	NA	NA	NA	180c		8.3 U	5.6 U	8.3 U	5.6 U	8.3 U	5 U	5 U	5 U
Silver	µg/L	1.5	NA	1.9	NA	180c		11 U	11 U	11 U	11 U	11 U	10 U	10 U	10 U
Petroleum Hydrocarbons															
Total Petroleum Hydrocarbons	µg/L	NA	NA	NA	NA	NA		--	--	--	--	--	--	--	--
Gasoline Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	1000		--	--	--	--	--	--	--	--
Diesel Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		--	--	--	--	--	250 U	250 U	250 U
Lube Oil Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500		--	--	--	--	--	410 U	410 U	410 U
Volatile Organic Compounds															
Benzene	µg/L	NA	NA	NA	NA	5		ND	ND	ND	ND	ND	--	--	--
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17,000	1,600c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--
1,1-Dichloroethane	µg/L	NA	NA	NA	NA	1,800c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--
cis-1,2-Dichloroethene	µg/L	136	NA	NA	NA	180c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--
trans-1,2-Dichloroethene	µg/L	NA	NA	NA	NA	350c		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--
Ethylbenzene	µg/L	NA	NA	NA	29,000	700		--	0.2 U	--	0.2 U	--	--	--	--
Toluene	µg/L	737	NA	NA	200,000	1,000		--	0.2 U	--	0.2 U	--	--	--	--
Trichlorothene (TCE)	µg/L	2,200	NA	NA	81	5		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--
m,p-Xylenes	µg/L	NA	NA	NA	NA	35,000c		--	0.4 U	--	0.4 U	--	--	--	--
o-Xylenes	µg/L	NA	NA	NA	NA	35,000c		--	0.2 U	--	0.2 U	--	--	--	--
Total Xylenes	µg/L	NA	NA	NA	NA	1000									
Other EPA 8260 VOCs [3]	µg/L	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
PAH Compounds [4]	µg/L	[1]	NA	NA	NA	0.1		--	--	--	--	--	--	--	--
PCBs [5]	µg/L	[1]	0.03	10	0.00017	0.1		--	--	--	--	--	--	--	--

Table J-23. Summary of Downgradient Groundwater Data at Terminal 104

Note: Formatted for ledger-size printing

							Location ID	SW-9						
							Sample Date	1/4/2007						
Constituent	Unit	Groundwater Reference Value [1]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Site-specific Cleanup Goal [8] (µg/L)	Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health	Chemicals Detected Above Site-specific Cleanup Goal
Metals (Total)													
Arsenic	µg/L	27.9	36	69	0.14	5	--	17	0 of 17	0 of 17	0 of 17	**4 of 17 [7]**	**2 of 17**
Barium	µg/L	NA	NA	NA	NA	NA	--	17	NA	NA	NA	NA	NA
Cadmium	µg/L	2.6	9.3	42	NA	5	--	17	0 of 17	0 of 17	0 of 17	NA	0 of 17
Chromium	µg/L	306 (T)	50	1,100	NA	50	--	17	0 of 17	0 of 17	0 of 17	NA	0 of 17
Lead	µg/L	11	8.1	210	NA	15	--	20	0 of 20	0 of 20	0 of 20	NA	0 of 20
Mercury	µg/L	0.0052	0.025	1.8	0.15	2	--	17	0 of 17	0 of 17	0 of 17	0 of 17	0 of 17
Selenium	µg/L	NA	NA	NA	NA	180c	--	17	NA	NA	NA	NA	0 of 17
Silver	µg/L	1.5	NA	1.9	NA	180c	--	17	0 of 17	NA	0 of 17	NA	0 of 17
Petroleum Hydrocarbons													
Total Petroleum Hydrocarbons	µg/L	NA	NA	NA	NA	NA	--	12	NA	NA	NA	NA	NA
Gasoline Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	1000	100 U	10	NA	NA	NA	NA	0 of 10
Diesel Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500	250 U	10	NA	NA	NA	NA	0 of 10
Lube Oil Range Hydrocarbons	µg/L	NA [2]	NA	NA	NA	500	400 U	10	NA	NA	NA	NA	0 of 10
Volatile Organic Compounds													
Benzene	µg/L	NA	NA	NA	NA	5	--	15	NA	NA	NA	NA	0 of 15
1,2-Dichlorobenzene	µg/L	5.2	NA	NA	17,000	1,600c	--	14	0 of 14	NA	NA	0 of 14	0 of 14
1,1-Dichloroethane	µg/L	NA	NA	NA	NA	1,800c	--	14	NA	NA	NA	NA	0 of 14
cis-1,2-Dichloroethene	µg/L	136	NA	NA	NA	180c	--	14	0 of 14	NA	NA	NA	0 of 14
trans-1,2-Dichloroethene	µg/L	NA	NA	NA	NA	350c	--	14	NA	NA	NA	NA	0 of 14
Ethylbenzene	µg/L	NA	NA	NA	29,000	700	1 U	26	NA	NA	NA	0 of 26	0 of 26
Toluene	µg/L	737	NA	NA	200,000	1,000	1 U	26	0 of 26	NA	NA	0 of 26	0 of 26
Trichlorothene (TCE)	µg/L	2,200	NA	NA	81	5	--	14	0 of 14	NA	NA	0 of 14	0 of 14
m,p-Xylenes	µg/L	NA	NA	NA	NA	35,000c	1 U	23	NA	NA	NA	NA	0 of 23
o-Xylenes	µg/L	NA	NA	NA	NA	35,000c	1 U	23	NA	NA	NA	NA	0 of 23
Total Xylenes	µg/L	NA	NA	NA	NA	1000		3	NA	NA	NA	NA	0 of 3
Other EPA 8260 VOCs [3]	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAH Compounds [4]	µg/L	[1]	NA	NA	NA	0.1	--	6	0 of 6	NA	NA	NA	0 of 6
PCBs [5]	µg/L	[1]	0.03	10	0.00017	0.1	--	2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2

Table J-23. Summary of Downgradient Groundwater Data at Terminal 104

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, NTR, SQS, or a partitioning coefficient is not available from Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

ND = Analyte not detected. The source document only summarized detected results; the reporting limit could not be determined.

-- = Not analyzed

c = MTCA Method C criteria

D = Dissolved metals

U = Non-detect

T = Total metals

[1] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[2] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[3] Other EPA 8260 VOC compounds and all PAH and PCB compounds were non-detect.

[4] Results for carcinogenic PAHs in groundwater.

[5] In addition to the two locations listed in this table (MW-13 and MW-15), nine other monitoring wells in upgradient locations were tested for PCBs. No PCBs were detected in any of the sampled locations.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health, which only applies to inorganic arsenic. The reference values for arsenic have not been adjusted to take into account naturally occurring arsenic concentrations that may be present in groundwater or surface water.

[8] MTCA Method A cleanup level, unless otherwise specified.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Site-Specific Cleanup Goals

Table J-24. Summary of Terminal 30 Nearshore Groundwater Monitoring Data (All Monitoring Wells)

Note: Formatted for ledger-size printing

							MW 84B (Table J-20)		MW 84A[D] (Table J-21)		MW 85A (Table J-22)		MW 85B[D] (Table J-23)	
			Marine AWQC [4] (µg/L)											
Constituent	Unit	Groundwater Reference Value [2]	Chronic	Acute	NTR Human Health [5] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]
Petroleum Hydrocarbons														
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
BTEX Compounds														
Benzene	µg/L	180 [3]	NA	NA	71	23	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Toluene	µg/L	737 [3]	NA	NA	200,000	48,500	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
PAH Compounds														
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**2 of 2**	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	**2 of 2**	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA	0 of 2	NA	0 of 2	NA	0 of 2	NA	0 of 2	NA
Anthracene	µg/L	11	NA	NA	110,000	25,900	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0 of 2	NA	0 of 2	NA	0 of 2	NA	0 of 2	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	**2 of 2**	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	0 of 2	NA	0 of 2	NA	0 of 2	NA	**2 of 2**	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2

Table J-24. Summary of Terminal 30 Nearshore Groundwater Monitoring Data (All Monitoring Wells)

Note: Formatted for ledger-size printing

							MW 86B (Table J-24)		MW 86C[D] (Table J-25)		MW 87A (Table J-26)		MW 87B[D] (Table J-27)	
			Marine AWQC [4] (µg/L)			Location ID								
Constituent	Unit	Groundwater Reference Value [2]	Chronic	Acute	NTR Human Health [5] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]	Detections in Excess of Reference Values [1]	Detections in Excess of Cleanup Goal [1]
Petroleum Hydrocarbons														
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
BTEX Compounds														
Benzene	µg/L	180 [3]	NA	NA	71	23	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA	0 of 1
Toluene	µg/L	737 [3]	NA	NA	200,000	48,500	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1	0 of 1
PAH Compounds														
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	0 of 2	NA	0 of 1	NA	0 of 1	NA	0 of 1	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**3 of 3**	0 of 3	**2 of 2**	0 of 2	0 of 2	0 of 2	**1 of 2**	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA	0 of 3	NA	0 of 2	NA	0 of 2	NA	0 of 2	NA
Anthracene	µg/L	11	NA	NA	110,000	25,900	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	0 of 3	**2 of 3**	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	**1 of 2**
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0 of 3	NA	0 of 2	NA	0 of 2	NA	0 of 2	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0 of 3	**1 of 3**	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460	**1 of 3**	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940	0 of 3	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	0 of 3	NA	0 of 2	NA	0 of 2	NA	**2 of 2**	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	0 of 2	0 of 3	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2	0 of 2

Table J-24. Summary of Terminal 30 Nearshore Groundwater Monitoring Data (All Monitoring Wells)

Note: Formatted for ledger-size printing

							Location ID	Summary of All Well Locations			
Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [4] (µg/L) Chronic	Marine AWQC [4] (µg/L) Acute	NTR Human Health [5] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Detections in Excess of Reference Values	Detections in Excess of Marine AWQC Chronic	Detections in Excess of Marine AWQC Acute	Detections in Excess of NTR Human Health	Detections in Excess of Site-Specific Cleanup Goal
Petroleum Hydrocarbons											
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	NA	NA	NA	NA	0 of 8
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	NA	NA	NA	NA	0 of 8
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	NA	NA	NA	NA	0 of 8
BTEX Compounds											
Benzene	µg/L	180 [3]	NA	NA	71	23	0 of 8	NA	NA	0 of 8	0 of 8
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	NA	NA	NA	0 of 8	0 of 8
o-Xylene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	NA	NA	NA	NA	0 of 8
Toluene	µg/L	737 [3]	NA	NA	200,000	48,500	0 of 8	NA	NA	0 of 8	0 of 8
PAH Compounds											
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	0 of 8	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**5 of 8**	NA	NA	NA	0 of 8
Acenaphthylene	µg/L	11	NA	NA	NA	NA	0 of 8	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110,000	25,900	0 of 8	NA	NA	0 of 8	0 of 8
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	0 of 8	NA	NA	**1 of 8**	**2 of 8**
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0 of 8	NA	NA	0 of 8	0 of 8
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0 of 8	NA	NA	0 of 8	0 of 8
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0 of 8	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0 of 8	NA	NA	0 of 8	0 of 8
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0 of 8	NA	NA	0 of 8	**1 of 8**
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0 of 8	NA	NA	0 of 8	0 of 8
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	0 of 8	NA	NA	0 of 8	0 of 8
Fluorene	µg/L	2.0	NA	NA	370	3,460	**2 of 8**	NA	NA	0 of 8	0 of 8
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0 of 8	NA	NA	0 of 8	0 of 8
Naphthalene	µg/L	54	NA	NA	NA	4,940	0 of 8	NA	NA	NA	0 of 8
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	**2 of 8**	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	0 of 8	NA	NA	0 of 8	0 of 8

Table J-24. Summary of Terminal 30 Nearshore Groundwater Monitoring Data (All Monitoring Wells)

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

bold = detection above reporting limits

D = Deep well

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[4] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[5] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[6] If not otherwise specified, wells are shallow.

Table J-25. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-84B

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Location ID / Sample ID / Sample Date: MW-84B / MW-84B-0411 / 4/19/2011 Value	MW-84B / MW-84B-1111 / 11/8/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC: Chronic	Chemicals Detected Above Marine AWQC: Acute	Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
Petroleum Hydrocarbons														
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	50 U	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	**160**	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	250 U	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds														
Benzene	µg/L	180 [5]	NA	NA	71	23	0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	0.5 U	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	1 U	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500	0.65 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds														
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	--	0.1 U	1	0 of 1	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**87**	**100**	2	**2 of 2**	NA	NA	NA	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA	**0.5**	**0.51**	2	0 of 2	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900	**0.092**	**0.11**	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	**0.13**	**0.12**	2	0 of 2	NA	NA	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460	**0.24**	**0.25**	2	0 of 2	NA	NA	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	**0.41**	**0.69**	2	0 of 2	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	**0.077**	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2

Table J-25. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-84B

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified, wells are shallow.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-26. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-84A

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Location ID / Sample ID / Sample Date: MW-84A[D] MW-84A-0809 4/19/2011 Value	MW-84A[D] MW-84A-1109 11/8/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC: Chronic	Chemicals Detected Above Marine AWQC: Acute	Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
Petroleum Hydrocarbons														
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	50 U	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	50 U	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	250 U	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds														
Benzene	µg/L	180 [5]	NA	NA	71	23	0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	0.8 U	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	1 U	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500	0.65 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds														
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	--	0.1 U	1	0 of 1	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**1.2**	**1**	2	0 of 2	NA	NA	NA	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900	0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460	0.015 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2

Table J-26. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-84A

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

J = Estimated concentration

U = Analyte was not detected above reporting limit

D = Deep well

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified wells are shallow

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-27. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-85 and MW-85A

Note: Formatted for ledger-size printing

							Location ID Sample ID Sample Date	MW-85A MW-85A-0411 4/19/2011	MW-85A MW-85A-1111 11/8/2011						
Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L)		NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)				Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC		Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
			Chronic	Acute								Chronic	Acute		
Petroleum Hydrocarbons															
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800		0.05 U	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500		0.05 U	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500		0.25 U	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds															
Benzene	µg/L	180 [5]	NA	NA	71	23		0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910		0.5 U	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA		--	--	0	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA		--	--	0	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000		1 U	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500		0.65 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds															
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA		--	0.1 U	1	0 of 1	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900		0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA		--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90		0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460		0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590		0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2

Table J-27. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-85 and MW-85A

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified wells are shallow

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-28. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-85B

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L)		NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Location ID Sample ID Sample Date MW-85B[D] MW-85B-0411 4/19/2011 Value	MW-85B[D] MW-85B-1111 11/8/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC		Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
			Chronic	Acute							Chronic	Acute		
Petroleum Hydrocarbons														
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	50 U	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	50 U	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	250 U	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds														
Benzene	µg/L	180 [5]	NA	NA	71	23	0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	0.5 U	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	1 U	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500	0.65 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds														
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	--	0.1 U	1	0 of 1	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**10**	**12**	2	**2 of 2**	NA	NA	NA	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA	**0.16**	**0.15**	2	0 of 2	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900	**0.23**	**0.33**	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0.1 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	**0.31**	**0.34**	2	0 of 2	NA	NA	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460	**6.1**	**7.6**	2	**2 of 2**	NA	NA	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940	**0.1**	**0.39**	2	0 of 2	NA	NA	NA	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	**5.4**	**8.4**	2	**2 of 2**	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	**0.13**	**0.14**	2	0 of 2	NA	NA	0 of 2	0 of 2

Table J-28. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-85B

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

D = Deep well

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified, wells are shallow.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-29. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-86B

Note: Formatted for ledger-size printing

							Location ID	MW-86B	MW-86B	MW-86B						
							Sample ID	MW-86B-0411	MW-86B-1111	MW-86B-0412						
							Sample Date	4/19/2011	11/8/2011	4/19/2012						
Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L)		NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)				Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC		Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
			Chronic	Acute								Chronic	Acute		
Petroleum Hydrocarbons															
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	**210**	--	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	**87**	--	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	250 U	--	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds															
Benzene	µg/L	180 [5]	NA	NA	71	23	**0.5**	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	**0.88**	--	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	0.5 U	--	--	1	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	1 U	--	--	1	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	**1.8**	--	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500	**1.5**	--	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds															
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	--	0.1 U	2.5 U	2	0 of 2	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**5.1**	**6.9**	**7.8**	3	**3 of 3**	NA	NA	NA	0 of 3
Acenaphthylene	µg/L	11	NA	NA	NA	NA	**0.063**	0.1 U	2.5 U	3	0 of 3	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900	**0.18**	**0.31**	2.5 U	3	0 of 3	NA	NA	0 of 3	0 of 3
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	**0.26**	**0.27**	0.5 U	3	0 of 3	NA	NA	**2 of 3**	**2 of 3**
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0.018 U	0.01 U	0.5 U	3	0 of 3	NA	NA	0 of 3	0 of 3
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	0.5 U	3	0 of 3	NA	NA	0 of 3	0 of 3
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0.05 U	0.1 U	2.5 U	3	0 of 3	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	0.5 U	3	0 of 3	NA	NA	0 of 3	0 of 3
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0.018 U	**0.019**	0.5 U	3	0 of 3	NA	NA	0 of 3	**1 of 3**
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0.018 U	0.01 U	0.5 U	3	0 of 3	NA	NA	0 of 3	0 of 3
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	--	--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	**0.9**	**0.89**	2.5 U	3	0 of 3	NA	NA	0 of 3	0 of 3
Fluorene	µg/L	2.0	NA	NA	370	3,460	**0.86**	**2.3**	2.5 U	3	**1 of 3**	NA	NA	0 of 3	0 of 3
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0.018 U	0.01 U	0.5 U	3	0 of 3	NA	NA	0 of 3	0 of 3
Naphthalene	µg/L	54	NA	NA	NA	4,940	**0.05**	**0.12**	2.5 U	3	0 of 3	NA	NA	NA	0 of 3
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	**0.16**	**0.64**	2.5 U	3	0 of 3	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	**0.58**	**0.65**	2.5 U	3	0 of 2	NA	NA	0 of 3	0 of 3

Table J-29. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-86B

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified, wells are shallow.

= Exceeds Groundwater Reference Value

Blue Bold Text = Exceeds Marine AWQC Chronic Reference Value

Red Bold Text = Exceeds Marine AWQC Acute and Chronic Reference Value

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-30. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-86C

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Location ID / Sample ID / Sample Date: MW-86C[D] MW-86C-0411 4/19/2011 Value	MW-86C[D] MW-86C-1111 11/8/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC Chronic	Chemicals Detected Above Marine AWQC Acute	Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
Petroleum Hydrocarbons														
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	250 U	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	**69**	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	250 U	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds														
Benzene	µg/L	180 [5]	NA	NA	71	23	0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	0.5 U	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	0.5 U	--	1	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	1 U	--	1	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	**1.6**	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500	**1.2**	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds														
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	--	0.1 U	1	0 of 1	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**4.2**	**5.6**	2	**2 of 2**	NA	NA	NA	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA	**0.54**	0.1 U	2	0 of 2	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900	**0.15**	**0.18**	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	**0.42**	**0.46**	2	0 of 2	NA	NA	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460	**1.3**	**1.8**	2	0 of 2	NA	NA	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940	**1.3**	**0.17**	2	0 of 2	NA	NA	NA	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	**0.73**	**0.45**	2	0 of 2	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	**0.34**	**0.38**	2	0 of 2	NA	NA	0 of 2	0 of 2

Table J-30. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-86C

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

D = Deep well

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified, wells are shallow.

= Exceeds Groundwater Reference Value

Green Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-31. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-87A

Note: Formatted for ledger-size printing

							Location ID Sample ID Sample Date	MW-87A MW-87A-0411 4/19/2011	MW-87A MW-87A-1111 11/8/2011						
Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L)		NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)		Value	Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC		Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
			Chronic	Acute								Chronic	Acute		
Petroleum Hydrocarbons															
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800		50 U	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500		50 U	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500		250 U	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds															
Benzene	µg/L	180 [5]	NA	NA	71	23		0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910		0.5 U	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA		--	--	0	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA		--	--	0	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000		1 U	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500		0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds															
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA		--	0.1 U	1	0 of 1	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643		**0.18**	**0.41**	2	0 of 2	NA	NA	NA	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900		0.5 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA		0.1 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA		--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90		0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460		**0.069**	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018		0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA		0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590		0.05 U	0.1 U	2	0 of 2	NA	NA	0 of 2	0 of 2

Table J-31. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-87A

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified, wells are shallow.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-32. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-87B

Note: Formatted for ledger-size printing

Constituent	Unit	Groundwater Reference Value [2]	Marine AWQC [6] (µg/L) Chronic	Marine AWQC [6] (µg/L) Acute	NTR Human Health [7] (µg/L)	Controlling Terminal 30 Surface Water ARAR (µg/L)	Location ID / Sample ID / Sample Date: MW-87B / MW-87B-0411 / 4/19/2011 Value	Location ID / Sample ID / Sample Date: MW-87B / MW-87B-1111 / 11/8/2011 Value	Number of Valid Sample Results	Chemicals Detected Above Groundwater Reference Value [3]	Chemicals Detected Above Marine AWQC: Chronic	Chemicals Detected Above Marine AWQC: Acute	Chemicals Detected Above NTR Human Health	Chemicals Detected Above Controlling Terminal 30 Surface Water ARAR
Petroleum Hydrocarbons														
Gasoline Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	800	50 U	--	1	NA	NA	NA	NA	0 of 1
Diesel Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	50 U	--	1	NA	NA	NA	NA	0 of 1
Motor Oil Range Hydrocarbons	µg/L	NA [3,4]	NA	NA	NA	500	250 U	--	1	NA	NA	NA	NA	0 of 1
BTEX Compounds														
Benzene	µg/L	180 [5]	NA	NA	71	23	0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
Ethylbenzene	µg/L	NA	NA	NA	29,000	6,910	0.5 U	--	1	NA	NA	NA	0 of 1	0 of 1
o-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
mp-Xylene	µg/L	NA	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Total Xylene	µg/L	NA	NA	NA	NA	1,000	1 U	--	1	NA	NA	NA	NA	0 of 1
Toluene	µg/L	737 [5]	NA	NA	200,000	48,500	0.5 U	--	1	0 of 1	NA	NA	0 of 1	0 of 1
PAH Compounds														
2-Methylnaphthalene	µg/L	13	NA	NA	NA	NA	--	**0.1**	1	0 of 1	NA	NA	NA	NA
Acenaphthene	µg/L	2.6	NA	NA	NA	643	**2.2**	**2.8**	2	**1 of 2**	NA	NA	NA	0 of 2
Acenaphthylene	µg/L	11	NA	NA	NA	NA	**0.31**	0.1 U	2	0 of 2	NA	NA	NA	NA
Anthracene	µg/L	11	NA	NA	110000	25,900	**0.39**	**0.2**	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(a)anthracene	µg/L	0.82	NA	NA	0.031	0.018	**0.019**	0.01 U	2	0 of 2	NA	NA	0 of 2	**1 of 2**
Benzo(a)pyrene	µg/L	0.02	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(b)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Benzo(g,h,i)perylene	µg/L	0.012	NA	NA	NA	NA	0.05 U	0.1 U	2	0 of 2	NA	NA	NA	NA
Benzo(k)fluoranthene	µg/L	0.24	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Chrysene	µg/L	8.05	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzo(a,h)anthracene	µg/L	0.073	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Dibenzofuran	µg/L	1.3	NA	NA	NA	NA	--	--	0	NA	NA	NA	NA	NA
Fluoranthene	µg/L	2.3	NA	NA	14,000	90	**1.6**	**0.78**	2	0 of 2	NA	NA	0 of 2	0 of 2
Fluorene	µg/L	2.0	NA	NA	370	3,460	**1.5**	**1**	2	0 of 2	NA	NA	0 of 2	0 of 2
Indeno(1,2,3-cd)pyrene	µg/L	0.07	NA	NA	0.031	0.018	0.018 U	0.01 U	2	0 of 2	NA	NA	0 of 2	0 of 2
Naphthalene	µg/L	54	NA	NA	NA	4,940	**0.57**	**0.1**	2	0 of 2	NA	NA	NA	0 of 2
Phenanthrene	µg/L	4.8	NA	NA	NA	NA	**5.1**	**6.7**	2	**2 of 2**	NA	NA	NA	NA
Pyrene	µg/L	14	NA	NA	11,000	2,590	**0.87**	**0.49**	2	0 of 2	NA	NA	0 of 2	0 of 2

Table J-32. Summary of Terminal 30 Nearshore Groundwater Monitoring Data for MW-87B

Note: Formatted for ledger-size printing

Notes:

NA = Not applicable. Chemical does not have an AWQC, SQS, or does not have a partitioning coefficient in Table 6-2 of the East Waterway SEDGM (Anchor and Windward 2009).

-- = Not analyzed

bold = detection above reporting limits

J = Estimated concentration

U = Analyte was not detected above reporting limit

[1] Site cleanup levels applicable to point of exposure (groundwater discharge into sediment bioactive zone). Site cleanup levels framework also incorporates other factors for data from sampling locations further inland.

[2] Refer to SRI Section 9.4.4.1 for the derivation of the groundwater reference values for groundwater based on equilibrium partitioning considerations.

[3] Current MTCA Method A cleanup level used as a surrogate value for evaluating total petroleum hydrocarbon data.

[4] Groundwater monitoring has included testing for specific petroleum-associated hazardous substances (e.g., PAH compounds and volatile organics). No exceedances of applicable references have been noted for these compounds. Additionally, nearshore groundwater complies with the MTCA Method A cleanup levels, which provide a conservative groundwater reference value for petroleum hydrocarbons.

[5] Refer to Table 6-3 of the East Waterway SEDGM (Anchor and Windward 2009) for the derivation of groundwater reference values for volatile organic compounds.

[6] Marine AWQC = Marine Ambient Water Quality Criteria per Washington State (WAC 173-201A-240).

[7] NTR = National Toxics Rule, 40 CFR 131 reference values for Human Health for the consumption of organisms only.

[8] If not otherwise specified, wells are shallow.

= Exceeds Groundwater Reference Value

Blue Bold Text = **Exceeds Marine AWQC Chronic Reference Value**

Red Bold Text = **Exceeds Marine AWQC Acute and Chronic Reference Value**

= Exceeds NTR Human Health Reference Value

= Exceeds Controlling Terminal 30 Surface Water ARAR

Table J-33. Well Depths

Note: Formatted for ledger-size printing

Nearshore Site	Well ID	Well Type	Depth Type	Depth Measurement
Harbor Island	HI-1	Deep	Well Screen Interval (ft bgs)	25-35
	HI-2	Deep	Well Screen Interval (ft bgs)	25-35
	HI-3	Deep	Well Screen Interval (ft bgs)	25-35
	HI-4	Deep	Well Screen Interval (ft bgs)	25-35
	HI-5	Deep	Well Screen Interval (ft bgs)	25-35
	HI-12	Shallow	Well Screen Interval (ft bgs)	7-17
	HI-16	Deep	Well Screen Interval (ft bgs)	25-35
Terminal 102	GP-2	Shallow	Depth to water (ft)/ Total Boring Depth	11.5/14
	GP-5-1	Shallow	Depth to water (ft)/ Total Boring Depth	11/14
	GP-5-2	Shallow	Depth to water (ft)/ Total Boring Depth	11/14
	GP-6	Shallow	Depth to water (ft)/ Total Boring Depth	11/14
	GP-7	Shallow	Depth to water (ft)/ Total Boring Depth	11/14
	GP-8	Shallow	Depth to water (ft)/ Total Boring Depth	11/14
	GP-9	Shallow	Depth to water (ft)/ Total Boring Depth	
Pier 35 (USCG)	MW-1C-03	Shallow	Depth to water (ft)	8.49
	MW-2-03	Shallow	Depth to water (ft)	8.06
	SB-SC-02	Shallow	Depth to water (ft)	8
	SB-SC-03	Shallow	Depth to water (ft)	8.4
	SB-SC-05	Shallow	Depth to water (ft)	8.02
	SB-SC-07	Shallow	Depth to water (ft)	8.3
	SB-SC-08	Shallow	Depth to water (ft)	7.96
Pier 34 (GATX)	B-1	Shallow	NA	NA
	B-2	Shallow	NA	NA
	GMW-12	Shallow	NA	NA
	CW-1	Shallow	NA	NA
	B-11	Shallow	NA	NA
Terminal 30	MW-84B	Shallow	Screened interval (ft)	5-20
	MW-84A	Deep	Screened interval (ft)	30-40
	MW-85A	Shallow	Screened interval (ft)	5-20
	MW-85B	Deep	Screened interval (ft)	30-40
	MW-86B	Shallow	Screened interval (ft)	5-20
	MW-86C	Deep	Screened interval (ft)	30-40
	MW-87A	Shallow	Screened interval (ft)	5-20
	MW-87B	Deep	Screened interval (ft)	30-40
Terminal 25	AQ-MW-1	Shallow	Screened interval (ft)	13-18
	AQ-MW-2	Shallow	Screened interval (ft)	14.5-19.5
	AQ-MW-3	Shallow	Screened interval (ft)	14.5-19.5
	AQ-MW-4	Shallow	Screened interval (ft)	14.5-19.5
	MW-1	Shallow	Screened interval (ft)	6.5-16.5
	MW-2	Shallow	Screened interval (ft)	6.5-16.5
	MW-3	Shallow	Screened interval (ft)	4.5-12.5
	MW-4	Shallow	Screened interval (ft)	4.0-14.0
	LW-1	Shallow	Screened interval (ft)	6-16
	LW-2	Shallow	Screened interval (ft)	6-16
	LW-3	Shallow	Screened interval (ft)	6-16
	B97-GW	Shallow	Screened interval (ft)	12-16
Terminal 104	MW-4	Shallow	Depth to water (unknown units)	8.6
	MW-5	Shallow	Depth to water (unknown units)	8.75
	MW-6	Shallow	Depth to water (unknown units)	9
	P-10	Shallow	NA	NA
	P-11	Shallow	NA	NA
	P-12	Shallow	NA	NA
	P-13	Shallow	NA	NA
	MW-13	Shallow	Depth to water (ft)	6.53
	MW-13	Shallow	Depth to water (ft)	7.79
	MW-13	Shallow	Depth to water (ft)	8.6
	MW-15	Shallow	Depth to water (ft)	7.03
	MW-15	Shallow	Depth to water (ft)	8.26
	MW-15	Shallow	Depth to water (ft)	9.06
	MW-16	Shallow	Depth to water (ft)	7.52
	MW-16	Shallow	Depth to water (ft)	8.35
	MW-17	Shallow	Depth to water (ft)	7.36
	MW-17	Shallow	Depth to water (ft)	8.35
	SW-6	Shallow	Sample depth (ft bgs)	7-12
	SW-7	Shallow	Sample depth (ft bgs)	7-12
	SW-8	Shallow	Sample depth (ft bgs)	7-12
	SW-9	Shallow	Sample depth (ft bgs)	7-12

Notes:

bgs = below ground surface

ft = feet

NA = not applicable

Table J-34. Available Groundwater Conductance and Temperature Data (Salinity)

Note: Formatted for ledger-size printing

Location	Well ID	Well Type	Well Screen Depth (feet)	Dates Sampled	Specific Conductance (umhos/cm)	Temp (°C)	Result 1 Specific Conductance (umhos/cm)	Temp 1 (°C)	Estimated Salinity 1 (ppt)
Harbor Island	HI-1	Deep	25-35	10/21/10, 6/29/11	1700/1377	17/15.1	1700	17	<2
Harbor Island	HI-2	Deep	25-35	10/21/10, 6/29/11	14480/13638	15.68/15.68	14480	15.68	10.4
Harbor Island	HI-3	Deep	25-35	10/21/10, 6/29/11	2799/2769	15.22/14.57	2799	15.22	<2
Harbor Island	HI-4	Deep	25-35	10/21/10, 6/29/11	1465/985	15.57/15.05	1465	15.57	<2
Harbor Island	HI-5	Deep	25-35	10/21/10, 6/30/11	2750/2322	14.88/16.14	2750	14.88	<2
Harbor Island	HI-12	Shallow	7-17	10/21/10, 6/29/11	45000/22030	16.90/13.57	45000	16.9	35.2
Harbor Island	HI-16	Deep	25-35	10/22/10, 6/29/11	2760/2729	17.70/15.75	2760	17.7	<2
Terminal 30	MW-84B	Shallow	5-20	4/19/2011, 11/8/2011	961/983	13/15.8	961	13	<2
Terminal 30	MW-84A	Deep	30-40	4/19/2011, 11/8/2011	1040/1180	14.4/14.7	1040	14.4	<2
Terminal 30	MW-85A	Shallow	5-20	4/19/2011, 11/8/2011	4890/6370	11.6	4890	11.6	3.6
Terminal 30	MW-85B	Deep	30-40	4/19/2011, 11/8/2011	3700/5310	14.2/14	3700	14.2	2.5
Terminal 30	MW 86B	Shallow	5-20	4/19/2011, 11/8/2011	1850/2700	14.85/11.7	1850	14.85	<2
Terminal 30	MW-86C	Deep	30-40	4/19/2011, 11/8/2011	2130/2290	13/14.21	2130	13	<2
Terminal 30	MW-87A	Shallow	5-20	4/19/2011, 11/8/2011	2460/4051	12.3/15.98	2460	12.3	<2
Terminal 30	MW-87B	Deep	30-40	4/19/2011, 11/8/2011	797/869	14.11/14.5	797	14.11	<2
Terminal 25	AQ-MW-1	Shallow	13-18	10/28/11, 2/6/12, 5/21/12, 7/31/12	20027/24933/28590/30550	12.4/9.6/13.9/15.3	20027	12.4	16.2
Terminal 25	AQ-MW-2	Shallow	14.5-19.5	10/28/11, 2/6/12, 5/21/12, 7/31/12	1781/3654/3816/4198	6.79/14.4/12.5/14.33	1781	6.79	<2
Terminal 25	AQ-MW-3	Shallow	14.5-19.5	10/28/11, 2/6/12, 5/21/12, 7/31/12	2283/2405/2624/3002	13.8/14.3/14/13.2	2283	13.8	<2
Terminal 25	AQ-MW-4	Shallow	14.5-19.5	10/28/11, 2/6/12, 5/21/12, 7/31/12	3965/4891/8051/8390	14.5/13.8/13.65/12.7	3965	14.5	2.7

Notes:

1. Salinity estimates calculated using: http://www.fivecreeks.org/monitor/sal.shtml
2. NA = Not applicable

Table J-34. Available Groundwater Conductance and Temperature Data (Salinity)

Note: Formatted for ledger-size printing

Location	Well ID	Well Type	Well Screen Depth (feet)	Dates Sampled	Result 2 Specific Conductance (umhos/cm)	Temp 2 (°C)	Estimated Salinity 2 (ppt)	Result 3 Specific Conductance (umhos/cm)	Temp 3 (°C)	Estimated Salinity 3 (ppt)	Result 4 Specific Conductance (umhos/cm)	Temp 4 (°C)	Estimated Salinity 4 (ppt)
Harbor Island	HI-1	Deep	25-35	10/21/10, 6/29/11	1377	15.1	<2	NA	NA	NA	NA	NA	NA
Harbor Island	HI-2	Deep	25-35	10/21/10, 6/29/11	13638	15.68	9.8	NA	NA	NA	NA	NA	NA
Harbor Island	HI-3	Deep	25-35	10/21/10, 6/29/11	2769	14.57	<2	NA	NA	NA	NA	NA	NA
Harbor Island	HI-4	Deep	25-35	10/21/10, 6/29/11	985	15.05	<2	NA	NA	NA	NA	NA	NA
Harbor Island	HI-5	Deep	25-35	10/21/10, 6/30/11	2322	16.14	<2	NA	NA	NA	NA	NA	NA
Harbor Island	HI-12	Shallow	7-17	10/21/10, 6/29/11	22030	13.57	17.4	NA	NA	NA	NA	NA	NA
Harbor Island	HI-16	Deep	25-35	10/22/10, 6/29/11	2729	15.75	<2	NA	NA	NA	NA	NA	NA
Terminal 30	MW-84B	Shallow	5-20	4/19/2011, 11/8/2011	983	15.8	<2	NA	NA	NA	NA	NA	NA
Terminal 30	MW-84A	Deep	30-40	4/19/2011, 11/8/2011	1180	14.7	<2	NA	NA	NA	NA	NA	NA
Terminal 30	MW-85A	Shallow	5-20	4/19/2011, 11/8/2011	6370	11.6	4.8	NA	NA	NA	NA	NA	NA
Terminal 30	MW-85B	Deep	30-40	4/19/2011, 11/8/2011	5310	14	3.7	NA	NA	NA	NA	NA	NA
Terminal 30	MW 86B	Shallow	5-20	4/19/2011, 11/8/2011	2700	11.7	<2	NA	NA	NA	NA	NA	NA
Terminal 30	MW-86C	Deep	30-40	4/19/2011, 11/8/2011	2290	14.21	<2	NA	NA	NA	NA	NA	NA
Terminal 30	MW-87A	Shallow	5-20	4/19/2011, 11/8/2011	4051	15.98	2.6	NA	NA	NA	NA	NA	NA
Terminal 30	MW-87B	Deep	30-40	4/19/2011, 11/8/2011	869	14.5	<2	NA	NA	NA	NA	NA	NA
Terminal 25	AQ-MW-1	Shallow	13-18	10/28/11, 2/6/12, 5/21/12, 7/31/12	24933	9.6	22.2	28590	13.9	22.9	30550	15.3	23.8
Terminal 25	AQ-MW-2	Shallow	14.5-19.5	10/28/11, 2/6/12, 5/21/12, 7/31/12	3654	14.4	2.5	3816	12.5	2.7	4198	14.33	2.9
Terminal 25	AQ-MW-3	Shallow	14.5-19.5	10/28/11, 2/6/12, 5/21/12, 7/31/12	2405	14.3	<2	2624	14	<2	3002	13.2	2.1
Terminal 25	AQ-MW-4	Shallow	14.5-19.5	10/28/11, 2/6/12, 5/21/12, 7/31/12	4891	13.8	3.4	8051	13.65	5.8	8390	12.7	6.3

Notes:

1. Salinity estimates calculated using: http://www.fivecreeks.org/monitor/sal.shtml
2. NA = Not applicable

Table J-35. Summary of Partitioning Assumptions and Groundwater Reference Values

Note: Formatted for ledger-size printing

cPAH Reference Value Calculations for Future Pontentially Exposed Intertidal Areas

Non-Ionizing Organics	CAS No.	Class	SQS (mg/kg OC)	EW RBTC for CPAH for Direct Contact* (µg/kg dwt)	Benzo(a)pyrene Equivalency	Effective RBTC for compound (µg/kg dwt)	Estimated OC-Normalized Value (µg/kg TOC at 2% TOC)	Koc Estimate (L/Kg oc) [d]	Koc Reference	Reference Value Based on EW RBTC (µg/L)	Reference Value Based on SQS[b] (µg/L)
benzo(a)anthracene	56-55-3	HPAH	110	150	0.1	1,500	75,000	2.31E+05	d*	**0.32**	**0.48**
benzo(a)pyrene	50-32-8	HPAH	99	150	1	150	7,500	7.87E+05	d	**0.01**	**0.13**
benzo(b)fluoranthene	205-99-2	HPAH	230	150	0.1	1,500	75,000	8.03E+05	d	**0.09**	**0.29**
benzo(k)fluoranthene	207-08-9	HPAH	230	150	0.1	1,500	75,000	7.87E+05	d	**0.10**	**0.29**
chrysene	218-01-9	HPAH	110	150	0.01	15,000	750,000	2.36E+05	d	**3.18**	**0.47**
dibenz(a,h)anthracene	53-70-3	HPAH	12	150	0.1	1,500	75,000	2.62E+06	d	**0.029**	**0.0046**
indeno(1,2,3-cd)pyrene	193-39-5	HPAH	34	150	0.1	1,500	75,000	2.68E+06	d	**0.028**	**0.013**

cPAH Partitioning for Site-wide Use (non-interidal areas)

Non-Ionizing Organics	CAS No.	Class	SQS (mg/kg OC)	EW RBTC for CPAH for Netfishing (µg/kg dw)	Benzo(a)pyrene Equivalency	Effective RBTC for compound (µg/kg dwt)	Estimated OC-Normalized Value (µg/kg TOC at 2% TOC)	Koc Estimate (L/Kg oc) [d]	Koc Reference	Reference Value Based on EW RBTC (µg/L)	Reference Value Based on SQS[b] (µg/L)
benzo(a)anthracene	56-55-3	HPAH	110	380	0.1	3,800	190,000	2.31E+05	d*	**0.82**	**0.48**
benzo(a)pyrene	50-32-8	HPAH	99	380	1	380	19,000	7.87E+05	d	**0.02**	**0.13**
benzo(b)fluoranthene	205-99-2	HPAH	230	380	0.1	3,800	190,000	8.03E+05	d	**0.24**	**0.29**
benzo(k)fluoranthene	207-08-9	HPAH	230	380	0.1	3,800	190,000	7.87E+05	d	**0.24**	**0.29**
chrysene	218-01-9	HPAH	110	380	0.01	38,000	1,900,000	2.36E+05	d	**8.05**	**0.47**
dibenz(a,h)anthracene	53-70-3	HPAH	12	380	0.1	3,800	190,000	2.62E+06	d	**0.073**	**0.0046**
indeno(1,2,3-cd)pyrene	193-39-5	HPAH	34	380	0.1	3,800	190,000	2.68E+06	d	**0.07**	**0.013**

Arsenic

Heavy Metals	CAS No.	Class	SQS (mg/kg)	EW RBTC for Arsenic for Natural Background (mg/kg)		Effective RBTC for compound (mg/kg)		Koc Estimate (L/Kd)	Kd Reference	Reference Value Based on EW RBTC (µg/L)[g]	Reference Value Based on SQS (µg/L)[h]
Arsenic	7440-38-2	Metals	57	7		7		2.51E+02	a	**27.89**	**227.09**

Notes:

Chlor = chlorinated organics

cPAH = carcinogenic polycyclic aromatic hydrocarbons

GW = Groundwater reference value based on groundwater to sediment equilibrium partitioning estimate.

HPAH = high-molecular-weight polycyclic aromatic hydrocarbon compounds

LPAH = low-molecular-weight polycyclic aromatic hydrocarbon compounds

Misc. = miscellaneous extractable organics

* = Tissue sampling was performed as part of the risk assessment. Risks associated with seafood were significant, but a quantitative relationship between sediments and tissues could not be determined. The final sediment risk-based target concentration was established based on a direct-contact screening level protective of tribal clamming activities in intertidal areas. That value was derived based on cPAH as benzo(a)pyrene equivalents.

[a] EPA (2005). Partition Coefficients for Metals in Surface Water, Soil, and Waste. EPA/600/R-05/074. July 2005. Values obtained from Table 4 of that document.

[b] Derivation of GW reference value for non-ionizing organics: GW (µg/L) = (SQS (mg/kg OC) / Koc (L/kg OC)) x 1000 µg/mg

[c] Derivation of GW reference value for Ionizing Organics: GW (µg/L) = SQS (µg/kg) / (Koc [L/kg OC] * foc) [Assumes foc = 0.02 (2.0%)]

[d] EPI: EPA Estimation Programs Interface (EPI) Suite, V. 3.20, 2008. (http://www.epa.gov/oppt/exposure/pubs/episuitedl.htm)

[d*] EPI estimated value has been updated since V 3.12 of EPI database.

[e] Derivation of GW reference value for Heavy Metals: GW (µg/L) = (SQS (mg/kg) / Kd (L/kg)) x 1,000 µg/mg

[f] Baes (1984). Baes, C.F. A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides through Agriculture. (http://homer.ornl.gov/baes/documents/ornl5786.html)

[g] Derivation of reference value for arsenic: Reference Value (µg/L) = (Natural Background (mg/kg) / Kd (L/kg)) x 1,000 µg/mg

[h] Derivation of reference value for heavy metals: Reference Value (µg/L) = (SQS (mg/kg) / Kd (L/kg)) x 1,000 µg/mg