December 2009
Compliance Groundwater Monitoring

CAP Sante Marine
Ecology Agreed Order No. DE-07TCPHQ-4197
Anacortes, Washington

for
Port of Anacortes

December 23, 2009

GeoEngineers
Earth Science + Technology

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GeoEngineers

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Compliance Groundwater Monitoring

Cap Sante Marine
Ecology Agreed Order No. DE-07TCPHQ-4197
Anacortes, Washington

File No. 5147-005-07

December 23, 2009

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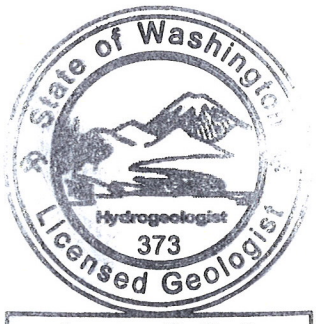

12-23-09

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INTRODUCTION

This report presents the results of the sixth quarterly compliance groundwater monitoring event at the Cap Sante Marine Lease Area (Site) in Anacortes, Washington. The sixth round of groundwater monitoring was completed in December 2009. The Site is located at the Port of Anacortes (Port) Cap Sante Boat Haven as shown in Figure 1. The general Site layout is shown in Figure 2.

The Port completed an Interim Action at the Site in 2007 and 2008 that included removal of underground storage tanks (USTs) and contaminated soil. In accordance with the Cap Sante Marine Interim Action Work Plan Supplement (Work Plan Supplement) dated September 20, 2007, four consecutive quarters of compliance groundwater monitoring were completed to characterize post-interim action groundwater conditions at the Site. Slight exceedances of diesel-range hydrocarbons were detected in one of the four compliance groundwater monitoring wells (MW-2A) during the June and September 2008 sampling events. Diesel-range hydrocarbons were detected in MW-2A at concentrations less than MTCA cleanup levels during the December 2008 and March 2009 sampling events. Groundwater samples from the other three wells were clean for all four quarterly events. Therefore, further sampling is only required by Ecology on MW-2A to demonstrate completeness of the cleanup action. Collection and analysis of additional groundwater samples from the other three monitoring wells at the Site is not required by Ecology.

GROUNDWATER MONITORING ACTIVITIES

The purpose of the December 2009 compliance groundwater monitoring is to measure groundwater depths, evaluate post-interim action groundwater flow direction, and collect groundwater samples from one monitoring well at the site for chemical analyses. Specific activities that were completed are as follows:

- Measure the depths to groundwater and calculate the groundwater elevation in the four wells. Estimate groundwater flow direction at the site based on the groundwater elevations.
- Obtain groundwater samples from monitoring well MW-2A for chemical analysis of benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8021B, gasoline-range hydrocarbons by Washington State Department of Ecology (Ecology) Method NWTPH-G, diesel- and heavy oil-range hydrocarbons by Ecology Method NWTPH-Dx with silica gel cleanup, PAHs by EPA 8270 SIM and lead by EPA 7421. Submit the samples to ALS Laboratories of Everett, Washington for chemical analysis.
- Store the purge water generated during well sampling in drums at a secure location on Port property, pending offsite disposal.
- Evaluate the chemical analytical results relative to MTCA cleanup levels for the Site.

GROUNDWATER MONITORING RESULTS

General

In accordance with the Work Plan Supplement, four monitoring wells (MW-1A through MW-4A) were installed at the Site on May 27, 2008 for compliance groundwater monitoring. Monitoring well MW-1A was installed west (upgradient) of the remedial excavation limits. Monitoring wells MW-2A through MW-4A were installed in the southwest, east-central and northeast portions, respectively, of the remedial excavation. The

approximate locations of the compliance monitoring wells are shown in Figure 2. Groundwater depths, elevations, chemical analytical results and field parameters obtained during previous groundwater monitoring events and the December 2009 event are presented in Tables 1 through 4. Sampling procedures are described in Appendix A. Laboratory reports for the chemical analyses are presented in Appendix B.

Groundwater Conditions

Groundwater conditions at the Site were evaluated by measuring groundwater levels in MW-1A through MW-4A and obtaining groundwater samples from MW-2A on December 3, 2009. Depths to groundwater ranged from approximately 3.6 to 4.7 feet bgs (Table 1). The inferred direction of groundwater flow beneath the Site based on the December 2009 measurements is toward the southeast (Figure 2). Groundwater flow direction during this monitoring event is consistent with previous groundwater monitoring events in 2008 and 2009.

Groundwater field parameters including pH, conductivity, turbidity, dissolved oxygen and temperature were measured prior to obtaining samples from MW-2A. Groundwater field parameter data are summarized in Table 4. Groundwater samples from MW-2A were submitted to ALS Laboratory Group in Everett, Washington, for chemical analysis of BETX, gasoline-, diesel- and oil-range hydrocarbons, PAHs and lead. The groundwater analytical results are presented in Tables 1, 2 and 3. The contaminants of concern either were not detected in MW-2A or were detected at concentrations that did not exceed Site cleanup levels. Two cPAHs (benzo[a]anthracene and chrysene) were detected in MW-2A at concentrations exceeding the 0.018 ppb cleanup level. However, the cPAH detections did not exceed the 0.1 ppb cleanup level for cPAHs using the toxicity equivalency methodology (TEQ) described in WAC 173-340-708(8). Therefore, cPAHs were not detected in MW-2A at concentrations of regulatory concern based on the TEQ methodology. Diesel-range petroleum hydrocarbons were detected in MW-2A at a concentration of 440 parts per billion (ppb) in December 2009, which is less than the 500 ppb MTCA cleanup level. Diesel-range hydrocarbon concentrations in MW-2A have now met the MTCA cleanup level for four consecutive sampling events. Diesel-range hydrocarbon concentrations in MW-2A in December 2009 and previous monitoring events are shown in Figure 3.

CONCLUSIONS

Contaminants of concern either were not detected or were detected at concentrations that did not exceed Site cleanup levels in compliance monitoring well MW-2A. Based on the 2008 and 2009 sampling results, the low-level, diesel-range groundwater exceedance detected in MW-2A in June and September 2008 have attenuated over time. The December 2009 results mark the fourth consecutive quarter with no groundwater exceedances in MW-2A, thus confirming four consecutive rounds of groundwater monitoring results below cleanup levels in all of the wells located at the Site. Based on the 2008 and 2009 groundwater monitoring results, groundwater cleanup levels have been attained at the Site and in accordance with Ecology requirements, no additional compliance sampling will be necessary to demonstrate completeness of the cleanup actions for closure of the Site.

LIMITATIONS

We have prepared this report for the exclusive use of the Port of Anacortes, their authorized agents and regulatory agencies in their review of compliance groundwater monitoring at the Port of Anacortes Cap Sante

Marine Lease Area Site located in Anacortes, Washington. No other party may rely on the product of our services unless we agree in advance and in writing to such reliance.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

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TABLES

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TABLE 1
SUMMARY OF GROUNDWATER LEVELS AND CHEMICAL ANALYTICAL DATA
PETROLEUM HYDROCARBONS, VOLATILES AND LEAD
INTERIM REMEDIAL ACTION - CAP SANTE MARINE
ANACORTES, WASHINGTON

Monitoring Well[1] (top of casing elevation - feet)	Date Sampled	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Petroleum Hydrocarbons[2] (µg/l)			Volatile Organic Compounds (VOCs)[3] (µg/l)				Lead (µg/l)	
				Gasoline-Range	Diesel-Range	Heavy Oil-Range	Benzene	Ethyl-benzene	Toluene	Xylenes	Total	Dissolved
MW-1A (12.63)	06/05/08	4.04	8.59	<50	<130	<250	<1	<1	<1	<3	<3	<3
	09/09/08	5.47	7.16	<50	<130	<250	<1	<1	<1	<3	<3	--
	12/10/08	4.66	7.97	<50	<130	<250	<1	<1	<1	<3	<3	--
	03/11/09	5.16	7.47	<50	<130	<250	<1	<1	<1	<3	<3	--
	09/10/09	5.35	7.28	--	--	--	--	--	--	--	--	--
	12/03/09	4.21	8.42	--	--	--	--	--	--	--	--	--
MW-2A (12.96)	06/05/08	4.71	8.25	**150**	**810**	<250	**3**	<1	**1**	<3	**40**	<3
	06/23/08	5.63	7.33	--	<130	<250	--	--	--	--	<3	--
	09/09/08	6.11	6.85	**75**	**540**	<250	**1**	<1	<1	<3	<3	--
	12/10/08	5.58	7.38	**140**	**340**	<250	<1	<1	<1	<3	<3	--
	03/11/09	5.74	7.22	**120**	**340**	<250	<1	<1	<1	<3	<3	--
	09/10/09	5.98	6.98	**100**	**500**	<250	<1	<1	<1	<3	<1	--
	12/03/09	4.66	8.30	**130**	**440**	<250	<1	<1	<1	<3	<1	--
MW-3A (12.03)	06/05/08	3.74	8.29	<50	<130	<250	<1	<1	<1	<3	<3	<3
	09/09/08	5.20	6.83	<50	<130	<250	<1	<1	<1	<3	<3	--
	12/10/08	4.51	7.52	<50	<130	<250	<1	<1	<1	<3	<3	--
	03/11/09	4.74	7.29	<50	<130	<250	<1	<1	<1	<3	**5**	--
	09/10/09	5.08	6.95	--	--	--	--	--	--	--	--	--
	12/03/09	3.60	8.43	--	--	--	--	--	--	--	--	--
MW-4A (12.41)	06/05/08	4.12	8.29	<50	<130	<250	<1	<1	<1	<3	<3	<3
	09/09/08	5.33	7.08	<50	<130	<250	<1	<1	<1	<3	<3	--
	12/10/08	4.52	7.89	<50	<130	<250	<1	<1	<1	<3	**4**	--
	03/11/09	4.95	7.46	<50	<130	<250	<1	<1	<1	<3	<3	--
	09/10/09	5.20	7.21	--	--	--	--	--	--	--	--	--
	12/03/09	3.99	8.42	--	--	--	--	--	--	--	--	--
D-060508	06/05/08	--	--	<50	<130	<250	<1	<1	<1	<3	<3	<3
D-9/9/08	09/09/08	--	--	<50	<130	<250	<1	<1	<1	<3	<3	--
D-12/10/08	12/10/08	--	--	<50	<130	<250	<1	<1	<1	<3	<3	--
D-03/11/09	03/11/09	--	--	<50	<130	<250	<1	<1	<1	<3	<3	--
Trip Blank	06/06/08	--	--	<50	--	--	<1	<1	<1	<3	--	--
	09/09/08	--	--	<50	--	--	<1	<1	<1	<3	--	--
	12/10/08	--	--	<50	--	--	<1	<1	<1	<3	--	--
	03/11/09	--	--	<50	--	--	<1	<1	<1	<3	--	--
MTCA Groundwater Cleanup Level				800/1,000 [4]	500	500	51	2,100	15,000	1,000	8.1	NE

Notes:

[1]The approximate monitoring well locations are shown in Figure 2.

[2]Petroleum hydrocarbons analyzed using Ecology Method NWTPH-Gx and NWTPH-Dx with acid/silica gel cleanup.

[3]VOCs analyzed using EPA Method 8021B.

[4]MTCA Method A cleanup level is 800 µg/l when benzene is present, 1,000 µg/l when benzene is not present.

µg/l = micrograms per liter.

D = Duplicate groundwater sample. Samples D-060508 and D-03/11/09 are representative of the June 2008 and March 2009 samples from MW-4A. Samples Dup-9/9/08 and D-12/10/08 are representative of the September and December 2008 samples from MW-3A.

NE = not established.

Chemical analyses performed by CCI Analytical Laboratories/ALS Laboratory Group, Everett, Washington.

Bolding indicates analyte was detected. Shading indicates the detected concentration exceeds the respective cleanup level.

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TABLE 2
SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA
NONCARCINOGENIC PAHS
INTERIM REMEDIAL ACTION - CAP SANTE MARINE
ANACORTES, WASHINGTON

Monitoring Well[1]	Date Sampled	Noncarcinogenic PAHs[2] (µg/l)								
		Acenaph-thene	Acenaph-thylene	Anthra-cene	Benzo(ghi)-perylene	Fluoran-thene	Fluorene	Naph-thalenes	Phenan-threne	Pyrene
MW-1A	06/05/08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.04**	<0.02	**0.07**
	09/09/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	12/10/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	03/11/09	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	**0.019**	<0.018	<0.018
MW-2A	06/05/08	**110**	**2.4**	**6.4**	<0.02	**7.7**	**54**	**434**	**38**	**3.4**
	09/09/08	**60**	**1.2**	**3.0**	<0.018	**3.2**	**31**	**413**	**20**	**1.4**
	12/10/08	**49**	**1.2**	**1.8**	<0.018	**2.4**	**15**	**322**	**11**	**1.2**
	03/11/09	**61**	**1.1**	**2.2**	<0.018	**2.6**	**24**	**242.6**	**16**	**0.97**
	09/10/09	**71**	**1.4**	**3.7**	<0.018	**2.7**	**27**	**46**	**22**	**1.5**
	12/03/09	**47**	**1.1**	**1.2**	<0.018	**0.94**	**15**	**25.86**	**8.5**	**0.5**
MW-3A	06/05/08	<0.02	**0.03**	<0.02	<0.02	<0.02	<0.02	**0.20**	<0.02	<0.02
	09/09/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	12/10/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	03/11/09	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
MW-4A	06/05/08	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	**0.03**	<0.02	<0.02
	09/09/08	<0.019	**0.04**	<0.018	<0.018	<0.018	**0.02**	<0.018	**0.03**	<0.018
	12/10/08	**0.02**	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
	03/11/09	**0.019**	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
D-060508	06/05/08	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	**0.04**	**0.02**	<0.02
D-9/9/08	09/09/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
D-12/10/08	12/10/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
D-03/11/09	03/11/09	**0.019**	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
MTCA Groundwater Cleanup Level		643	NE	25,900	NE	90	3,460	4,940	NE	2,590

Notes:

[1]The approximate monitoring well locations are shown in Figure 2.

[2]Polycyclic aromatic hydrocarbons (PAHs) analyzed using EPA Method 8270SIM. The full list of PAHs that were analyzed is presented in Appendix B.

µg/l = micrograms per liter.

NE = not established.

D = Duplicate groundwater sample. Samples D-060508 and D-03/11/09 are representative of the June 2008 and March 2009 samples from MW-4A. Samples Dup-9/9/08 and D-12/10/08 are representative of the September and December 2008 samples from MW-3A.

Chemical analyses performed by CCI Analytical Laboratories, Everett, Washington.

Bolding indicates analyte was detected. Shading indicates the detected concentration exceeds the respective cleanup level.

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TABLE 3

SUMMARY OF GROUNDWATER CHEMICAL ANALYTICAL DATA

CARCINOGENIC PAHS

INTERIM REMEDIAL ACTION - CAP SANTE MARINE

ANACORTES, WASHINGTON

Monitoring Well[1]	Date Sampled	Carcinogenic PAHs[2] (µg/l)							
		Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(k)-fluoranthene	Chrysene	Dibenz(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (TEQ)[3]
MW-1A	06/05/08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.020
	09/09/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
	12/10/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
	03/11/09	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
MW-2A	06/05/08	**0.21**	**0.02**	**0.03**	**0.03**	**0.19**	<0.02	<0.02	**0.050**
	09/09/08	**0.07**	<0.018	<0.018	<0.018	**0.07**	<0.018	<0.018	**0.020**
	12/10/08	**0.1**	<0.018	<0.018	<0.018	**0.09**	<0.018	<0.018	**0.024**
	03/11/09	**0.049**	<0.018	<0.018	<0.018	**0.045**	<0.018	<0.018	**0.018**
	09/10/09	**0.047**	<0.018	<0.018	<0.018	**0.048**	<0.018	<0.018	**0.018**
	12/03/09	**0.036**	<0.018	<0.018	<0.018	**0.03**	<0.018	<0.018	**0.017**
MW-3A	06/05/08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.020
	09/09/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
	12/10/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
	03/11/09	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
MW-4A	06/05/08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.020
	09/09/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
	12/10/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
	03/11/09	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
D-060508	06/05/08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.020
D-9/9/08	09/09/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
D-12/10/08	12/10/08	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
D-03/11/09	03/11/09	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	0.013
MTCA Groundwater Cleanup Level		0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.100

Notes:

[1]The approximate monitoring well locations are shown in Figure 2.

[2]Polycyclic aromatic hydrocarbons (PAHs) analyzed using EPA Method 8270SIM. The full list of PAHs that were analyzed is presented in Appendix B.

[3]Total carcinogenic PAHs calculated using toxicity equivalency (TEQ) methodology relative to benzo(a)pyrene. cPAHs that were not detected were assigned a value of one half of the detection limit for these calculations.

µg/l = micrograms per liter.

D = Duplicate groundwater sample. Samples D-060508 and D-03/11/09 are representative of the June 2008 and March 2009 samples from MW-4A. Samples Dup-9/9/08 and D-12/10/08 are representative of the September and December 2008 samples from MW-3A.

Chemical analyses performed by CCI Analytical Laboratories, Everett, Washington.

Bolding indicates analyte was detected. Shading indicates the detected concentration exceeds the respective cleanup level.

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TABLE 4
SUMMARY OF GROUNDWATER FIELD PARAMETERS
INTERIM REMEDIAL ACTION - CAP SANTE MARINE
ANACORTES, WASHINGTON

Monitoring Well[1]	Date Measured	pH[2]	Conductivity[2] (mS/cm)	Turbidity[2] (ntu)	Dissolved Oxygen[2] (ppm)	Temperature[2] (^{o}C)
MW-1A	06/05/08	7.0	4.4	17	1.1	13
	09/09/08	6.9	2.0	16	1.3	18
	12/10/08	6.0	2.0	12	1.2	12
	03/11/09	5.2	1.8	6	2.9	9
MW-2A	06/05/08	6.8	7.7	550	1.6	13
	06/23/08	6.3	0.6	27	3.8	16
	09/09/08	6.5	0.6	29	3.2	18
	12/10/08	5.9	0.7	2	2.7	12
	03/11/09	5.1	10.8	4	2.9	8
	09/10/09	5.3	10.7	4	2.8	12
	12/03/09	5.8	10.2	3	2.8	8
MW-3A	06/05/08	6.7	8.1	63	2.5	12
	09/09/08	6.7	7.8	25	2.4	19
	12/10/08	6.0	6.4	12	2.5	12
	03/11/09	5.0	3.3	7	2.7	8
MW-4A	06/05/08	7.6	18.9	7	1.1	12
	09/09/08	7.4	16.2	12	1.3	18
	12/10/08	6.1	22.6	5	2.1	12
	03/11/09	5.1	30.0	6	2.9	8

Notes:

[1] The approximate monitoring well locations are shown in Figure 2.

[2] Measurements made using a Horiba-22 water quality meter.

mS/cm = milliSiemens per centimeter ntu = nephelometric turbidity units ppm = parts per million
˚C = Degrees Centigrade

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FIGURES

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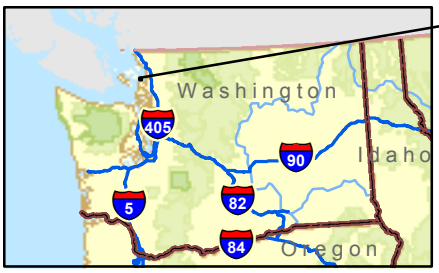

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Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Vicinity Map

Cap Sante Marine Interim Remedial Action
Port of Anacortes, Washington

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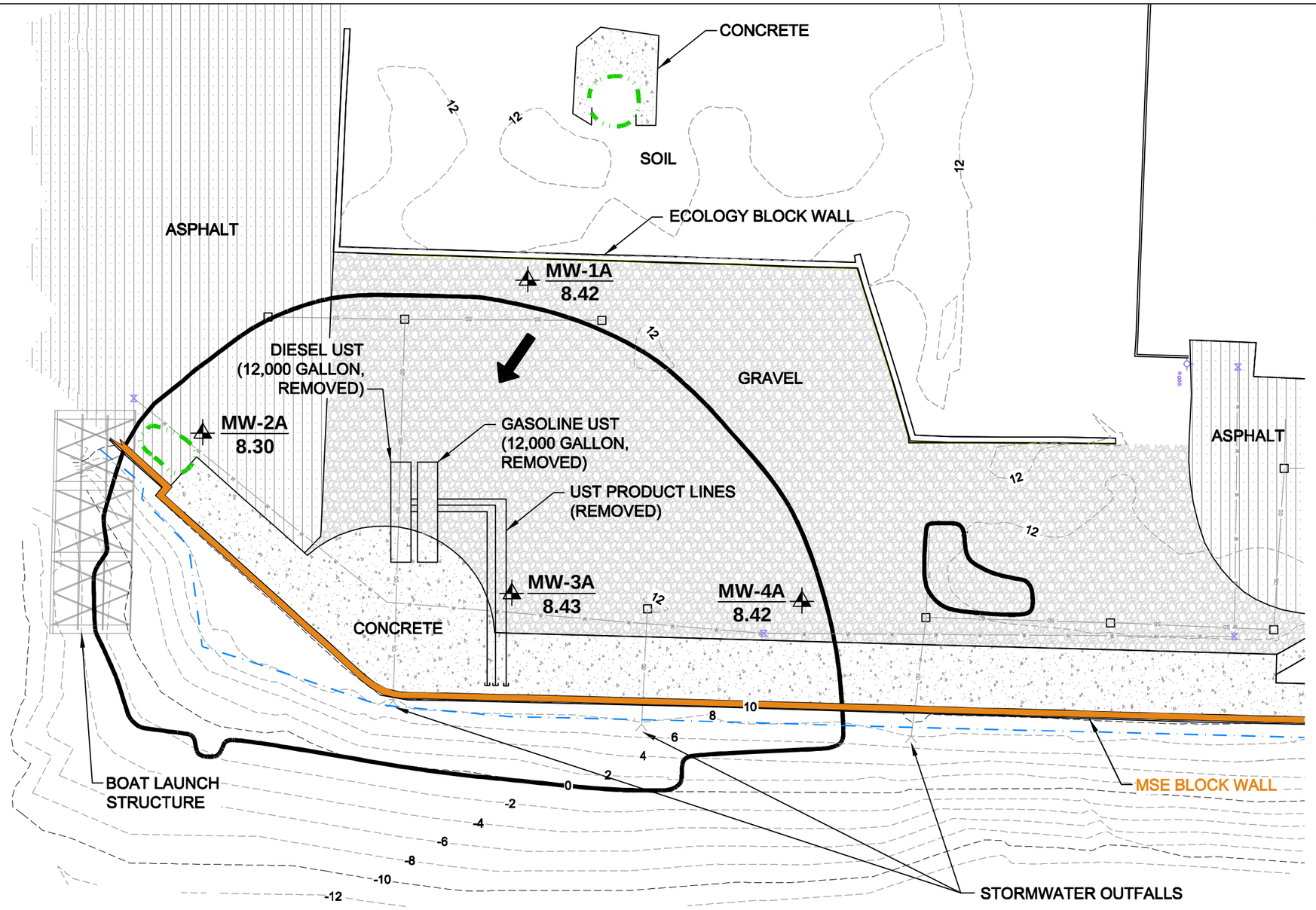
Figure 1

Office: SEA Path: P:\5\5147005\03\GIS\F1-0514700503_F1.mxd MM2 Map Revised: August 29, 2008



Legend

- Final Limits of Petroleum Excavations
- Final Limits of Metals Excavations
- Mean Higher High Water
- Catch Basin
- MW-2A / 8.30 — Post-Cleanup Compliance Monitoring Well / Groundwater Elevation (ft.) - (December 3, 2009)
- Groundwater Flow Direction
- UST — Underground Storage Tank
- Concrete
- Asphalt
- Gravel

Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base Map based on As-built Survey, April 2008 by Leonard, Boudinot & Skodje Inc.

W S N E

40 0 40
FEET

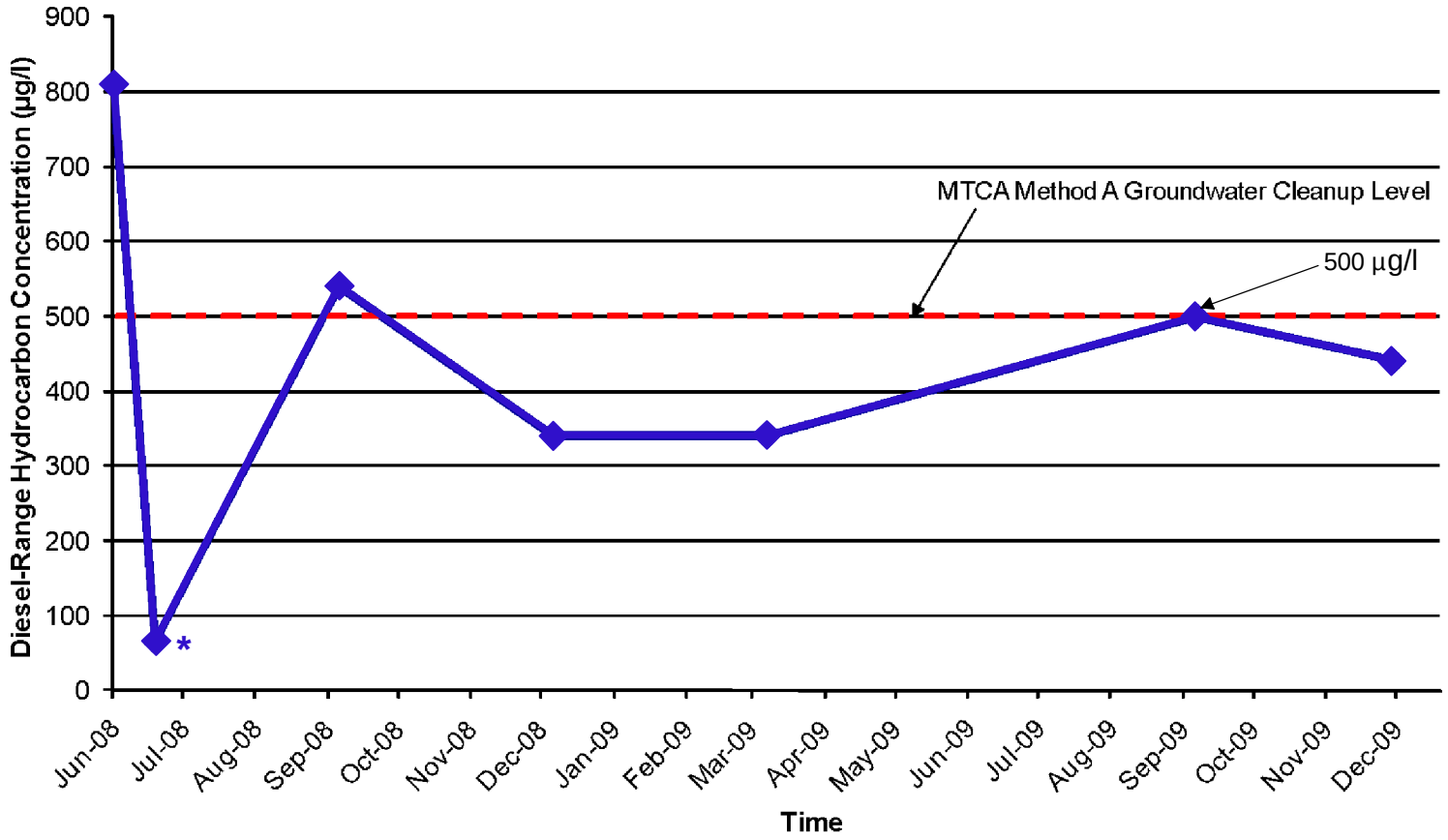
Site Plan: Compliance Monitoring Wells

Cap Sante Marine - Interim Remedial Action
Anacortes, Washington

GeoEngineers

Figure 2

Figure 3
Diesel-Range Hydrocarbon Concentration versus Time at Well MW-2A



Diesel Range Hydrocarbon Concentrations in MW-2A	
Cap Sante Marine Anacortes, Washington	
GeoEngineers	Figure 3

NOTES:

***** 1/2 reporting limit was used to plot 6/23/08 data .

µg/l = Micrograms per liter = parts per billion

APPENDICES

GeoEngineers

APPENDIX A
Field Procedures

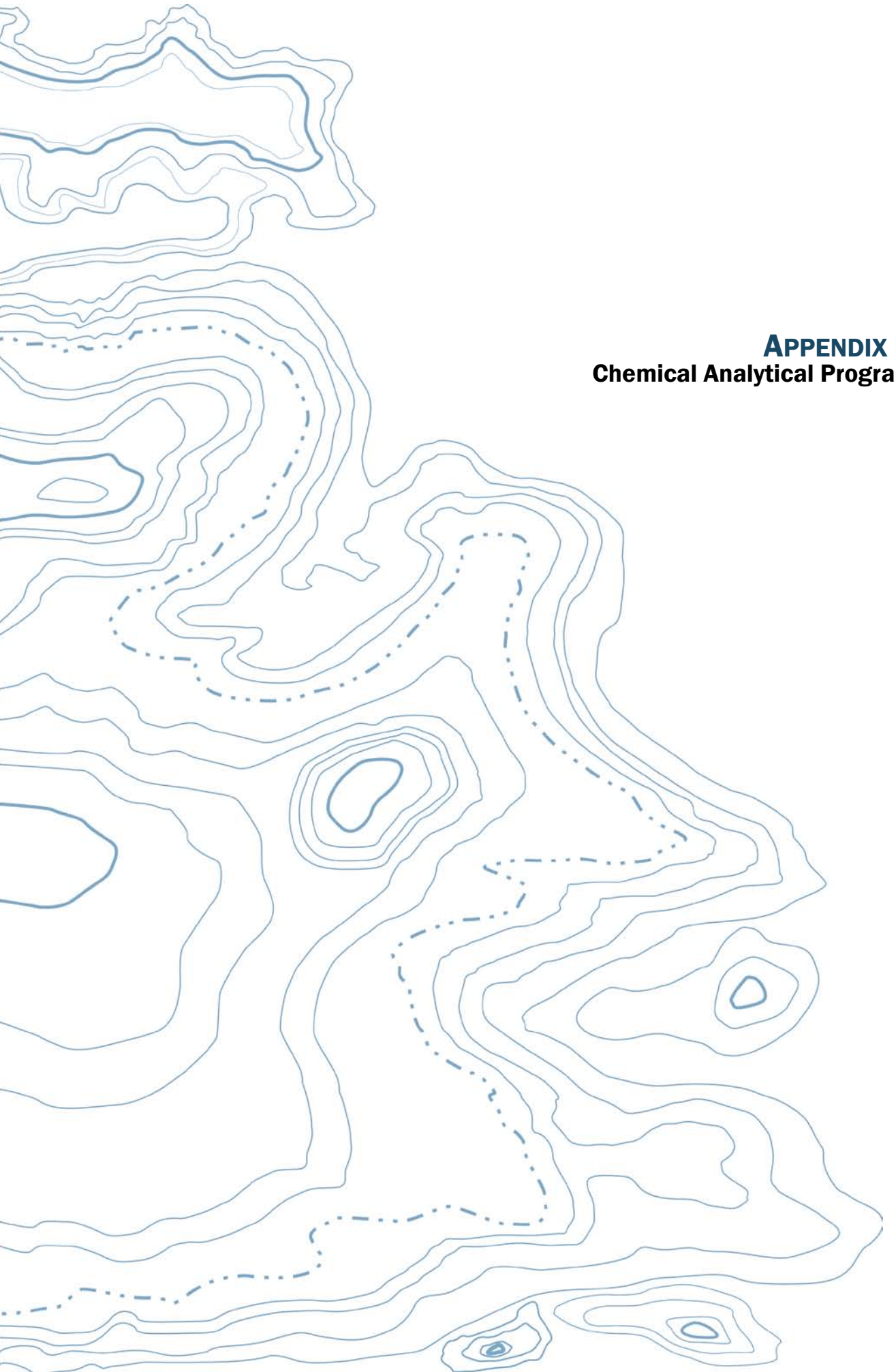
APPENDIX A
FIELD PROCEDURES

Groundwater Elevations

Well casing rim elevations were surveyed by GeoEngineers. Groundwater elevations are referenced to actual elevations of site features based on survey information provided to GeoEngineers by the Port of Anacortes. The depth to groundwater was measured in the monitoring wells using an electric water level indicator. The depth to groundwater was measured relative to the top of the well casings. Water level measurement equipment was washed in a Liqui-Nox® solution, followed by a distilled water rinse prior to use in the well. Groundwater elevations were calculated by subtracting the depth to water from the casing rim elevation.

Groundwater Sampling

Groundwater samples were obtained from monitoring well MW-2A using a peristaltic, low-flow pump. Groundwater field parameters were measured with a Horiba-22 water quality meter prior to collecting the samples. The water samples were transferred to clean laboratory-prepared containers. Samples requiring preservative (e.g. hydrochloric acid for volatile organic compound analyses) had the proper preservative in the laboratory-prepared bottles. Groundwater sample containers were filled completely to minimize headspace. The groundwater samples were kept cool during transport to the analytical laboratory.



APPENDIX B
Chemical Analytical Program

APPENDIX B
CHEMICAL ANALYTICAL PROGRAM

Samples

Chain-of-custody procedures were followed during the transport of the groundwater samples to the accredited analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results and laboratory quality control (QC) records are included in this appendix. The analytical results are summarized in the text and tables of this report.

Analytical Data Review

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Any data quality exceptions documented by the laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

Data Quality Exception Summary

No quality control exceptions were noted by the testing laboratory. Based on our data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use in this report.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Geoengineers, Inc.
600 Stewart St.
Plaza 600 Building, Suite 1700
Seattle, WA 98101

DATE: 12/18/2009
ALS JOB#: 0912027
DATE RECEIVED: 12/4/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Jim Roth
CLIENT PROJECT ID Port of Anacortes - Cap Sante Marine
CLIENT SAMPLE ID: 12/3/2009 MW-2A
ALS SAMPLE #: -01

DATA RESULTS

TPH-Gasoline

ANALYTE	RESULTS*	REPORTING LIMITS	DETECTION LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS BY
TPH-Volatile Range	130	50	4.6	1	UG/L	DLC

QC Batch prepared/extracted by EPA-5030 on 12/4/2009 3:24:52 PM.
Sample analyzed by NWTPH-GX on 12/4/2009 10:53:31 AM.

BTEXM by EPA-8021

ANALYTE	RESULTS*	REPORTING LIMITS	DETECTION LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS BY
Benzene	ND	1.0	0.12	1	UG/L	DLC
Toluene	ND	1.0	0.2	1	UG/L	DLC
Ethylbenzene	ND	1.0	0.1	1	UG/L	DLC
Xylenes	ND	3.0	0.91	1	UG/L	DLC

QC Batch prepared/extracted by EPA-5030 on 12/4/2009 3:24:52 PM.
Sample analyzed by EPA-8021 on 12/4/2009 10:53:31 AM.

TPH-Diesel

ANALYTE	RESULTS*	REPORTING LIMITS	DETECTION LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS BY
TPH-Diesel Range	440	130	40	1	UG/L	EBS
TPH-Oil Range	ND	250	36	1	UG/L	EBS

QC Batch prepared/extracted by EPA-3510 on 12/7/2009 11:36:58 AM.
Sample analyzed by NWTPH-DX w/ SGA on 12/4/2009 1:32:20 PM.

Semi-Volatile Organics by EPA-8270 SIM

ANALYTE	RESULTS*	REPORTING LIMITS	DETECTION LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS BY
Naphthalene	16	0.018	0.0015	1	UG/L	RAL
2-Methylnaphthalene	0.66	0.018	0.0021	1	UG/L	RAL
1-Methylnaphthalene	9.2	0.018	0.0018	1	UG/L	RAL
Acenaphthylene	1.1	0.018	0.0027	1	UG/L	RAL
Acenaphthene	47	0.072	0.0088	4	UG/L	RAL
Fluorene	15	0.018	0.0028	1	UG/L	RAL
Phenanthrene	8.5	0.018	0.0021	1	UG/L	RAL
Anthracene	1.2	0.018	0.0027	1	UG/L	RAL
Fluoranthene	0.94	0.018	0.0049	1	UG/L	RAL
Pyrene	0.50	0.018	0.0051	1	UG/L	RAL
Benzo[A]Anthracene	0.036	0.018	0.0044	1	UG/L	RAL
Chrysene	0.030	0.018	0.0057	1	UG/L	RAL
Benzo[B]Fluoranthene	ND	0.018	0.0074	1	UG/L	RAL
Benzo[K]Fluoranthene	ND	0.018	0.0049	1	UG/L	RAL
Benzo[A]Pyrene	ND	0.018	0.0085	1	UG/L	RAL
Indeno[1,2,3-Cd]Pyrene	ND	0.018	0.0077	1	UG/L	RAL
Dibenz[A,H]Anthracene	ND	0.018	0.0079	1	UG/L	RAL

8620 Holly Drive Suite 100 Everett, WA 98208 425 356-2600 FAX 425 356-2626 Seattle 206 292-9059

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CLIENT SAMPLE ID: 12/3/2009 MW-2A
ALS SAMPLE #: -01

DATA RESULTS

Benzo[G,H,I]Perylene	ND	0.018	0.0077	1	UG/L	RAL

QC Batch prepared/extracted by EPA-3510 on 12/14/2009 11:44:03 AM.
Sample analyzed by EPA-8270 SIM on 12/11/2009 9:05:00 PM.

ICP/MS Metals Analysis by EPA-6020

ANALYTE	RESULTS*	REPORTING LIMITS	DETECTION LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS BY
Lead	ND	1.0	1	1	UG/L	ARI

QC Batch prepared/extracted by EPA-6020 on 12/10/2009.
Sample analyzed by EPA-6020 on 12/10/2009.

Chromatogram indicates that it is likely that sample contains highly weathered gasoline and weathered diesel.

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:

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CLIENT PROJECT ID Port of Anacortes - Cap Sante Marine

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
0912027-01	NWTPH-GX	TFT	102%
0912027-01	EPA-8021	TFT	91%
0912027-01	NWTPH-DX	C25	89%
0912027-01	EPA-8270 SIM	Terphenyl-d14	100%
0912027-01 4X Dilution	EPA-8270 SIM	Terphenyl-d14	101%

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CLIENT PROJECT ID Port of Anacortes - Cap Sante Marine

QUALITY CONTROL RESULTS

BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBG-120409W	Water	NWTPH-GX	TPH-Volatile Range	ND(<50)	UG/L
MB-120409W	Water	EPA-8021	Benzene	ND(<1.0)	UG/L
MB-120409W	Water	EPA-8021	Toluene	ND(<1.0)	UG/L
MB-120409W	Water	EPA-8021	Ethylbenzene	ND(<1.0)	UG/L
MB-120409W	Water	EPA-8021	Xylenes	ND(<3.0)	UG/L
MB-120409W	Water	NWTPH-DX	TPH-Diesel Range	ND(<130)	UG/L
MB-120409W	Water	NWTPH-DX	TPH-Oil Range	ND(<250)	UG/L
MB-121109W	Water	EPA-8270 SIM	Naphthalene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	2-Methylnaphthalene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	1-Methylnaphthalene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Acenaphthylene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Acenaphthene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Fluorene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Phenanthrene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Anthracene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Fluoranthene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Pyrene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Benzo[A]Anthracene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Chrysene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Benzo[B]Fluoranthene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Benzo[K]Fluoranthene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Benzo[A]Pyrene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Indeno[1,2,3-Cd]Pyrene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Dibenz[A,H]Anthracene	ND(<0.018)	UG/L
MB-121109W	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	ND(<0.018)	UG/L
MBLK-12102009	Water	EPA-6020	Lead	ND(<1.0)	UG/L

APPROVED BY:

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DATE: 12/18/2009
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DATE RECEIVED: 12/4/2009
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Jim Roth
CLIENT PROJECT ID Port of Anacortes - Cap Sante Marine

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
417	Water	NWTPH-GX	TPH-Volatile Range	500	90%	88%	3
417	Water	EPA-8021	Benzene	20	98%	102%	4
417	Water	EPA-8021	Toluene	20	97%	100%	4
417	Water	EPA-8021	Ethylbenzene	20	95%	99%	4
417	Water	EPA-8021	Xylenes	60	97%	100%	4
421	Water	NWTPH-DX	TPH-Diesel Range	500	87%	91%	5
428	Water	EPA-8270 SIM	Naphthalene	5000	70%	71%	1
428	Water	EPA-8270 SIM	Acenaphthene	5000	73%	70%	4
428	Water	EPA-8270 SIM	Pyrene	5000	82%	81%	1
428	Water	EPA-8270 SIM	Benzo[G,H,I]Perylene	5000	71%	80%	12
R67055	Water	EPA-6020	Lead	100	98%	**NA**	NA

APPROVED BY:

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Everett, WA 98208
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http://www.alsenviro.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): 912027

Date 12-3-09 Page 1 Of 1

PROJECT ID: PORT OF ANACORTIS - CAP SANTE MARINE
REPORT TO COMPANY: JIM ROTH - GEOENGINEERS
PROJECT MANAGER: JIM ROTH
ADDRESS: GEOENGINEERS - SEATTLE
PHONE: 206-239-3743 FAX: 206-728-2732
P.O. NUMBER: 5147-005-07 E-MAIL: JROTH@GEOENGINEERS.COM
INVOICE TO COMPANY:
ATTENTION:
ADDRESS:

LABORATORY COPY

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX WITH SILICA GEL CLEAN UP	NWTPH-GX	BTEX by EPA-8021B	MTBE by EPA-8021 ☐ EPA-8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM X	PCB ☐ Pesticides ☐ by EPA 8081/8082	Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify) TOTAL LEAD BY EPA METHOD 6020/7000	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	OTHER (Specify)	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. MW-2A	12-3	1656	W	1		X	X	X							X			X			5	
2.																						
3.																						
4.																						
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

SPECIAL INSTRUCTIONS * DETECTION LIMIT OF 0.018 ug/L FOR PAHs.

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Brian Lindquist, 12-4-09
   Received By: Shawn Robinson AU 12/4/09 9:45
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: ☒ 10 Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: ☒ 5 Standard | 3 | 1 | SAME DAY

OTHER: Specify:

* Turnaround request less than standard may incur Rush Charges

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