

Appendix A

2009 Supplementary Investigation Summary

Attachment A-1

Data Tables

Table 1 Soil and Sediment Sampling Summary

		Analyte	Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons	Microtox [®] /Sulfide/ Ammonia	Total Organic Carbon	Grain Size
		Analytical Method	NWTPH-Dx (without SG cleanup)	NWTPH-Dx (with SG cleanup)	Multiple ¹	SW9060	ASTM D422
Location ID	Sample Date	Sample Depth Interval (feet)					
Cascadia Inn Investigation							
1B-B-30A	8/25/2009	4- 4	X	—	—	—	—
		6- 6	X	—	—	—	—
		8- 8	X	—	—	—	—
		9- 9	X	—	—	—	—
1B-B-31	8/20/2009	4.1- 4.1	X	—	—	—	—
		6- 6	X	—	—	—	—
		8- 8	X	—	—	—	—
East End of Hydraulic Control and Containment Wall Investigation							
1C-B-10	8/3/2009	12- 14	X	—	—	—	—
1C-B-11	8/14/2009	9- 10	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
		15- 17	X	—	—	—	—
1C-B-9	8/13/2009	9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
2A-B-43	7/30/2009	14- 16	X	—	—	—	—
		16- 18	X	—	—	—	—
		18- 20	X	—	—	—	—
2A-B-44	7/29/2009	10- 12	X	—	—	—	—
		14- 16	X	—	—	—	—
		16- 18	X	—	—	—	—
		19- 21	X	—	—	—	—
2A-B-45	7/29/2009	12- 14	X	—	—	—	—
		14- 16	X	—	—	—	—
		16- 18	X	—	—	—	—
		18- 19	X	—	—	—	—
2A-B-46	7/31/2009	12- 14	X	—	—	—	—
		14- 16	X	—	—	—	—
		17- 19	X	—	—	—	—
EW-2A	3/19/2009	9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
		15- 17	X	—	—	—	—

Table 1 Soil and Sediment Sampling Summary

		Analyte	Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons	Microtox [®] /Sulfide/ Ammonia	Total Organic Carbon	Grain Size
		Analytical Method	NWTPH-Dx (without SG cleanup)	NWTPH-Dx (with SG cleanup)	Multiple ¹	SW9060	ASTM D422
Location ID	Sample Date	Sample Depth Interval (feet)					
Former Maloney Creek Zone - West Wetland Investigation							
3-B-30	8/14/2009	0- 4	—	—	—	—	X
		4- 6	X	X	—	X	X
		6- 8	X	X	—	X	—
		8- 10	X	X	—	X	—
		10- 12	X	X	—	X	—
3-B-31	8/24/2009	0- 2	X	X	—	X	X
		2- 4	X	X	—	X	X
		4- 6	X	X	—	X	—
		6- 7.5	—	—	—	—	X
3-B-33	8/24/2009	0- 2	X	X	X	X	—
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
3-B-34	8/24/2009	0- 2	X	X	—	X	—
		1- 2	—	—	—	—	X
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
3-B-36	8/26/2009	0- 2	X	X	—	X	—
		2- 4	X	X	—	X	—
		5.25- 5.75	X	X	—	X	—
3-B-37	8/25/2009	0- 2	X	X	—	X	—
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
3-B-38	8/24/2009	0- 2	X	X	—	X	—
		2- 3.25	—	—	—	—	X
		2- 4	X	X	—	X	—
		4- 5	X	X	—	X	—
3-B-39	8/24/2009	0- 2	X	X	—	X	—
		2- 3.25	—	—	—	—	X
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
		6- 7	X	X	—	X	—
3-B-44	8/25/2009	0- 2	X	X	—	X	—
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—

Table 1 Soil and Sediment Sampling Summary

		Analyte	Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons	Microtox [®] /Sulfide/ Ammonia	Total Organic Carbon	Grain Size
		Analytical Method	NWTPH-Dx (without SG cleanup)	NWTPH-Dx (with SG cleanup)	Multiple ¹	SW9060	ASTM D422
Location ID	Sample Date	Sample Depth Interval (feet)					
3-B-45	8/25/2009	0- 2	X	X	—	X	—
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
3-B-46	8/26/2009	0- 2	X	X	—	X	X
		2- 4	X	X	—	X	X
		4- 6	X	X	—	X	—
3-B-47	8/26/2009	0- 2	—	—	X	X	—
3-B-48	8/26/2009	0- 2	X	X	X	X	—
		2- 3.25	—	—	—	—	X
		2- 4	X	X	—	X	—
		3.75- 5	—	—	—	—	X
3-B-49	8/25/2009	4- 5.5	X	X	—	X	—
		0- 2	X	X	X	X	X
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
3-B-50	8/25/2009	0- 2	X	X	X	X	—
		2- 4	X	X	—	X	—
		4- 5	X	X	—	X	—
3-B-51	8/25/2009	0- 2	X	X	X	X	—
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
3-B-52	8/24/2009	0- 2	X	X	X	X	—
		2- 4	X	X	—	X	—
		4- 6	X	X	—	X	—
3-W-41	8/17/2009	4- 6	X	—	—	—	—
		6- 8	X	—	—	—	—
		8- 10	X	—	—	—	—
		10- 12	X	—	—	—	—
3-W-42	8/14/2009	4- 6	X	—	—	—	—
		6- 8	X	—	—	—	—
		8- 10	X	—	—	—	—
3-W-43	8/18/2009	10- 12	X	—	—	—	—
		4- 6	X	—	—	—	—
		6- 8	X	—	—	—	—
		8- 10	X	—	—	—	—

Table 1 Soil and Sediment Sampling Summary

		Analyte	Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons	Microtox [®] /Sulfide/ Ammonia	Total Organic Carbon	Grain Size
		Analytical Method	NWTPH-Dx (without SG cleanup)	NWTPH-Dx (with SG cleanup)	Multiple ¹	SW9060	ASTM D422
Location ID	Sample Date	Sample Depth Interval (feet)					
Levee Zone - West End Investigation							
5-B-75	8/12/2009	9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
		15- 17	X	—	—	—	—
5-B-76	8/5/2009	NS	—	—	—	—	
5-B-77	8/5/2009	9- 11	X	—	—	—	—
		11- 12.5	X	—	—	—	—
		15- 17	X	—	—	—	—
5-B-78	8/13/2009	9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
		15- 17	X	—	—	—	—
5-B-79	8/13/2009	7- 9	X	—	—	—	—
		9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
5-B-80	8/5/2009	9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
		15- 17	X	—	—	—	—
5-B-81	8/12/2009	9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—
		15- 17	X	—	—	—	—
5-B-82	8/11/2009	9- 10	X	—	—	—	—
		10- 12	X	—	—	—	—
		12- 14	X	—	—	—	—
		14- 16	X	—	—	—	—
5-B-83	8/11/2009	9- 11	X	—	—	—	—
		12- 14	X	—	—	—	—
		14- 16	X	—	—	—	—
		16- 18	X	—	—	—	—
5-B-84D	8/17/2009	13- 15	X	—	—	—	—
		15- 17	X	—	—	—	—
		17- 19	X	—	—	—	—

Table 1 Soil and Sediment Sampling Summary

		Analyte	Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons	Microtox [®] /Sulfide/ Ammonia	Total Organic Carbon	Grain Size
		Analytical Method	NWTPH-Dx (without SG cleanup)	NWTPH-Dx (with SG cleanup)	Multiple ¹	SW9060	ASTM D422
Location ID	Sample Date	Sample Depth Interval (feet)					
5-B-85	8/18/2009	14- 16	X	—	—	—	—
		16- 18	X	—	—	—	—
		18- 20	X	—	—	—	—
		20- 22	X	—	—	—	—
5-B-86	8/13/2009	9- 11	X	—	—	—	—
		11- 13	X	—	—	—	—
		13- 15	X	—	—	—	—

Notes:

X = Analysis conducted on this sample

— = Analysis not conducted on this sample

NS = Not sampled

SG = Silica Gel

¹Multiple Analytical Methods:

Microtox[®] Method = Freshwater Microtox[®] 100 Percent Sediment Porewater Toxicity Assessment (Ecology, 2008)

Sulfide Method = Methylene Blue Method (equivalent to EPA Method 376.2)

Ammonia Method = Clinica Chimica Acta 14 403 (1996; equivalent to EPA Method 351.2)

Table 2 Boring Completion Summary

Boring ID	Date Drilled	Ground Surface Elevation (NAVD 88)	Total Boring Depth (feet)	Boring Diameter (inches)	Seal Material	Depth to Water during Installation (feet)
East End of Hydraulic Control and Containment Wall Investigation						
1C-B-9	8/13/2009	935.38	15	6	Bentonite	9.5
1C-B-10	8/3/2009	935.41	14	4	Bentonite	—
1C-B-11	8/14/2009	935.19	20	6	Bentonite	13
2A-B-43	7/30/2009	935.70	21	4	Bentonite	14
2A-B-44	7/29/2009	936.97	21	4	Bentonite	14
2A-B-45	7/29/2009	936.48	25	4	Bentonite	16
2A-B-46	7/31/2009	937.11	22	4	Bentonite	14
Former Maloney Creek Zone — West Wetland Investigation						
3-B-30	8/14/2009	927.48	16	4	Bentonite	6
3-B-31	8/24/2009	924.04	7.5	2	Bentonite	6
3-B-33	8/24/2009	924.29	6	2	Bentonite	14
3-B-34	8/24/2009	924.93	6	2	Bentonite	1.5
3-B-36	8/26/2009	923.24	5.75	2	Bentonite	2
3-B-37	8/25/2009	923.94	6.5	2	Bentonite	2.58
3-B-38	8/24/2009	924.38	5	2	Bentonite	1.5
3-B-39	8/24/2009	925.90	7	2	Bentonite	2.66
3-W-41	8/17/2009	926.92	20	4	Bentonite	6
3-W-42	8/14/2009	930.60	22	4	Bentonite	13.5
3-W-43	8/18/2009	929.07	20	4	Bentonite	6
3-B-44	8/25/2009	922.02	6	2	Bentonite	1.5
3-B-45	8/25/2009	923.63	6	2	Bentonite	2.5
3-B-46	8/26/2009	922.06	5	2	Bentonite	2
3-B-47	8/26/2009	921.37	2.5	2	Bentonite	2
3-B-48	8/26/2009	918.17	5.5	2	Bentonite	1.66
3-B-49	8/25/2009	923.43	6	2	Bentonite	4
3-B-50	8/25/2009	923.13	6	2	Bentonite	1.5
3-B-51	8/25/2009	923.83	6	2	Bentonite	2
3-B-52	8/24/2009	923.89	7	2	Bentonite	1
Levee Zone — West End Investigation						
5-B-75	8/12/2009	923.54	18	6	Bentonite	11
5-B-76	8/5/2009	923.46	19	4	Bentonite	14
5-B-77	8/5/2009	923.67	20	4	Bentonite	10
5-B-78	8/12/2009	924.26	17	6	Bentonite	11
5-B-79	8/12/2009	923.63	21	6	Bentonite	11.5
5-B-80	8/13/2009	923.25	20	4	Bentonite	9
5-B-81	8/5/2009	923.81	18	4	Bentonite	9.5
5-B-82	8/11/2009	923.87	20	6	Bentonite	11
5-B-83	8/11/2009	923.76	24	6	Bentonite	12
5-B-84	8/17/2009	928.06	21	4	Bentonite	8
5-B-85	8/18/2009	927.97	23	4	Bentonite	12
5-B-86	8/13/2009	923.30	16	6	Bentonite	11

Table 3 Well Completion Summary

Well ID	Date Installed	MP Elevation	Ground Surface Elevation (NAVD 88)	Total Well Depth (ft – bgs)	Surface Completion	Well Diameter (inches)	Well Material	Screen Slot Size (inch)
3-W-41	8/19/2009	926.45	926.92	19.0	Flush Mount	2	Schedule 40 PVC	0.02
3-W-42	8/14/2009	930.37	930.60	20.0	Flush Mount	2	Schedule 40 PVC	0.02
3-W-43	8/18/2009	928.85	929.07	16.0	Flush Mount	2	Schedule 40 PVC	0.02

Well ID	Screen Interval (ft – bgs)	Concrete Interval (ft – bgs)	Seal Material	Surface Seal Interval	Sand Pack Material	Sand Pack Interval during Installation	DTW during Installation (ft.)
3-W-41	4 – 19	0 – 1	Bentonite	1 – 3	#2/12 silica sand	3 – 20	6
3-W-42	5 – 20	0 – 1	Bentonite	1 – 4	#2/12 silica sand	4 – 22	13.5
3-W-43	4 – 16	0 – 1	Bentonite	1 – 3	#2/12 silica sand	3 – 17	6

Notes:

MP – Measuring Point

ft – bgs – feet below ground surface

Table 4 Fluid Level Gauging Results

Well Number	Date	TOC Elevation (feet above MSL)	Depth to Water from TOC (feet)	Corrected Depth to Water from TOC (feet)	DTP from TOC (feet)	Groundwater Elevation (feet above MSL)	Product Thickness (feet)	Notes
1B-W-2	8/25/2009	935.81	14.27	NA	NA	921.54	None	
1B-W-3	8/25/2009	936.66	15.52	NA	NA	921.14	None	
1C-W-1	8/25/2009	936.44	14.22	NA	NA	922.22	None	
1C-W-2	8/25/2009	935.29	11.02	NA	NA	924.27	None	
1C-W-7	8/25/2009	934.3	12.24	NA	NA	922.06	None	
1C-W-8	8/25/2009	934.18	13.71	NA	NA	920.47	None	
2A-W-10	8/25/2009	937.93	12.89	NA	NA	925.04	None	
2A-W-11	8/25/2009	933.59	9.62	NA	NA	923.97	Heavy Trace	Heavy trace product; gauged with tape & paste
2A-W-3	8/25/2009	934.43	12.36	NA	NA	922.07	Heavy Trace	Heavy trace product; gauged with tape & paste
2A-W-4	8/25/2009	935.31	12.94	NA	12.63	922.67	0.31	Product pumped out
2A-W-5	8/25/2009	939.47	15.01	NA	NA	924.46	None	
2A-W-7	8/25/2009	937.76	12.86	NA	NA	924.9	None	
2A-W-9	8/25/2009	936.58	12.23	NA	NA	924.35	None	
2B-B-21	8/25/2009	930.5	7.38	NA	NA	923.12	None	
2B-W-11	8/25/2009	930.80	5.41	NA	NA	925.39	None	Dry
2B-W-12	8/25/2009	933.48	8.68	8.42	NA	925.06	None	Dry
2B-W-13	8/25/2009	932.52	8.05	NA	NA	924.47	None	Dry
2B-W-14	8/25/2009	931.25	6.6	NA	NA	924.65	None	Dry
2B-W-15	8/25/2009	931.74	NM	NA	NA	NM	None	Dry at 4.2 feet
2B-W-19	8/25/2009	935.25	9.58	NA	NA	925.67	None	
2B-W-21	8/25/2009	935.81	10.95	NA	NA	924.86	None	
2B-W-30	8/25/2009	936.60	13.1	NA	NA	923.5	None	
2B-W-32	8/25/2009	935.45	9.95	NA	NA	925.5	None	
2B-W-33	8/25/2009	938.28	12.84	NA	NA	925.44	None	
2B-W-4	8/25/2009	931.03	5.58	NA	NA	925.45	None	
2B-W-45	8/25/2009	935.74	12.91	12.13	NA	923.61	None	
2B-W-46	8/25/2009	935.28	13.1	11.34	NA	923.94	None	
3-W-41	8/25/2009	926.45	6.91	NA	NA	919.54	None	

Table 4 Fluid Level Gauging Results

Well Number	Date	TOC Elevation (feet above MSL)	Depth to Water from TOC (feet)	Corrected Depth to Water from TOC (feet)	DTP from TOC (feet)	Groundwater Elevation (feet above MSL)	Product Thickness (feet)	Notes
3-W-42	8/25/2009	930.37	10.01	NA	NA	920.36	None	
3-W-43	8/25/2009	928.85	6.11	NA	NA	922.74	None	
CV	8/24/2009	936.10	17.14	NA	NA	918.96	None	
EV	8/24/2009	934.23	10.73	NA	NA	923.50	None	
FWV	8/24/2009	930.76	10.64	NA	NA	920.12	None	
IW-01	8/24/2009	933.44	9.90	NA	NA	923.54	None	
IW-02	8/24/2009	934.10	11.66	NA	NA	922.44	None	Trace product; gauged with tape & paste
MW-1	8/25/2009	939.20	14.21	NA	NA	924.99	None	
MW-10	8/25/2009	938.34	14.28	NA	NA	924.06	None	
MW-11	8/25/2009	939.20	14.79	NA	NA	924.41	None	
MW-13	8/25/2009	934.93	11.55	NA	NA	923.38	None	
MW-14	8/25/2009	936.49	13.43	NA	NA	923.06	None	
MW-15	8/25/2009	936.80	14.82	NA	NA	921.98	None	
MW-16	8/25/2009	933.32	14.43	NA	NA	918.89	None	
MW-17	8/25/2009	937.15	NM	NA	NA	NM	NM	Inaccessible; buried under soil stockpile
MW-18	8/25/2009	940.68	16.23	NA	NA	924.45	None	
MW-2	8/25/2009	939.20	13.99	NA	NA	925.21	None	
MW-3	8/25/2009	938.03	12.59	NA	NA	925.44	None	
MW-38R	8/25/2009	922.39	5.71	NA	NA	916.68	None	
MW-39	8/25/2009	936.21	11.19	NA	NA	925.02	Trace	Trace product; gauged with tape & paste
MW-4	8/25/2009	936.95	11.63	NA	NA	925.32	None	
MW-40	8/25/2009	936.52	14.35	NA	NA	922.17	None	
MW-5	8/25/2009	933.36	9.13	NA	NA	924.23	None	
MW-7	8/25/2009	936.89	14.51	NA	NA	922.38	None	Gauged with tape & paste
MW-9	8/25/2009	937.53	14.51	NA	NA	923.02	None	
PW-01	8/24/2009	930.34	10.62	NA	NA	919.72	None	
PW-03	8/24/2009	935.59	15.62	NA	NA	919.97	None	
PW-04	8/24/2009	938.26	14.80	NA	NA	923.46	None	
PZ-1	8/24/2009	935.39	11.29	NA	NA	924.1	None	
PZ-2N	8/24/2009	934.38	12.25	NA	NA	922.13	None	

Table 4 Fluid Level Gauging Results

Well Number	Date	TOC Elevation (feet above MSL)	Depth to Water from TOC (feet)	Corrected Depth to Water from TOC (feet)	DTP from TOC (feet)	Groundwater Elevation (feet above MSL)	Product Thickness (feet)	Notes
PZ-2S	8/24/2009	934.96	10.79	NA	NA	924.166	None	
PZ-3N	8/24/2009	934.45	14.01	NA	NA	920.44	None	
PZ-3S	8/24/2009	935.47	11.49	NA	NA	923.98	None	Trace product; gauged with tape & paste
PZ-4N	8/24/2009	935.33	14.66	NA	NA	920.667	None	
PZ-4S	8/24/2009	935.37	12.97	NA	NA	922.40	None	
PZ-5N	8/24/2009	933.16	13.25	NA	NA	919.91	None	
PZ-5S	8/24/2009	933.53	11.36	NA	NA	922.17	None	Trace product; gauged with tape & paste
PZ-6N	8/24/2009	931.21	11.30	NA	NA	919.907	None	
PZ-6S	8/24/2009	931.44	NM	NA	NA	NM	None	Heavy product; unable to gauge with pump and tubing
PZ-7N	8/24/2009	930.41	10.73	NA	NA	919.675	None	
PZ-7S	8/24/2009	930.43	9.76	NA	NA	920.67	None	
PZ-8	8/24/2009	929.50	10.42	NA	NA	919.075	None	
RW-01	8/24/2009	932.80	12.81	NA	NA	919.99	None	
RW-06	8/24/2009	928.51	8.65	NA	NA	919.86	None	
WV	8/24/2009	931.82	11.96	NA	NA	919.86	None	

Notes:

TOC = Top of Casing

NA = Not Applicable

NM = Not Measured

Table 5 Levee Zone — West End Investigation Total Petroleum Hydrocarbon Soil Results

Analytical Method Chemical Name Unit			NWTPH-Dx Lube Oil mg/kg			NWTPH-Dx PHC as Diesel Fuel mg/kg			NWTPH-Dx TPH (calc) mg/kg
Location ID	Sample Date	Depth Interval (feet)	Result & Qualifier	MDL	RDL	Result & Qualifier	MDL	RDL	
5-B-75	8/12/2009	9- 11	92	9.5	52	67	6	26	159
5-B-75	8/12/2009	11- 13	ND	10	55	ND	6.3	28	8.15
5-B-75	8/12/2009	13- 15	ND	12	66	ND	7.5	33	9.75
5-B-75	8/12/2009	15- 17	ND	12	66	ND	7.5	33	9.75
5-B-77	8/5/2009	9- 11	7700	51	280	6000	32	140	13700
5-B-77	8/5/2009	11- 12.5	1100	10	56	690	6.3	28	1790
5-B-77	8/5/2009	15- 17	ND	11	61	ND	6.9	30	8.95
5-B-78	8/13/2009	9- 11	5500 J	41	250	6800 J	24	100	12300
5-B-78	8/12/2009	11- 13	350	41	250	620	24	100	970
5-B-78	8/12/2009	13- 15	1400	41	250	2000	24	100	3400
5-B-78	8/12/2009	15- 17	100	10	57	56	6.5	29	156
5-B-79	8/13/2009	7- 9	17000 J	49	270	16000 J	31	130	33000
5-B-79	8/13/2009	9- 11	1300	9.7	53	1300	6.1	27	2600
5-B-79	8/13/2009	11- 13	1300	9.4	52	1200	5.9	26	2500
5-B-79	8/13/2009	13- 15	1200	9.3	51	1100	5.8	25	2300
5-B-80	8/5/2009	9- 11	ND	9.3	51	ND	5.8	26	7.55
5-B-80	8/5/2009	11- 13	ND	9.9	54	ND	6.2	27	8.05
5-B-80	8/5/2009	13- 15	ND	9.2	51	ND	5.8	25	7.5
5-B-80	8/5/2009	15- 17	ND	11	60	ND	6.8	30	8.9
5-B-81	8/12/2009	9- 11	ND	9.4	52	ND	5.9	26	7.65
5-B-81	8/12/2009	11- 13	ND	9.5	52	ND	5.9	26	7.7
5-B-81	8/12/2009	13- 15	ND	12	66	ND	7.5	33	9.75
5-B-81	8/12/2009	15- 17	ND	12	67	ND	7.6	33	9.8
5-B-82	8/11/2009	9- 10	1300 J	10	55	780 J	6.3	28	2080
5-B-82	8/11/2009	9- 10	700 J	10	56	410 J	6.3	28	1110
5-B-82	8/11/2009	10- 12	3700	9.3	51	2000	5.8	26	5700
5-B-82	8/11/2009	12- 14	500	41	250	760	24	100	1260
5-B-82	8/11/2009	14- 16	420	41	250	640	24	100	1060
5-B-83	8/11/2009	9- 11	13000	94	520	13000	59	260	26000
5-B-83	8/11/2009	12- 14	640	9.8	54	390	6.1	27	1030
5-B-83	8/11/2009	14- 16	140	9.7	53	64	6.1	27	204
5-B-83	8/11/2009	16- 18	160	9.2	51	98	5.8	25	258
5-B-84D	8/17/2009	13- 15	2100	410	2500	2900	240	1000	5000
5-B-84D	8/17/2009	15- 17	170	4.1	25	200	2.4	10	370
5-B-84D	8/17/2009	17- 19	43	4.1	25	ND	2.4	10	44.2
5-B-85	8/18/2009	14- 16	120	4.1	25	140	2.4	10	260
5-B-85	8/18/2009	16- 18	39	4.1	25	78	2.4	10	117
5-B-85	8/18/2009	18- 20	38 J	12	65	33	7.4	32	71
5-B-85	8/18/2009	20- 22	ND	13	70	ND	8	35	10.5

Table 5 Levee Zone — West End Investigation Total Petroleum Hydrocarbon Soil Results

Analytical Method Chemical Name Unit			NWTPH-Dx Lube Oil mg/kg			NWTPH-Dx PHC as Diesel Fuel mg/kg			NWTPH-Dx TPH (calc) mg/kg
Location ID	Sample Date	Depth Interval (feet)	Result & Qualifier	MDL	RDL	Result & Qualifier	MDL	RDL	
5-B-86	8/13/2009	9- 11	ND	9	49	ND	5.6	25	7.3
5-B-86	8/13/2009	9- 11	ND	8.9	49	ND	5.6	25	7.25
5-B-86	8/13/2009	11- 13	ND	11	58	ND	6.6	29	8.8
5-B-86	8/13/2009	11- 13	ND	10	57	ND	6.6	29	8.3
5-B-86	8/13/2009	13- 15	ND	12	64	ND	7.3	32	9.65
5-B-86	8/13/2009	13- 15	ND	11	60	ND	6.8	30	8.9
Maximum			17000			16000			33000
Minimum			ND			ND			7.25
Average									2613.41

Notes:

- FD Field Duplicate
- J Detected Result, Estimated Concentration
- N Normal
- ND Not Detected
- MDL Method Detection Limit
- PHC Petroleum Hydrocarbon
- RDL Reporting Detection Limit
- RL Remediation Level
- TPH Total Petroleum Hydrocarbon
- mg/kg Milligrams per kilogram
- TPH results exceed the RL (3,400 mg/kg NWTPH-Dx)

NWTPH-Dx TPH (Calc) = Sum of the Lube Oil Range and Diesel Fuel Range Hydrocarbons by Method NWTPH-Dx. 1/2 the MDL was used for all NDs.

Table 6 East End of Hydraulic Containment and Control Wall Investigation – Total Petroleum Hydrocarbon Soil Results

Analytical Method Chemical Name Unit				NWTPH-Dx Lube Oil mg/kg			NWTPH-Dx PHC as Diesel Fuel mg/kg			NWTPH-Dx TPH (calc) mg/kg
Location ID	Sample Date	Sample Type	Depth Interval (feet)	Result & Qualifier	MDL	RDL	Result & Qualifier	MDL	RDL	
1C-B-9	8/13/2009	N	9- 11	86	9.8	54	48	6.1	27	134
1C-B-9	8/13/2009	N	11- 13	ND	9.9	54	ND	6.2	27	8.05
1C-B-9	8/13/2009	N	13- 15	ND	9.6	53	ND	6	26	7.8
1C-B-10	8/3/2009	N	12- 14	6400 J	94	510	4000	59	260	10400
1C-B-11	8/14/2009	N	9- 10	ND	8.9	49	ND	5.6	24	7.25
1C-B-11	8/14/2009	N	11- 13	ND	9.3	51	ND	5.8	26	7.55
1C-B-11	8/14/2009	N	13- 15	ND	9.3	51	ND	5.8	26	7.55
1C-B-11	8/14/2009	N	15- 17	ND	11	60	ND	6.9	30	8.95
2A-B-43	7/30/2009	N	14- 16	11000	99	550	8600	62	270	19600
2A-B-43	7/30/2009	N	16- 18	ND	11	61	ND	7	31	9
2A-B-43	7/30/2009	N	18- 20	ND	12	64	ND	7.3	32	9.65
2A-B-44	7/29/2009	N	10- 12	ND	9.7	53	ND	6.1	27	7.9
2A-B-44	7/30/2009	N	14- 16	340	9.7	53	240	6.1	27	580
2A-B-44	7/30/2009	N	16- 18	4900	95	520	4100	59	260	9000
2A-B-44	7/30/2009	N	19- 21	ND	12	65	ND	7.4	32	9.7
2A-B-45	7/29/2009	N	12- 14	ND	9.2	51	ND	5.8	25	7.5
2A-B-45	7/29/2009	FD	12- 14	ND	9.9	54	ND	6.2	27	8.05
2A-B-45	7/29/2009	N	14- 16	ND	9.2	51	ND	5.8	25	7.5
2A-B-45	7/29/2009	N	16- 18	ND	11	61	ND	6.9	30	8.95
2A-B-45	7/29/2009	N	18- 19	ND	12	66	ND	7.5	33	9.75
2A-B-46	7/31/2009	N	12- 14	340	9.8	54	240	6.1	27	580
2A-B-46	7/31/2009	N	14- 16	3000	52	280	2000	32	140	5000
2A-B-46	7/31/2009	N	17- 19	ND	12	63	ND	7.2	32	9.6
EW-2A	3/19/2009	N	9- 11	5230 J	83.2	520	4660 J	20.8	104	9890
EW-2A	3/19/2009	N	11- 13	295 J	4.33	27	279 J	2.16	10.8	574
EW-2A	3/19/2009	N	13- 15	367	8.68	54.2	373 J	2.17	10.8	740
EW-2A	3/19/2009	N	15- 17	172 J	4.24	26.5	163 J	2.12	10.6	335
Maximum				11000			8600			19600
Minimum				ND			ND			7.25
Average										2109.92

Notes:

- FD Field Duplicate
- J Detected Result, Estimated Concentration
- N Normal
- ND Not Detected
- MDL Method Detection Limit
- PHC Petroleum Hydrocarbon
- RDL Reporting Detection Limit
- RL Remediation Level
- TPH Total Petroleum Hydrocarbon
- mg/kg Milligrams per kilogram

TPH results exceed the RL (3,400 mg/kg NWTPH-Dx)

NWTPH-Dx TPH (Calc) = Sum of the Lube Oil Range and Diesel Fuel Range Hydrocarbons by Method NWTPH-Dx.
1/2 the MDL was used for all NDs.

Table 7 Cascadia Inn Investigation Total Petroleum Hydrocarbon Soil Results

Location ID	Sample Date	Analytical Method		NWTPH-Dx Lube Oil mg/kg			NWTPH-Dx PHC AS DIESEL FUEL mg/kg			NWTPH-Dx TPH (calc) mg/kg
		Chemical Name	Unit	Result & Qualifier	MDL	RDL	Result	MDL	RDL	
		Sample Type	Depth Interval (feet)							
1B-B-30A	8/25/2009	N	4- 4	28 J	9.5	52	47	5.9	26	75
1B-B-30A	8/25/2009	N	6- 6	21 J	9.5	52	72	6	26	93
1B-B-30A	8/25/2009	N	8- 8	46 J	9.6	53	35	6	26	81
1B-B-30A	8/26/2009	N	9- 9	22	9.3	51	13	5.8	26	35
1B-B-31	8/20/2009	N	4.1- 4.1	160	9.9	54	2200	6.2	27	2360
1B-B-31	8/20/2009	N	6- 6	35 J	9.3	51	400	5.8	26	435
1B-B-31	8/21/2009	N	8- 8	35 J	9.9	54	39	6.2	27	74
1B-B-31	8/21/2009	FD	8- 8	49 J	9.8	54	53	6.2	27	102
Minimum				21			13			35
Maximum				160			2200			2360
Average										407

Notes:

- FD Field Duplicate
- J Detected Result, Estimated Concentration
- N Normal
- ND Not Detected
- MDL Method Detection Limit
- PHC Petroleum Hydrocarbon
- RDL Reporting Detection Limit
- TPH Total Petroleum Hydrocarbon
- mg/kg Milligrams per kilogram

NWTPH-Dx TPH (Calc) = Sum of the Lube Oil Range and Diesel Fuel Range Hydrocarbons by Method NWTPH-Dx.

1/2 the MDL was used for all NDs.

Table 8 Summary of Data Validation and Usability

Lab SDG	Sample ID	Method	Analyte	Concentration and Qualifier	Unit	Reason Code
BSC0216	EW-2A(11-13)	NWTPH-Dx	Lube Oil Range Hydrocarbons	295 J	mg/kg	CHRO
BSC0216	EW-2A(11-13)	NWTPH-Dx	Diesel Range Hydrocarbons	279 J	mg/kg	CHRO
BSC0216	EW-2A(13-15)	NWTPH-Dx	Diesel Range Hydrocarbons	373 J	mg/kg	CHRO
BSC0216	EW-2A(15-17)	NWTPH-Dx	Lube Oil Range Hydrocarbons	172 J	mg/kg	CHRO
BSC0216	EW-2A(15-17)	NWTPH-Dx	Diesel Range Hydrocarbons	163 J	mg/kg	CHRO
BSC0216	EW-2A(9-11)	NWTPH-Dx	Lube Oil Range Hydrocarbons	5230 J	mg/kg	SUR
BSC0216	EW-2A(9-11)	NWTPH-Dx	Diesel Range Hydrocarbons	4660 J	mg/kg	CHRO, SUR
580147361	1C-B-10-12-14	NWTPH-Dx	#2 Diesel (C10-C24)	4000 J	mg/kg	MS
580147361	1C-B-10-12-14	NWTPH-Dx	Motor Oil (>C24-C36)	6400 J	mg/kg	MS
580149121	5-B-82 90-100	NWTPH-Dx	#2 Diesel (C10-C24)	410 J	mg/kg	FD
580149121	5-B-82 90-100	NWTPH-Dx	Motor Oil (>C24-C36)	700 J	mg/kg	FD
580149121	5-B-82 9-10	NWTPH-Dx	#2 Diesel (C10-C24)	780 J	mg/kg	FD
580149121	5-B-82 9-10	NWTPH-Dx	Motor Oil (>C24-C36)	1300 J	mg/kg	FD
580149631	5-B-79 7-9	NWTPH-Dx	#2 Diesel (C10-C24)	16000 J	mg/kg	SUR, RPD
580149631	5-B-79 7-9	NWTPH-Dx	Motor Oil (>C24-C36)	17000 J	mg/kg	SUR, RPD
580150311	3-W-41 8-10	NWTPHDxSG	#2 Diesel (C10-C24)	15 J	mg/kg	BRL
580150311	3-W-43 4-6	NWTPH-Dx	Motor Oil (>C24-C36)	10 J	mg/kg	BRL
580150311	3-W-43 6-8	NWTPH-Dx	Motor Oil (>C24-C36)	24 J	mg/kg	BRL
580150311	3-W-43 6-8	NWTPHDxSG	Motor Oil (>C24-C36)	25 J	mg/kg	BRL
580150311	5-B-85 18-20	NWTPH-Dx	Motor Oil (>C24-C36)	38 J	mg/kg	BRL
580150971	1B-B-31 6	NWTPH-Dx	Motor Oil (>C24-C36)	35 J	mg/kg	BRL
580150971	1B-B-31 8	NWTPH-Dx	Motor Oil (>C24-C36)	35 J	mg/kg	BRL
580150971	1B-B-31 8(DUP)	NWTPH-Dx	Motor Oil (>C24-C36)	49 J	mg/kg	BRL
580150971	3-B-31 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	25 J	mg/kg	BRL
580150971	3-B-33 4-6	NWTPH-Dx	Motor Oil (>C24-C36)	41 J	mg/kg	BRL
580150971	3-B-33 4-6	NWTPHDxSG	Motor Oil (>C24-C36)	32 J	mg/kg	BRL
580150971	3-B-34 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	91 J	mg/kg	BRL
580150971	3-B-38 2-4	NWTPH-Dx	Motor Oil (>C24-C36)	26 J	mg/kg	BRL
580150971	3-B-39 0-2	NWTPHDxSG	Motor Oil (>C24-C36)	13 J	mg/kg	BRL
580150971	3-B-39 4-6	NWTPH-Dx	#2 Diesel (C10-C24)	11 J	mg/kg	BRL
580150972	3-B-33 0-2	E350.2	Ammonia	< 160 UJ	mg/kg	MS
580150972	3-B-52 0-2	E350.2	Ammonia	< 110 UJ	mg/kg	MS
580151281	1B-B-30A 4	NWTPH-Dx	Motor Oil (>C24-C36)	28 J	mg/kg	BRL
580151281	1B-B-30A 6	NWTPH-Dx	Motor Oil (>C24-C36)	21 J	mg/kg	BRL
580151281	1B-B-30A 8	NWTPH-Dx	#2 Diesel (C10-C24)	35 J	mg/kg	RPD
580151281	1B-B-30A 8	NWTPH-Dx	Motor Oil (>C24-C36)	46 J	mg/kg	BRL

Table 8 Summary of Data Validation and Usability

Lab SDG	Sample ID	Method	Analyte	Concentration and Qualifier	Unit	Reason Code
580151281	3-B-37 0-2	NWTPH-Dx	#2 Diesel (C10-C24)	20 J	mg/kg	BRL
580151281	3-B-37 0-2	NWTPHDxSG	#2 Diesel (C10-C24)	16 J	mg/kg	BRL
580151281	3-B-37 10-12	NWTPH-Dx	Motor Oil (>C24-C36)	36 J	mg/kg	BRL
580151281	3-B-37 10-12	NWTPHDxSG	Motor Oil (>C24-C36)	44 J	mg/kg	BRL
580151281	3-B-45 4-6	NWTPH-Dx	#2 Diesel (C10-C24)	8.5 J	mg/kg	BRL
580151281	3-B-45 4-6	NWTPH-Dx	Motor Oil (>C24-C36)	22 J	mg/kg	BRL
580151281	3-B-45 4-6	NWTPHDxSG	#2 Diesel (C10-C24)	8.5 J	mg/kg	BRL
580151281	3-B-45 4-6	NWTPHDxSG	Motor Oil (>C24-C36)	< 74 U	mg/kg	MB, BRL, original result was 28 mg/Kg
580151281	3-B-45-0-2	NWTPH-Dx	#2 Diesel (C10-C24)	12 J	mg/kg	BRL
580151281	3-B-45-0-2	NWTPHDxSG	#2 Diesel (C10-C24)	9.7 J	mg/kg	BRL
580151281	3-B-45-2-4	NWTPH-Dx	#2 Diesel (C10-C24)	12 J	mg/kg	BRL
580151281	3-B-45-2-4	NWTPH-Dx	Motor Oil (>C24-C36)	35 J	mg/kg	BRL
580151281	3-B-45-2-4	NWTPHDxSG	#2 Diesel (C10-C24)	8.4 J	mg/kg	BRL
580151281	3-B-45-2-4	NWTPHDxSG	Motor Oil (>C24-C36)	< 73 U	mg/kg	MB, BRL, original result was 30 mg/Kg
580151282	3-B-49 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	21 J	mg/kg	BRL
580151282	3-B-49 0-2	NWTPHDxSG	Motor Oil (>C24-C36)	15 J	mg/kg	BRL
580151282	3-B-50 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	48 J	mg/kg	BRL
580151282	3-B-50 0-2	NWTPHDxSG	Motor Oil (>C24-C36)	42 J	mg/kg	BRL
580151282	3-B-51 0-2	NWTPH-Dx	#2 Diesel (C10-C24)	11 J	mg/kg	BRL
580151282	3-B-51 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	73 J	mg/kg	BRL
580151282	3-B-51 0-2	NWTPHDxSG	#2 Diesel (C10-C24)	14 J	mg/kg	BRL
580151282	3-B-51 0-2	NWTPHDxSG	Motor Oil (>C24-C36)	74 J	mg/kg	BRL
580151451	1B-B-30A 9	NWTPH-Dx	#2 Diesel (C10-C24)	13 J	mg/kg	BRL
580151451	1B-B-30A 9	NWTPH-Dx	Motor Oil (>C24-C36)	< 51 U	mg/kg	MB, BRL, original result was 22 mg/Kg

Table 8 Summary of Data Validation and Usability

Lab SDG	Sample ID	Method	Analyte	Concentration and Qualifier	Unit	Reason Code
580151451	3-B-36 0-2	NWTPH-Dx	#2 Diesel (C10-C24)	9.2 J	mg/kg	BRL, FD
580151451	3-B-36 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	< 70 U	mg/kg	MB, BRL, FD, original result was 42 mg/Kg
580151451	3-B-36 0-2	NWTPHDxSG	#2 Diesel (C10-C24)	8.9 J	mg/kg	BRL, FD
580151451	3-B-36 0-2	NWTPHDxSG	Motor Oil (>C24-C36)	< 70 U	mg/kg	MB, BRL, FD, original result was 37 mg/Kg
580151451	3-B-36 0-2	SW9060	Total Organic Carbon	35000 J	mg/kg	MS
580151451	3-B-36 10-12	NWTPH-Dx	#2 Diesel (C10-C24)	100 J	mg/kg	FD
580151451	3-B-36 10-12	NWTPH-Dx	Motor Oil (>C24-C36)	700 J	mg/kg	FD
580151451	3-B-36 10-12	NWTPHDxSG	#2 Diesel (C10-C24)	77 J	mg/kg	FD
580151451	3-B-36 10-12	NWTPHDxSG	Motor Oil (>C24-C36)	410 J	mg/kg	FD
580151451	3-B-36 10-12	SW9060	Total Organic Carbon	27000 J	mg/kg	MS
580151451	3-B-36 2-4	NWTPHDxSG	Motor Oil (>C24-C36)	< 70 U	mg/kg	MB, BRL, original result was 20 mg/Kg
580151451	3-B-36 2-4	SW9060	Total Organic Carbon	18000 J	mg/kg	MS
580151451	3-B-36 5.25-5.75	NWTPH-Dx	Motor Oil (>C24-C36)	< 58 U	mg/kg	MB, BRL, original result was 24 mg/Kg
580151451	3-B-36 5.25-5.75	NWTPHDxSG	#2 Diesel (C10-C24)	18 J	mg/kg	BRL
580151451	3-B-36 5.25-5.75	NWTPHDxSG	Motor Oil (>C24-C36)	< 58 U	mg/kg	MB, BRL, original result was 11 mg/Kg
580151451	3-B-36 5.25-5.75	SW9060	Total Organic Carbon	5700 J	mg/kg	MS
580151451	3-B-46 0-2	NWTPH-Dx	#2 Diesel (C10-C24)	34 J	mg/kg	BRL, SUR
580151451	3-B-46 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	300 J	mg/kg	SUR
580151451	3-B-46 0-2	NWTPHDxSG	#2 Diesel (C10-C24)	17 J	mg/kg	BRL
580151451	3-B-46 0-2	SW9060	Total Organic Carbon	42000 J	mg/kg	MS, FD
580151451	3-B-46 10-12	NWTPH-Dx	#2 Diesel (C10-C24)	39 J	mg/kg	BRL
580151451	3-B-46 10-12	NWTPHDxSG	#2 Diesel (C10-C24)	25 J	mg/kg	BRL
580151451	3-B-46 10-12	SW9060	Total Organic Carbon	10000 J	mg/kg	MS, FD

Table 8 Summary of Data Validation and Usability

Lab SDG	Sample ID	Method	Analyte	Concentration and Qualifier	Unit	Reason Code
580151451	3-B-46 2-4	NWTPH-Dx	Motor Oil (>C24-C36)	< 75 U	mg/kg	MB, BRL, original result was 32 mg/Kg
580151451	3-B-46 2-4	NWTPHDxSG	Motor Oil (>C24-C36)	< 75 U	mg/kg	MB, BRL, original result was 19 mg/Kg
580151451	3-B-46 2-4	SW9060	Total Organic Carbon	15000 J	mg/kg	MS
580151451	3-B-46 4-6	NWTPH-Dx	#2 Diesel (C10-C24)	9.8 J	mg/kg	BRL
580151451	3-B-46 4-6	NWTPH-Dx	Motor Oil (>C24-C36)	< 66 U	mg/kg	MB, BRL, original result was 42 mg/Kg
580151451	3-B-46 4-6	NWTPHDxSG	Motor Oil (>C24-C36)	< 66 U	mg/kg	MB, BRL, original result was 16 mg/Kg
580151451	3-B-46 4-6	SW9060	Total Organic Carbon	39000 J	mg/kg	MS
580151451	3-B-48 14-15.5	NWTPH-Dx	Motor Oil (>C24-C36)	< 60 U	mg/kg	MB, BRL, original result was 17 mg/Kg
580151451	3-B-48 14-15.5	NWTPHDxSG	#2 Diesel (C10-C24)	7.7 J	mg/kg	BRL
580151451	3-B-48 14-15.5	NWTPHDxSG	Motor Oil (>C24-C36)	< 60 U	mg/kg	MB, BRL, original result was 14 mg/Kg
580151451	3-B-48 14-15.5	SW9060	Total Organic Carbon	4800 J	mg/kg	MS
580151451	3-B-48 2-4	NWTPH-Dx	#2 Diesel (C10-C24)	12 J	mg/kg	BRL
580151451	3-B-48 2-4	NWTPH-Dx	Motor Oil (>C24-C36)	< 72 U	mg/kg	MB, BRL, original result was 32 mg/Kg
580151451	3-B-48 2-4	NWTPHDxSG	Motor Oil (>C24-C36)	< 72 U	mg/kg	MB, BRL, original result was 31 mg/Kg
580151451	3-B-48 2-4	SW9060	Total Organic Carbon	21000 J	mg/kg	MS
580151451	3-B-48 4-5.5	NWTPH-Dx	Motor Oil (>C24-C36)	< 61 U	mg/kg	MB, BRL, original result was 12 mg/Kg
580151451	3-B-48 4-5.5	NWTPHDxSG	Motor Oil (>C24-C36)	< 61 U	mg/kg	MB, BRL, original result was 16 mg/Kg
580151451	3-B-48 4-5.5	SW9060	Total Organic Carbon	4700 J	mg/kg	MS
580151452	3-B-47 0-2	SW9034	Sulfide	54.4 J	mg/kg	RPD

Table 8 Summary of Data Validation and Usability

Lab SDG	Sample ID	Method	Analyte	Concentration and Qualifier	Unit	Reason Code
580151452	3-B-48 0-2	NWTPH-Dx	Motor Oil (>C24-C36)	< 72 U	mg/kg	MB, BRL, original result was 32 mg/Kg
580151452	3-B-48 0-2	NWTPHDxSG	#2 Diesel (C10-C24)	9.7 J	mg/kg	BRL
580151452	3-B-48 0-2	NWTPHDxSG	Motor Oil (>C24-C36)	< 72 U	mg/kg	MB, BRL, original result was 21 mg/Kg
580151452	3-B-48 0-2	SW9060	Total Organic Carbon	32000 J	mg/kg	MS
S090813	5-B-78 9-11	NWTPHDX	Diesel Rang (C10-C25)	6800 J	mg/kg	SUR
S090813	5-B-78 9-11	NWTPHDX	Motor Oil Range (C25-C36)	5500 J	mg/kg	SUR

Qualifier Definitions

J – Estimated concentration

U – Undetected at the reporting limit or at the reported concentration; result is considered to be a false positive.

UJ – Undetected result, reporting limit is estimated

Reason Code Definitions

BRL – Reported concentration is greater than the MDL but less than the reporting limit.

CHRO – Detected response in the diesel range, but the chromatographic pattern does not match the calibration standard utilized.

FD – Field duplicate RPD outside limits.

MB – Method blank contamination.

MS – Matrix spike recovery is outside quality control limits.

RPD – Duplicate sample relative percent difference outside quality control limits.

SUR – Surrogate recovery is outside quality control limits.