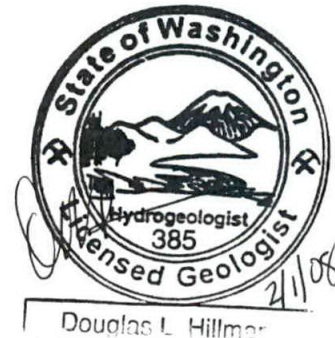


MEMORANDUM

Project No.: 020034-002-04

February 1, 2008

To: Mr. Nnamdi Madakor, Washington State Department of Ecology
cc: Brian Thomas, Resolute Properties, LLC
From: **Doug Hillman, LHG**
Principal Hydrogeologist



Re: **Compliance Monitoring Data/TCP ID #NW0486**
Former Flohr Metals Property, Seattle, Washington

This memorandum describes the groundwater compliance monitoring for the former Flohr Metals property (subject property) conducted for 2007, including collection of groundwater quality and water level elevation data. Monitoring is conducted in accordance with the requirements of the "no further action" letter dated September 2, 2003 and the Revised Groundwater Compliance Monitoring Plan (Aspect Consulting, 2003). Results from this monitoring round were consistent with past data as conditions continue to improve.

The monitoring was conducted on December 18, 2007 and results from this event showed the following:

- Constituents of concern including tetrachloroethene (PCE), trichloroethene (TCE), 1,1-Dichloroethene (1,1-DCE), and vinyl chloride (VC) were non-detectable at the conditional points of compliance (P1-A/B, P2-A/B); and
- Natural attenuation continues to effectively remove residual contaminants in upland groundwater.

Based on the stability and declining trends observed in the monitoring data, the next monitoring event is planned for December 2012, unless otherwise requested by Ecology. Details are provided below.

Groundwater Monitoring Results

Groundwater quality samples were collected along the groundwater flow path at points HC-1, IP-8, P1-A/B, and P2-A/B from the source area to the point of discharge near the Lake

MEMORANDUM

Project No. 020034-002-04

February 1, 2008

Washington Ship Canal, respectively. Groundwater elevations were also measured at these points and at several other wells on the property. Samples were analyzed for chlorinated solvents and parameters measured in the field included temperature, conductivity, pH, dissolved oxygen, and ORP. Laboratory certificates of analysis are copied in Attachment A and the field parameter measurements are compiled in Attachment B.

Groundwater Flow Direction

A groundwater elevation contour map (Figure 1) was developed using the water levels collected in December 2007 (Table 1). The groundwater flow direction is to the southwest toward the Ship Canal and consistent with prior rounds of measurements.

Analytical Results

Analytical results and respective cleanup levels are presented in Table 2 and summarized below:

- In the source area (HC-1), PCE is now the only constituent that exceeds cleanup levels;
- In the central portion of the plume (IP-8), PCE, 1,1-DCE, and VC are above the cleanup levels, but total chlorinated ethane concentrations have decreased nearly 10-fold during the compliance monitoring period; and
- At the conditional points of compliance (P1-A/B and P2-A/B), all of the constituents are below detection limits.

Planned Future Monitoring

Groundwater compliance monitoring will be continued in December ²⁰¹²~~2009~~. The monitoring event is planned for December because chlorinated solvent concentrations were found to be highest on average during this month based on results from the 2004 quarterly monitoring events.

ATTACHMENTS:

Table 1 - Groundwater Elevation Measurements

Table 2 - Groundwater Quality

Figure 1 - Exploration Plan and Compliance Monitoring Location Map

Attachment A - Lab Certificates

Attachment B - Field Groundwater Sampling Forms

V:\020034 Kvichak Marine\2007 Compliance\GW Monitoring 2007.doc

Table 1 - Groundwater Elevation Measurements

Well	Date Installed	Depth in Feet	Depth to Water in Feet																		
			22-Apr-99	17-Apr-00	29-Aug-00	10-Oct-00	20-Nov-00	25-Jan-01	22-Feb-01	18-Apr-01	18-Jun-01	30-Jul-01	28-Mar-02	3-Apr-02	5-Feb-04	14-May-04	30-Aug-04	1-Dec-04	20-Jan-06	18-Dec-07	
MW-1	4-Aug-98	15.0													9.55	10.09	9.09	9.98	10.61	9.85	10.22
MW-2	4-Aug-98	15.0	9.47		9.81		10.52	10.44							9.86	10.40	9.44	10.29	10.90	10.16	10.45
HC-1	3-Mar-00	17.0		9.49	10.13		10.85	10.76		9.40	9.30				5.34						
HC-2	3-Mar-00	13.0		4.82	5.45		6.30	6.30		4.72	4.59				5.23	5.13	5.93		5.41	6.14	5.97
HC-3	3-Mar-00	13.0		4.62	5.28		6.02	6.07					5.41		3.74	3.73	4.77	2.89	3.93	4.68	
HC-4	17-Feb-01	8.5							4.10	3.11	3.03		3.74		3.73						
HC-5	17-Feb-01	8.5							4.03	3.07	2.89		3.83		3.72	4.45	2.92				
HC-6	17-Feb-01	8.5										2.64	3.17		3.11						
IP-1	24-Mar-00	16.0						11.33							10.42	10.98			11.5	10.68	11.03
IP-2	24-Mar-00	15.0						11.33							10.46	11.02	10.14	10.91	11.54	10.76	11.1
IP-3	3-Oct-00	15.0				10.41		10.74							9.88		9.38	10.1		11.32	
IP-4	3-Oct-00	14.5				10.48		10.76							9.78	9.69	9.51	10.3	10.86	10.24	10.57
IP-5		14.5				10.28		10.51							9.58						
IP-6		14.5						11.19							10.33	11.01	9.79	10.69	11.36	10.88	
IP-7		14.5						10.90							10.1						
IP-8		14.5						10.80							9.9	10.61	9.29	10.24	10.92	10.47	10.73
IP-9		14.5						11.11							10.58	11.02	9.57	10.46	11.24	10.85	
P-1A	28-Mar-02	4.0													2.59						
P-1B	28-Mar-02	7.0													2.59						
P-2A	28-Mar-02	6.5													2.65						
P-2B	28-Mar-02	9.5													2.65						

Well	TOC Elevation	Groundwater Elevation in Feet																		
		22-Apr-99	17-Apr-00	29-Aug-00	10-Oct-00	20-Nov-00	25-Jan-01	22-Feb-01	18-Apr-01	18-Jun-01	30-Jul-01	28-Mar-02	3-Apr-02	5-Feb-04	14-May-04	30-Aug-04	1-Dec-04	20-Jan-06	18-Dec-07	
MW-1																				
MW-2	29.50	20.03		19.69		18.98	19.06						19.95	19.41	20.41	19.52	18.89	19.65	19.28	
HC-1	30.00		20.51	19.87		19.15	19.24		20.60	20.70			20.14	19.60	20.56	19.71	19.10	19.84	19.55	
HC-2	24.76		19.94	19.31		18.46	18.46		20.04	20.17		19.35	19.42					18.66	18.76	
HC-3	24.56		19.94	19.28		18.54	18.49					19.33	19.43	18.63		19.15	18.42	18.73	18.59	
HC-4	22.97							18.87	19.86	19.94		19.23	19.24	18.20	20.08	19.04	18.29			
HC-5	22.93							18.90	19.86	20.04		19.10	19.21	18.48	20.01					
HC-6	22.27										19.63	19.10	19.16							
IP-1	30.54						19.21						20.12	19.56			19.04	19.86	19.51	
IP-2	30.51						19.18						20.05	19.49	20.37	19.60	18.97	19.75	19.41	
IP-3	29.79				19.38		19.05						19.91		20.41	19.69		18.47		
IP-4	29.86				19.38		19.10						20.08	20.17	20.35	19.56	19.00	19.62	19.29	
IP-5	29.63				19.35		19.12						20.05							
IP-6	30.00						18.81						19.67	18.99	20.21	19.31	18.64	19.12		
IP-7	29.76						18.86						19.66							
IP-8	29.53						18.73						19.63	18.92	20.24	19.29	18.61	19.06	18.80	
IP-9	29.79						18.68						19.21	18.77	20.22	19.33	18.55	18.94		
P-1A	21.81												19.22							
P-2A	21.81												19.16							

Table 2 - Groundwater Quality

Sample Number Elevation Date of Sampling	Groundwater Screening Criteria	MW-1 8/5/98	MW-2				HC-1 (Replaced MW-1)												
			8/25/98	8/29/00	11/20/00	3/28/02	3/9/00	4/17/00	8/29/00	11/20/00	4/18/01	6/18/01	4/3/02	2/5/04	5/14/04	8/30/04	12/1/04	1/20/06	12/18/07
Total Suspended Solids in mg/L							1400												
Volatile Organics in µg/L (Detects only)																			
Vinyl Chloride	3.7	3	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.7	0.2 U
Chloroethane		2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone		NA	NA	5 U	5.8	10 U	42	6.8	5 U	5 U	5 U	5 U	10 U		10 U	10 U	10 U	10 U	10 U
Carbon Disulfide		1 U	1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U							
1,1-Dichloroethene	1.93	27	11	4.6	0.7 J	3	2.9	1.1	1 U	1 U	1 U	1.4	1 U	1 U	1 U	1 U	1 U	2.0	1 U
1,1-Dichloroethane		130	77	34	8.6	32	7	2.7	1 U	1 U	3.4	7.4	3	4	1 U	1 U	1 U	17	1 U
cis-1,2-Dichloroethene		22	2 U	3	5.4	3	19	3.2	1.4	1 U	1.8	4.5	3	30	10	3	1 U	88	10
2-Butanone		5 U	5 U	5 U	6 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U		10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	417,000	67	10	9.1	0.9 J	8	16	5.5	1 U	1 U	6.3	13	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	56	4	2 U	8.4	3.1	3	6.2	1.6	1 U	1 U	1.1	2	7	12	1 U	1 U	1 U	10	6.2
Tetrachloroethene	4.15	600	27	44	5.7	22	270	160	23	5.8	110	160	18	10	4	6	6	19	19
Naphthalene	4,940														1 U	1 U	1 U	1 U	1 U
Dissolved Metals in mg/L																			
Arsenic	0.005 (1)						0.05 U												
Copper	0.0046						0.002												
Iron						0.54													
Lead	0.021						0.02 U												
Nickel	0.027						0.01 U												
Zinc	0.061						0.009												
Nitrate/Nitrite in mg-N/L																			
Nitrate						1.6								0.2 U	0.2 U	0.2 U	0.0 U	0.036	
Nitrite						0.077											0.010	0.010 U	
Nitrate+Nitrite (NO3+NO2)						1.6											0.010 U	0.036	
Sulfate in mg/L						86								18.6	1.25	1.48	11.9	59.2	
Dissolved Organic Carbon in mg/L														50.1	44.0	70.6	15.0	58.8	
Hardness in mg/CaCO3/L							350												

U = Not detected at indicated detection limit.

NA = Not analyzed.

(1) MTCA Method A cleanup level.

(2) Identified as MW in lab certificates.

Table 2 - Groundwater Quality

Sample Number Elevation Date of Sampling	Groundwater Screening Criteria	HC-2								HC-3						HC-4							
		3/9/00	4/17/00	8/29/00	11/20/00	1/24/01	4/18/01	6/19/01	3/28/02	3/9/00	4/17/00	8/29/00	11/20/00	1/24/01	3/28/02	2/22/01	4/18/01	6/18/01	3/28/02	2/5/04	5/14/04	8/30/04	12/1/04
Total Suspended Solids in mg/L		960								1400													
Volatile Organics in µg/L (Detects only)																							
Vinyl Chloride	3.7	1.2	1.4	1.3	1.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.5	5.2	2.7	2	2	2	1 U	2
Chloroethane		1.4	2.3	1.7	1.7	1 U	1.4	1 U	3	1.1	1.4	1 U	1.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone		5 U	5 U	5 U	5 U	5 U	200	18	10 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U	5 U	10 U		10 U	10 U	10 U
Carbon Disulfide		1 U	1 U	1 U	1 U	1 U	1.9	1 U		1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U					
1,1-Dichloroethene	1.93	8.4	9	7.4	5.7	3.9	2.7	2.9	4	1 U	1 U	1.1	1 U	1 U	1 U	2.9	1.5	1.2	3	3	2	1 U	2
1,1-Dichloroethane		54	45	45	41	42	31	28	41	1	2.2	3.4	2.3	1.8	3	12	5.6	6.5	16	8	7	2	4
cis-1,2-Dichloroethene		16	15	28	25	36	24	24	8	2.6	3.2	4.2	4	6.3	1	46	37	28	12	17	17	6	16
2-Butanone		5 U	5 U	5 U	5 U	5 U	7.1	5 U	10 U	5 U	5 U	5 U	5 U	5 U	10 U	66	5 U	5 U	10 U		10 U	10 U	10 U
1,1,1-Trichloroethane	417,000	1.5	1 U	1 U	1 U	1.2	1.3	1 U	10	1.7	1.8	1.1	1.9	2.1	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	56	36	36	53	36	16	8.2	15	13	1.4	1.8	2.6	1.7	2.6	2	7.4	2	1.2	29	23	6	2	10
Tetrachloroethene	4.15	35	34	23	6.3	1 U	1.4	3.3	5	12	13	9.4	12	11	15	1 U	1 U	1 U	5	4	1	2	1 U
Naphthalene	4,940			5 U	5 U	5 U	5 U	5 U	1 U							5 U	5 U	5 U	1 U		1 U	1 U	1 U
Dissolved Metals in mg/L																							
Arsenic	0.005 (1)	0.05 U		0.002						0.05 U		0.0004											
Copper	0.0045	0.002 U		0.002 U						0.002 U		0.002 U											
Iron																		8.68					
Lead	0.021	0.02 U		0.005						0.02 U		0.001											
Nickel	0.027	0.01 U		0.01 U						0.01 U		0.01 U											
Zinc	0.061	0.022		0.062						0.022		0.018 U											
Nitrate/Nitrite in mg-N/L																							
Nitrate																			0.010 U	0.2 U	0.2 U	0.255	0.010 U
Nitrite																			0.023				0.010 U
Nitrate+Nitrite (NO3+NO2)																			0.020				0.010 U
Sulfate in mg/L																			38	18	9.58	8.97	10.5
Dissolved Organic Carbon in mg/L																				42.9	6.72	12.8	2.26
Hardness in mg/CaCO3/L		310								130													

U = Not detected at indicated detection limit.

NA = Not analyzed.

(1) MTCA Method A cleanup level.

(2) Identified as MW in lab certificates.

Table 2 - Groundwater Quality

Sample Number Elevation Date of Sampling	Groundwater Screening Criteria	HC-5				HC-6		IP-6	IP-7	IP-8							
		2/22/01	4/18/01	6/18/01	3/28/02	7/30/01	3/28/02	3/28/02	3/28/02	4/3/02	2/5/04	5/14/04	8/30/04	12/1/04	1/20/06	12/18/07	
Total Suspended Solids in mg/L																	
Volatile Organics in µg/L (Detects only)	3.7	2.3	1.9	2.1	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U	5.3	
Vinyl Chloride		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chloroethane		5 U	5 U	5 U	10 U	5 U	10 U	10 U	10 U	10 U		10 U	10 U	10 U	10 U	10 U	
Acetone		1 U	1 U	1 U		1 U											
Carbon Disulfide		1 U	1 U	1.4	1 U	1.2	1	5	9	4	6	8	6	8	6.6	2.4	
1,1-Dichloroethene	1.93	1.8	1.1	1 U	1	13	14	23	34	18	17	20	20	24	20	8.2	
1,1-Dichloroethane		5	2.8	3.2	2	15	3	1	4	3	8	29	39	37	19	4.2	
cis-1-2-Dichloroethene		71	40	5 U	10 U	450	10 U	10 U	10 U	10 U		10 U	10 U	10 U	10 U	10 U	
2-Butanone																	
1,1,1-Trichloroethane	417,000	1 U	1 U	1 U	1 U	1 U	1	2	2	2	1	1 U	1 U	1 U	1 U	1 U	
Trichloroethene	56	1 U	1 U	1 U	2	2	3	12	23	14	35	44	44	65	60	13	
Tetrachloroethene	4.15	1 U	1 U	1 U	1 U	1 U	1 U	49	76	78	81	83	79	81	83	7.3	
Naphthalene	4,940	5 U	5 U	5 U	1 U	13	1 U	1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U	
Dissolved Metals in mg/L																	
Arsenic	0.005 (1)																
Copper	0.0046																
Iron									0.05 U								
Lead	0.021																
Nickel	0.027																
Zinc	0.061																
Nitrate/Nitrite in mg-N/L																	
Nitrate									0.010 U		0.2 U	0.2 U	0.2 U	0.010 U	0.010 U		
Nitrite									0.010 U					0.010 U	0.010 U		
Nitrate+Nitrite (NO3+NO2)									0.010 U					0.010 U	0.010 U		
Sulfate in mg/L																	
								47			33.7	31.2	22.1	36.1	35.4		
Dissolved Organic Carbon in mg/L																	
											15.2	16.4	28.8	5.52	41.30		
Hardness in mg/CaCO3/L																	

U = Not detected at indicated detection limit.

NA = Not analyzed.

(1) MTCA Method A cleanup level.

(2) Identified as MW in lab certificates.

Syr
spt 05 / oct
Coughlin

Table 2 - Groundwater Quality

Sample Number Elevation Date of Sampling	Groundwater Screening Criteria	IP-9 4/3/02	P-1A 4/3/02 2/5/04 5/14/04 8/30/04 12/1/04 1/20/06 12/18/07							P-1B 4/3/02 2/5/04 5/14/04 8/30/04 12/1/04 1/20/06 12/18/07						
Total Suspended Solids in mg/L																
Volatile Organics in µg/L (Detects only)																
Vinyl Chloride	3.7	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U
Chloroethane		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone		10 U	10 U		10 U	10 U	10 U	10 U	10 U	10 U		10 U	10 U	10 U	10 U	10 U
Carbon Disulfide																
1,1-Dichloroethene	1.93	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane		8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene		3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone		10 U	10 U		10 U	10 U	10 U	10 U	10 U	10 U		10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	417,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	56	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	4.15	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	4,940	1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U
Dissolved Metals in mg/L																
Arsenic (1)	0.005															
Copper	0.0046															
Iron																
Lead	0.021															
Nickel	0.027															
Zinc	0.081															
Nitrate/Nitrite in mg-N/L																
Nitrate				0.239	0.2 U	0.2 U	0.103	0.218			0.241	0.2 U	0.2 U	0.099	0.239	
Nitrite								0.010 U						0.010 U	0.010 U	
Nitrate+Nitrite (NO3+NO2)								0.218						0.099	0.239	
Sulfate in mg/L																
				6.09	6.25	8.39	5.4	4.7			6.17	6.21	8.67	6.0	4.6	
Dissolved Organic Carbon in mg/L																
				6.41	5.41	6.17	3.19	12			5.99	4.11	5.43	2.54	12.7	
Hardness in mg/CaCO3/L																

U = Not detected at indicated detection limit.

NA = Not analyzed.

(1) MTCA Method A cleanup level.

(2) Identified as MW in lab certificates.

Table 2 - Groundwater Quality

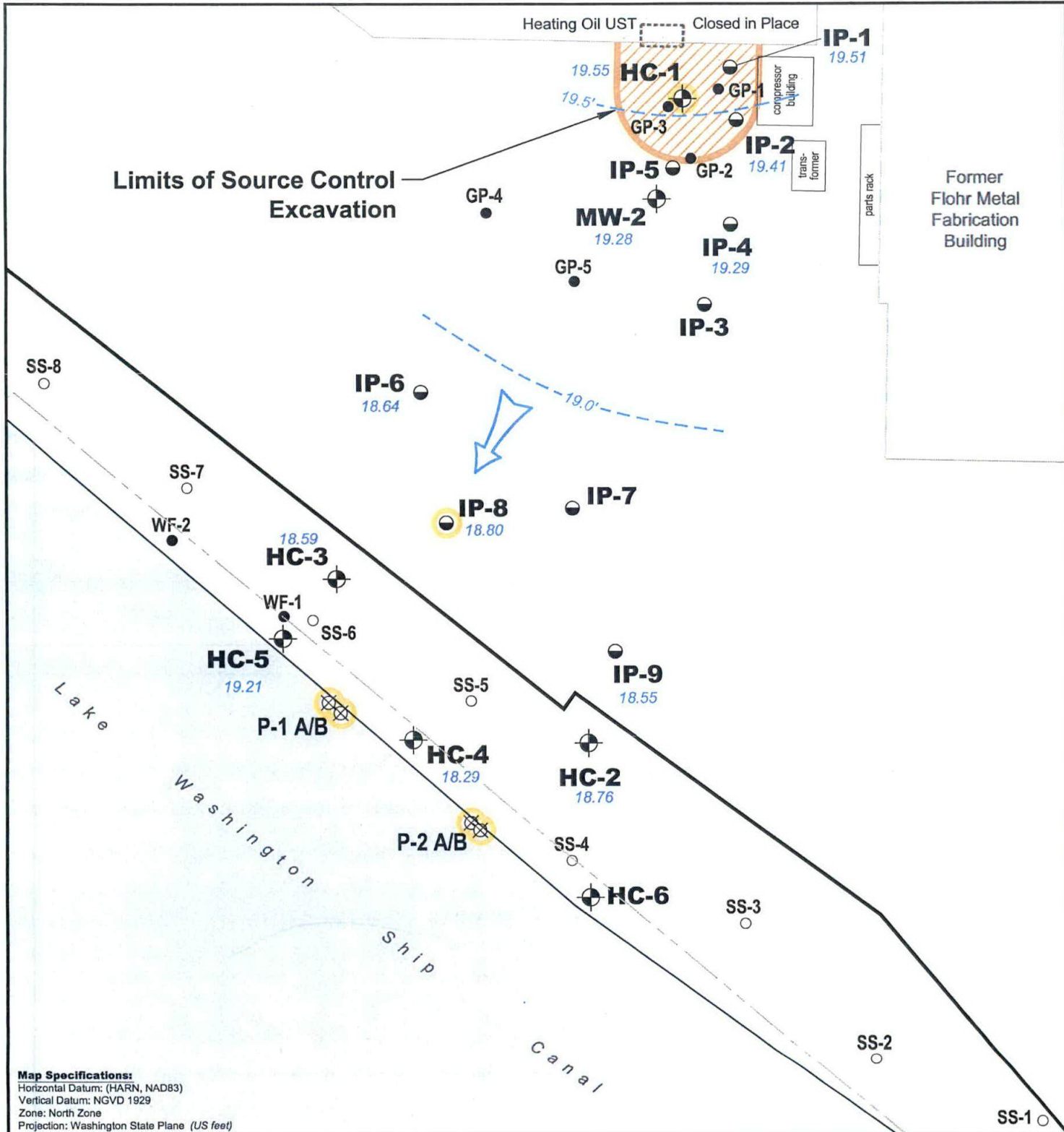
Sample Number Elevation Date of Sampling	Groundwater Screening Criteria	P-2A							P-2B						
		4/3/02	2/5/04	5/14/04	8/30/04	12/1/04	1/20/06	12/18/07	4/3/02	2/5/04	5/14/04	8/30/04	12/1/04	1/20/06	12/18/07
Total Suspended Solids in mg/L															
Volatile Organics in µg/L (Detects only)															
Vinyl Chloride	3.7	1 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U
Chloroethane		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone		10 U		10 U	10 U	10 U	10 U	10 U	10 U	10 U		10 U	10 U	10 U	10 U
Carbon Disulfide	1.93														
1,1-Dichloroethene		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	417,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone		10 U		10 U	10 U	10 U	10 U	10 U	10 U		10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	56	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	4.15	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	4,940	1 U		1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U	1 U	1 U
Dissolved Metals in mg/L															
Arsenic	0.005 (1)														
Copper	0.0046														
Iron															
Lead	0.021														
Nickel	0.027														
Zinc	0.061														
Nitrate/Nitrite in mg-N/L															
Nitrate			0.242	0.2 U	0.2 U	0.103	0.220			0.240	0.2 U	0.2 U	0.100	0.221	
Nitrite						0.010 U	0.010 U						0.010 U	0.010 U	
Nitrate+Nitrite (NO3+NO2)						0.103	0.220						0.100	0.221	
Sulfate in mg/L			6.07	6.23	8.61	5.3	4.7			6.09	6.28	8.49	5.4	5.2	
Dissolved Organic Carbon in mg/L			6.07	4.78	5.63	2.85	12.3			6.73	4.23	5.77	2.74	11.9	
Hardness in mg/CaCO3/L															

U = Not detected at indicated detection limit.

NA = Not analyzed.

(1) MTCA Method A cleanup level.

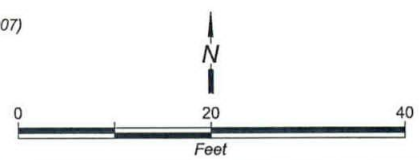
(2) Identified as MW in lab certificates.



Map Specifications:
 Horizontal Datum: (HARN, NAD83)
 Vertical Datum: NGVD 1929
 Zone: North Zone
 Projection: Washington State Plane (US feet)

Legend

- Compliance Monitoring Program Sampling Location
- Monitoring Well
- Injection Point
- Piezometer
- Probe Sample
- Surface Soil Sample
- Ground Water Contour (measured 12/18/2007)
- Ground Water Elevation (in feet)
- Ground Water Flow Direction



Aspect consulting
 IN-DEPTH PERSPECTIVE
 179 Madrone Lane North
 Bainbridge Island, WA 98110
 (206) 780-9370
 811 First Avenue #480
 Seattle, WA 98104
 (206)-328-7443

Exploration Plan and Compliance Monitoring Location Map
 Former Flohr Metal
 Seattle, Washington

DATE: January 2008	PROJECT NO. 020034
DESIGNED BY: KPS	FIGURE NO. 1
DRAWN BY: JRS	
REVISED BY: SCC	

Q:\Kivichak Marine\020034 - Former Flohr Metal\2008-01 Compliance Monitoring Data\020034-02.dwg

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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Yelena Aravkina, M.S.
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December 26, 2007

Doug Hillman, Project Manager
Aspect Consulting
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Mr. Hillman:

Included are the results from the testing of material submitted on December 18, 2007 from the Kvichak Marine 020034, F&BI 712192 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
ASP1226R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 18, 2007 by Friedman & Bruya, Inc. from the Aspect Consulting Kvichak Marine 020034, F&BI 712192 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting</u>
712192-01	HC-1
712192-02	IP-8
712192-03	P-1A
712192-04	P-1B
712192-05	P-2A
712192-06	P-2B

The 8260B compound 1,2,3-Trichlorobenzene was detected in the method blank. The compound was not detected in the samples and was flagged accordingly.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: HC-1	Client: Aspect Consulting
Date Received: 12/18/07	Project: Kvichak Marine 020034, F&BI 712192
Date Extracted: 12/20/07	Lab ID: 712192-01
Date Analyzed: 12/20/07	Data File: 122007.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	85	55	118
1,2-Dichloroethane-d4	75	53	121
Toluene-d8	75	55	121
4-Bromofluorobenzene	87	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	19
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<0.2	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	10	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	6.2	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: IP-8	Client: Aspect Consulting
Date Received: 12/18/07	Project: Kvichak Marine 020034, F&BI 712192
Date Extracted: 12/20/07	Lab ID: 712192-02
Date Analyzed: 12/20/07	Data File: 122008.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	84	55	118
1,2-Dichloroethane-d4	78	53	121
Toluene-d8	76	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	7.3
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	5.3	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	2.4	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	8.2	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	4.2	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	13	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: P-1A	Client: Aspect Consulting
Date Received: 12/18/07	Project: Kvichak Marine 020034, F&BI 712192
Date Extracted: 12/20/07	Lab ID: 712192-03
Date Analyzed: 12/20/07	Data File: 122009.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	84	55	118
1,2-Dichloroethane-d4	78	53	121
Toluene-d8	75	55	121
4-Bromofluorobenzene	86	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<0.2	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: P-1B
 Date Received: 12/18/07
 Date Extracted: 12/20/07
 Date Analyzed: 12/20/07
 Matrix: Water
 Units: ug/L (ppb)

Client: Aspect Consulting
 Project: Kvichak Marine 020034, F&BI 712192
 Lab ID: 712192-04
 Data File: 122010.D
 Instrument: GCMS4
 Operator: MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	85	55	118
1,2-Dichloroethane-d4	76	53	121
Toluene-d8	74	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1
Chloromethane	<1
Vinyl chloride	<0.2
Bromomethane	<1
Chloroethane	<1
Trichlorofluoromethane	<1
Acetone	<10
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
2,2-Dichloropropane	<1
cis-1,2-Dichloroethene	<1
Chloroform	<1
2-Butanone (MEK)	<10
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
1,1-Dichloropropene	<1
Carbon Tetrachloride	<1
Benzene	<1
Trichloroethene	<1
1,2-Dichloropropane	<1
Bromodichloromethane	<1
Dibromomethane	<1
4-Methyl-2-pentanone	<10
cis-1,3-Dichloropropene	<1
Toluene	<1
trans-1,3-Dichloropropene	<1
1,1,2-Trichloroethane	<1
2-Hexanone	<10
1,3-Dichloropropane	<1

Compounds:	Concentration ug/L (ppb)
Tetrachloroethene	<1
Dibromochloromethane	<1
1,2-Dibromoethane (EDB)	<1
Chlorobenzene	<1
Ethylbenzene	<1
1,1,1,2-Tetrachloroethane	<1
m,p-Xylene	<2
o-Xylene	<1
Styrene	<1
Isopropylbenzene	<1
Bromoform	<1
n-Propylbenzene	<1
Bromobenzene	<1
1,3,5-Trimethylbenzene	<1
1,1,2,2-Tetrachloroethane	<1
1,2,3-Trichloropropane	<1
2-Chlorotoluene	<1
4-Chlorotoluene	<1
tert-Butylbenzene	<1
1,2,4-Trimethylbenzene	<1
sec-Butylbenzene	<1
p-Isopropyltoluene	<1
1,3-Dichlorobenzene	<1
1,4-Dichlorobenzene	<1
1,2-Dichlorobenzene	<1
1,2-Dibromo-3-chloropropane	<1
1,2,4-Trichlorobenzene	<1
Hexachlorobutadiene	<1
Naphthalene	<1
1,2,3-Trichlorobenzene	<1

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: P-2A
 Date Received: 12/18/07
 Date Extracted: 12/20/07
 Date Analyzed: 12/20/07
 Matrix: Water
 Units: ug/L (ppb)

Client: Aspect Consulting
 Project: Kvichak Marine 020034, F&BI 712192
 Lab ID: 712192-05
 Data File: 122011.D
 Instrument: GCMS4
 Operator: MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	85	55	118
1,2-Dichloroethane-d4	74	53	121
Toluene-d8	74	55	121
4-Bromofluorobenzene	85	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<0.2	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: P-2B
 Date Received: 12/18/07
 Date Extracted: 12/20/07
 Date Analyzed: 12/20/07
 Matrix: Water
 Units: ug/L (ppb)

Client: Aspect Consulting
 Project: Kvichak Marine 020034, F&BI 712192
 Lab ID: 712192-06
 Data File: 122012.D
 Instrument: GCMS4
 Operator: MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	84	55	118
1,2-Dichloroethane-d4	76	53	121
Toluene-d8	76	55	121
4-Bromofluorobenzene	84	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<0.2	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	<1
1,3-Dichloropropane	<1		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260B

Client Sample ID: Method Blank	Client: Aspect Consulting
Date Received: Not Applicable	Project: Kvichak Marine 020034, F&BI 712192
Date Extracted: 12/20/07	Lab ID: 072039 mb
Date Analyzed: 12/20/07	Data File: 122006.D
Matrix: Water	Instrument: GCMS4
Units: ug/L (ppb)	Operator: MB

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Dibromofluoromethane	83	55	118
1,2-Dichloroethane-d4	77	53	121
Toluene-d8	75	55	121
4-Bromofluorobenzene	83	29	181

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	Tetrachloroethene	<1
Chloromethane	<1	Dibromochloromethane	<1
Vinyl chloride	<0.2	1,2-Dibromoethane (EDB)	<1
Bromomethane	<1	Chlorobenzene	<1
Chloroethane	<1	Ethylbenzene	<1
Trichlorofluoromethane	<1	1,1,1,2-Tetrachloroethane	<1
Acetone	<10	m,p-Xylene	<2
1,1-Dichloroethene	<1	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
trans-1,2-Dichloroethene	<1	Isopropylbenzene	<1
1,1-Dichloroethane	<1	Bromoform	<1
2,2-Dichloropropane	<1	n-Propylbenzene	<1
cis-1,2-Dichloroethene	<1	Bromobenzene	<1
Chloroform	<1	1,3,5-Trimethylbenzene	<1
2-Butanone (MEK)	<10	1,1,2,2-Tetrachloroethane	<1
1,2-Dichloroethane (EDC)	<1	1,2,3-Trichloropropane	<1
1,1,1-Trichloroethane	<1	2-Chlorotoluene	<1
1,1-Dichloropropene	<1	4-Chlorotoluene	<1
Carbon Tetrachloride	<1	tert-Butylbenzene	<1
Benzene	<1	1,2,4-Trimethylbenzene	<1
Trichloroethene	<1	sec-Butylbenzene	<1
1,2-Dichloropropane	<1	p-Isopropyltoluene	<1
Bromodichloromethane	<1	1,3-Dichlorobenzene	<1
Dibromomethane	<1	1,4-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dichlorobenzene	<1
cis-1,3-Dichloropropene	<1	1,2-Dibromo-3-chloropropane	<1
Toluene	<1	1,2,4-Trichlorobenzene	<1
trans-1,3-Dichloropropene	<1	Hexachlorobutadiene	<1
1,1,2-Trichloroethane	<1	Naphthalene	<1
2-Hexanone	<10	1,2,3-Trichlorobenzene	1.2 lc
1,3-Dichloropropane	<1		

Note: The reporting limit for vinyl chloride is equal to the MDL.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/26/07

Date Received: 12/18/07

Project: Kvichak Marine 020034, F&BI 712192

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: 712183-11 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	<1	<1	nm
Chloromethane	ug/L (ppb)	<1	<1	nm
Vinyl chloride	ug/L (ppb)	<0.2	<0.2	nm
Bromomethane	ug/L (ppb)	<1	<1	nm
Chloroethane	ug/L (ppb)	<1	<1	nm
Trichlorofluoromethane	ug/L (ppb)	<1	<1	nm
Acetone	ug/L (ppb)	<10	<10	nm
1,1-Dichloroethene	ug/L (ppb)	<1	<1	nm
Methylene chloride	ug/L (ppb)	<5	<5	nm
trans-1,2-Dichloroethene	ug/L (ppb)	<1	<1	nm
1,1-Dichloroethane	ug/L (ppb)	<1	<1	nm
2,2-Dichloropropane	ug/L (ppb)	<1	<1	nm
cis-1,2-Dichloroethene	ug/L (ppb)	<1	<1	nm
Chloroform	ug/L (ppb)	<1	<1	nm
2-Butanone (MEK)	ug/L (ppb)	<10	<10	nm
1,2-Dichloroethane (EDC)	ug/L (ppb)	<1	<1	nm
1,1,1-Trichloroethane	ug/L (ppb)	<1	<1	nm
1,1-Dichloropropene	ug/L (ppb)	<1	<1	nm
Carbon Tetrachloride	ug/L (ppb)	<1	<1	nm
Benzene	ug/L (ppb)	<1	<1	nm
Trichloroethene	ug/L (ppb)	<1	<1	nm
1,2-Dichloropropane	ug/L (ppb)	<1	<1	nm
Bromodichloromethane	ug/L (ppb)	<1	<1	nm
Dibromomethane	ug/L (ppb)	<1	<1	nm
4-Methyl-2-pentanone	ug/L (ppb)	<10	<10	nm
cis-1,3-Dichloropropene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
trans-1,3-Dichloropropene	ug/L (ppb)	<1	<1	nm
1,1,2-Trichloroethane	ug/L (ppb)	<1	<1	nm
2-Hexanone	ug/L (ppb)	<10	<10	nm
1,3-Dichloropropane	ug/L (ppb)	<1	<1	nm
Tetrachloroethene	ug/L (ppb)	<1	<1	nm
Dibromochloromethane	ug/L (ppb)	<1	<1	nm
1,2-Dibromoethane (EDB)	ug/L (ppb)	<1	<1	nm
Chlorobenzene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
1,1,1,2-Tetrachloroethane	ug/L (ppb)	<1	<1	nm
m,p-Xylene	ug/L (ppb)	<2	<2	nm
o-Xylene	ug/L (ppb)	<1	<1	nm
Styrene	ug/L (ppb)	<1	<1	nm
Isopropylbenzene	ug/L (ppb)	<1	<1	nm
Bromoform	ug/L (ppb)	<1	<1	nm
n-Propylbenzene	ug/L (ppb)	<1	<1	nm
Bromobenzene	ug/L (ppb)	<1	<1	nm
1,3,5-Trimethylbenzene	ug/L (ppb)	<1	<1	nm
1,1,2,2-Tetrachloroethane	ug/L (ppb)	<1	<1	nm
1,2,3-Trichloropropane	ug/L (ppb)	<1	<1	nm
2-Chlorotoluene	ug/L (ppb)	<1	<1	nm
4-Chlorotoluene	ug/L (ppb)	<1	<1	nm
tert-Butylbenzene	ug/L (ppb)	<1	<1	nm
1,2,4-Trimethylbenzene	ug/L (ppb)	<1	<1	nm
sec-Butylbenzene	ug/L (ppb)	<1	<1	nm
p-Isopropyltoluene	ug/L (ppb)	<1	<1	nm
1,3-Dichlorobenzene	ug/L (ppb)	<1	<1	nm
1,4-Dichlorobenzene	ug/L (ppb)	<1	<1	nm
1,2-Dichlorobenzene	ug/L (ppb)	<1	<1	nm
1,2-Dibromo-3-chloropropane	ug/L (ppb)	<1	<1	nm
1,2,4-Trichlorobenzene	ug/L (ppb)	<1	<1	nm
Hexachlorobutadiene	ug/L (ppb)	<1	<1	nm
Naphthalene	ug/L (ppb)	<1	<1	nm
1,2,3-Trichlorobenzene	ug/L (ppb)	<1	<1	nm

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/26/07

Date Received: 12/18/07

Project: Kvichak Marine 020034, F&BI 712192

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260B

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	50	93	86	50-136	8
Chloromethane	ug/L (ppb)	50	114	116	55-134	2
Vinyl chloride	ug/L (ppb)	50	117	114	56-144	3
Bromomethane	ug/L (ppb)	50	137	128	58-140	7
Chloroethane	ug/L (ppb)	50	126	112	55-144	12
Trichlorofluoromethane	ug/L (ppb)	50	92	94	54-142	2
Acetone	ug/L (ppb)	50	103	107	52-162	4
1,1-Dichloroethene	ug/L (ppb)	50	94	92	34-135	2
Methylene chloride	ug/L (ppb)	50	94	93	65-112	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	95	93	66-120	2
1,1-Dichloroethane	ug/L (ppb)	50	95	93	65-119	2
2,2-Dichloropropane	ug/L (ppb)	50	100	94	42-143	6
cis-1,2-Dichloroethene	ug/L (ppb)	50	97	95	75-121	2
Chloroform	ug/L (ppb)	50	95	93	63-117	2
2-Butanone (MEK)	ug/L (ppb)	50	96	94	77-125	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	95	94	67-116	1
1,1,1-Trichloroethane	ug/L (ppb)	50	94	92	63-124	2
1,1-Dichloropropene	ug/L (ppb)	50	96	95	62-122	1
Carbon Tetrachloride	ug/L (ppb)	50	95	95	63-126	0
Benzene	ug/L (ppb)	50	94	93	53-134	1
Trichloroethene	ug/L (ppb)	50	94	94	75-116	0
1,2-Dichloropropane	ug/L (ppb)	50	95	95	75-118	0
Bromodichloromethane	ug/L (ppb)	50	95	95	69-129	0
Dibromomethane	ug/L (ppb)	50	98	97	68-117	1
4-Methyl-2-pentanone	ug/L (ppb)	50	93	94	68-124	1
cis-1,3-Dichloropropene	ug/L (ppb)	50	97	96	64-123	1
Toluene	ug/L (ppb)	50	100	99	56-140	1
trans-1,3-Dichloropropene	ug/L (ppb)	50	105	105	71-124	0
1,1,2-Trichloroethane	ug/L (ppb)	50	100	100	66-123	0
2-Hexanone	ug/L (ppb)	50	104	104	66-128	0
1,3-Dichloropropane	ug/L (ppb)	50	101	100	71-125	1
Tetrachloroethene	ug/L (ppb)	50	103	102	78-116	1
Dibromochloromethane	ug/L (ppb)	50	107	107	75-122	0
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	103	104	72-124	1
Chlorobenzene	ug/L (ppb)	50	102	100	72-116	2
Ethylbenzene	ug/L (ppb)	50	99	98	76-123	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	50	103	102	69-121	1
m,p-Xylene	ug/L (ppb)	100	99	98	49-166	1
o-Xylene	ug/L (ppb)	50	100	99	68-121	1
Styrene	ug/L (ppb)	50	100	98	72-119	2
Isopropylbenzene	ug/L (ppb)	50	100	99	66-121	1
Bromoform	ug/L (ppb)	50	111	110	70-127	1
n-Propylbenzene	ug/L (ppb)	50	103	104	67-118	1
Bromobenzene	ug/L (ppb)	50	103	104	71-124	1
1,3,5-Trimethylbenzene	ug/L (ppb)	50	100	100	69-116	0
1,1,2,2-Tetrachloroethane	ug/L (ppb)	50	101	103	57-128	2
1,2,3-Trichloropropane	ug/L (ppb)	50	104	107	58-126	3
2-Chlorotoluene	ug/L (ppb)	50	100	99	66-116	1
4-Chlorotoluene	ug/L (ppb)	50	100	100	67-117	0
tert-Butylbenzene	ug/L (ppb)	50	100	100	65-121	0
1,2,4-Trimethylbenzene	ug/L (ppb)	50	100	100	69-123	0
sec-Butylbenzene	ug/L (ppb)	50	102	102	70-118	0
p-Isopropyltoluene	ug/L (ppb)	50	102	102	72-120	0
1,3-Dichlorobenzene	ug/L (ppb)	50	103	103	76-114	0
1,4-Dichlorobenzene	ug/L (ppb)	50	101	101	72-113	0
1,2-Dichlorobenzene	ug/L (ppb)	50	100	101	76-115	1
1,2-Dibromo-3-chloropropane	ug/L (ppb)	50	108	111	54-131	3
1,2,4-Trichlorobenzene	ug/L (ppb)	50	111	113	72-123	2
Hexachlorobutadiene	ug/L (ppb)	50	99	101	80-111	2
Naphthalene	ug/L (ppb)	50	115	118	61-137	3
1,2,3-Trichlorobenzene	ug/L (ppb)	50	117	118	74-126	1

Note: The calibration verification result for 1,1-dichloroethene and methylene chloride exceeded 15% deviation. The average deviation for all compounds was not greater than 15%; therefore, the calibration is considered valid.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - The analyte indicated was found in the method blank. The result should be considered an estimate.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht - The sample was extracted outside of holding time. Results should be considered estimates.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the compound indicated is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - The value reported exceeded the calibration range established for the analyte. The reported concentration should be considered an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The pattern of peaks present is not indicative of diesel.
- y - The pattern of peaks present is not indicative of motor oil.

ME 12-18-07 V2

Send Report To Doug Hillman

Company: Asperif

Address_____

City, State, ZIP Seattle

Phone # 206 838 5833 Fax # _____

SAMPLERS (*signature*)

PROJECT NAME/NO.

Kvichak MARINE
020034

PO #

REMARKS

Page # _____ of _____

TURNAROUND TIME

~~2~~ Standard (2 Weeks)

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ **Dispose after 30 days**

☐ Return samples

☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED										Notes
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	IFS					
HC-1	01A-C	12/18/07	1132	W	3				X							
IP-8	02A-C	1	1145	W	3				X							
P-1A	03A-C		1215	W	3				X							
P-1B	04A-C		1230	W	3				X							
P-2A	05A-C		1245	W	3				X							
P-2B	06A-C		1300	W	3				X							

Samples received at 9 °C

Friedman & Bruya, Inc.
3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS\COC\COC.DOC

SIGNATURE

Relinquished by

Received by: A

Relinquished by:

Received by:

PRINT NAME _____

Robert HANFORD

Nhan Phan

COMPANY

Aspect

FeBT

DATE _____

12/18

12/18/05

TIME

1370

✓

GROUNDWATER SAMPLING RECORD

WELL NUMBER: HC-1

Page: 1 of 1

Project Name: KUICHAK MARINE

Project Number: 020034

Date: 12-18-07

Starting Water Level (ft TOC): 10.45

Developed by: RLH

Casing Stickup (ft):

Measuring Point of Well: TOL

Total Depth (ft TOC): 17

Screened Interval (ft. BGS)

Casing Diameter (inches):

Filter Pack Interval (ft. BGS)

Casing Volume _____ ft Water x _____ Lpf =

Casing volumes: 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf

2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): 1' off

PURGING MEASUREMENTS

[illegible]

Total Gallons Purged: 7 liters

Total Casing Volumes Removed:

Ending Water Level (ft TOC): _____

Ending Total Depth (ft TOC): _____

SAMPLE INVENTORY

[illegible]

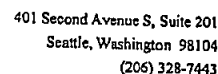
METHODS

Decon Equipment *All medical*

Purging Equipment: *Peristaltic pump tubing* Sampling Equipment: *same*

Disposal of Discharged Water: *Open*

Observations/Comments:



Page: 7 of 7

Project Number: 020034

Starting Water Level (ft TOC): _____
Casing Stickup (ft): _____
Total Depth (ft TOC): 17.5
Casing Diameter (inches): 2"

Casing Stickup (ft): _____

Total Depth (ft TOC): 144

Casing Diameter (inches): 2.0

Casing Diameter (inches): 2 1/2

Sample Intake Depth (ft TOC): 1' off
Bottom

Sample Intake Depth (ft TOC): 7 54

Sample Intake Depth (ft TOC): 7 544

Ending Water Level (ft TOC): _____ Ending Total Depth (ft TOC): _____

Observations/Comments:

GROUNDWATER SAMPLING RECORD

WELL NUMBER: PB-1 A / PB 1 B Page: ____ of ____

Project Name: KVichanlen Marine
Date: 12-18-07
Developed by: RRK
Measuring Point of Well: _____
Screened Interval (ft. BGS) _____
Filter Pack Interval (ft. BGS) _____

Project Number: 020039

Starting Water Level (ft TOC):	_____
Casing Stickup (ft):	_____
Total Depth (ft TOC):	_____
Casing Diameter (inches):	_____

Casing Volume _____ ft Water x _____ Lpf = _____
 Casing volumes: 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): _____

PURGING MEASUREMENTS

[illegible]

Total Gallons Purged: 8.5

Total Casing Volumes Removed: _____

Ending Water Level (ft TOC): _____

Ending Total Depth (ft TOC): _____

SAMPLE INVENTORY

[illegible]

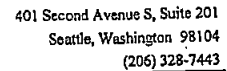
METHODS

Decon Equipment

Purging Equipment: Positive Displacement Sampling Equipment: 50ml

Disposal of Discharged Water: _____

Observations/Comments: _____



WELL NUMBER: P-2A/2B Page: of

Project Number: 020037

Starting Water Level (ft TOC):	_____
Casing Stickup (ft):	_____
Total Depth (ft TOC):	_____
Casing Diameter (inches):	_____

Casing Volume _____ ft Water x _____ Lpf = _____
 Casing volumes: 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): _____

[illegible]

Total Gallons Purged: _____ Total Casing Volumes Removed: _____

Ending Water Level (ft TOC): _____ Ending Total Depth (ft TOC): _____

[illegible]

Decon Equipment: Asst. Decon Unit
Purging Equipment: Horizontal - New Technology Sampling Equipment: Same
Disposal of Discharged Water: _____
Observations/Comments: _____