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Release #
USP # 7679

November 1, 2005

Mr. John Bails
Washington State Department of Ecology
Northwest Regional Office
3190 160th Ave. SE
Bellevue, Washington 98008

Subject: Gull Service Station No. 224
21481 State Route 20
Sedro Woolley, Washington

Dear Mr. Bails:

This letter transmits reports that summarize two subsurface investigations completed by Camp Dresser & McKee Inc. (CDM) at the above-referenced site. CDM has completed design of the remediation system and is currently procuring remediation system components. We anticipate that the remediation system installation and startup will occur before the end of the year.

Very truly yours,


Pamela J. Morrill, CHMM, LHG
Project Manager
Camp Dresser & McKee Inc.

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NOV 03 2005
DEPT OF ECOLOGY

Enclosures

cc: Mr. William T. Vivian, Gull Industries, Inc. (without enclosure)



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RELEASE 592008 #
Sedro Woolley Bull 224
Sedro Woolley
LIST # 7679
Gull Station 224

January 14, 2005

Mr. Bill Vivian
Gull Industries, Inc.
Post Office Box 24687
Seattle, Washington 98124



Subject: Subsurface Investigation
Former Gull Station No. 224
21481 State Route 20
Sedro-Woolley, Washington

RECEIVED

NOV 03 2005

DEPT OF ECOLOGY

Dear Mr. Vivian:

This letter documents results of Camp Dresser & McKee Inc.'s (CDM) soil and groundwater assessment of the former Gull Station No. 224 in Sedro-Woolley, Washington (site or subject property). The purpose of this investigation was to evaluate the presence and extent of hydrocarbon contamination. To our knowledge, there have been no previous environmental assessments conducted on the site.

Site Description

The subject property is located at the northwest corner of State Route (SR) 20 and Collins Road, in Skagit County, Washington as shown on Figure 1. The site lies adjacent to the Sedro-Woolley city limit, which extends along the eastern edge of Collins Road.

The site is 0.39 acres in size and somewhat triangular in shape. A franchised Shell gas station with a convenience store (Quick Food Store) is currently operating on the site. Site features include the convenience store with an attached canopy, two pump islands, three underground storage tanks containing three grades of unleaded gasoline, and a compressed air pump. The entrances, canopied area, and parking areas are paved with asphalt and concrete, except for landscaped planter areas. Portions of the north and west sides of the site are undeveloped and covered by mowed grass. Stormwater is handled by two dry wells that are located in the asphalt near the southeastern and southwestern corners of the site. Site features are shown in Figure 2.

The station is located in a mixed residential and farming area. Residential lots bound the site on the north and west sides. On the west side is an undeveloped lot, followed by a house. Single family homes are located adjacent to the north side of the site. Collins Road bounds the site to the east, followed by an overgrown lot with an apparently vacant house. To the south, across SR 20 are a Burlington Northern railroad line, farmland, and a treed riparian corridor.



Mr. Bill Vivian
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The site lies at an elevation of about 40 feet above mean sea level (MSL) within the Skagit River Valley and is underlain by alluvial soils deposited by the Skagit River. Various sloughs extend throughout the river valley. Gages Slough extends within about 900 feet of the northwest corner of the site and Hart Slough extends within about 1,500 feet southeast of the intersection of Collins Road and SR 20.

Scope of Work

The scope of CDM's investigation included the following:

- Advancing four borings to 19 feet below ground surface (ft bgs) and completing each boring as a 2-inch diameter groundwater monitoring well.
- Examining recovered soil samples from the soil borings and screening them for the presence of volatile organic compounds (VO Cs) using an organic vapor meter equipped with a photoionization detector (OVM-PID).
- Submitting one soil sample from each of four of the borings for chemical testing.
- Collecting groundwater samples from three of the installed monitoring wells and submitting these samples for chemical testing.
- Preparing this letter report summarizing our findings and recommendations.

The original proposed scope of work included drilling and installing three monitoring wells. However, when the dry wells were identified a fourth monitoring well was installed to evaluate the potential adverse impact from the dry wells. The fourth well was installed next to the southeasterly dry well, which was thought to be most susceptible to contamination from surface water runoff. The following sections summarize CDM's investigation methods and findings.

Field Investigation

Drilling and Soil Sampling

On November 22, 2004, CDM supervised drilling and well installation activities. Holt Drilling- a Division of Boart Longyear located in Milton, Washington was the drilling contractor. A B52 truck mounted hollow stem auger (HSA) drill rig was utilized to explore subsurface conditions and collect subsurface soil samples. Four borings identified as B1 through B4 were completed during this investigation and 2-inch diameter PVC monitoring well was installed in each borehole. Boring/well locations are shown on Figure 2.



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Soil samples were collected during drilling at approximately 2.5 to 5 intervals by driving a Dames and Moore sampler into undisturbed soil ahead of the borehole bottom using a 300-pound hammer. Driving was terminated when the full 18-inch drive was completed. Soils encountered were logged according to the Unified Soil Classification System as described on Figure A1 in Attachment A. General well construction details are shown on Figure A2 in Attachment A. The individual boring logs and well construction details are shown on Figures A3 through A6 in Attachment A.

Soils encountered during drilling consisted of gray to brown, very soft to loose, sand, silty sand, or sandy silt throughout the top 7 to 8 feet. The sand is very fine grained. The sand content decreased with depth and soils became medium stiff to stiff, gray or brown, sandy silt or silt. The silt increased in stiffness in each borehole at about 17 ft bgs. Groundwater was encountered at approximately 11 ft bgs in each boring.

Soil Sampling and Analysis

Soil samples collected during drilling were field screened using an OVM-PID. The field-screening results were used to aid in determining which samples were to be collected for laboratory analysis. Table 1 summarizes the OVM-PID field screening readings.

One soil sample from each of the four borings was submitted for chemical analysis as summarized in Table 1. Soil sample collection depths were based on OVM-PID readings and field observations. When applicable, the sample with the highest OVM-PID reading was selected for analysis.

Soil samples to be submitted for chemical analysis were collected in three EnCore® samplers in accordance with EPA Method 5035 and a 4-ounce laboratory grade glass jar. The samples were delivered in a chilled cooler under chain-of-custody protocol to OnSite Environmental, Inc. (OnSite) in Redmond, Washington for chemical analysis. Each soil sample was analyzed for total petroleum hydrocarbons quantified as gasoline (TPH-G) by Northwest Method NWTPH-Gx, total petroleum hydrocarbons quantified as diesel (TPH-D) and oil (TPH-O) by Northwest Method NWTPH-Dx, and benzene, ethylbenzene, toluene, and xylenes (BETX) by EPA Method 8021B. Soil samples from B1 and B3 were also analyzed for total lead by EPA Method 6010B.

Groundwater Sampling and Analysis

B1 through B3 were purged and sampled on November 23, 2004. B4 was not sampled because heavy rain had flooded the area where the well was located and opening the well casing would have caused surface water to flow into the well. Pumping the surface water from the area to immediately sample was deemed impractical and cost prohibitive, given the



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circumstances observed at the site and the fact that soil and groundwater exhibited no signs of contamination at time of drilling and well installation.

Sampling was accomplished using a peristaltic pump. Prior to sampling, each well was purged of stagnant water within the well casing and sandpack. Temperature, pH, specific conductance, and turbidity were monitored during purging to check for stabilization before collecting each sample (Table 2).

Groundwater samples were collected in laboratory-supplied bottles containing preservative as appropriate for the analyses being conducted. The samples were delivered in a chilled cooler and shipped by courier under chain-of-custody protocol to OnSite. Total petroleum hydrocarbons as gasoline, diesel, and oil, and BETX by the same methods described above. The groundwater sample from B3 was also analyzed for total lead.

Groundwater Levels and Gradient

Water levels were measured in B1 through B3 on November 23, 2004. The well casing elevations were also surveyed on this date. As noted previously, the area of B4 was flooded and therefore the well casing could not be surveyed. The top of the grate for the dry well at the southeast corner of the property was used as the benchmark with an assumed elevation of 100 ft. Depths to water in these wells ranged from 9.55 to 10.54 ft below the top of the well casings. Well casing elevation and water level data are summarized on Table 3. The groundwater flow direction on this date is indicated to be toward the northwest as shown on Figure 2.

Findings

Soil

Soils encountered during drilling consisted of alluvial fine-grained sand and silt. Wood pieces and other organics were typically observed at depths of about 7 to 10 ft bgs. Hydrocarbon contamination was not apparent in borings B2 and B4, but was apparent in B1 and B3. In B1 hydrocarbons were evident in soils throughout the borehole, with the highest apparent concentrations at about 12 to 14 ft bgs. Slight hydrocarbon contamination was evident in the vadose zone soils at B3, but soils containing the highest hydrocarbon concentrations appeared to be within the saturated interval, particularly within the 12 to 14 ft depth. This depth interval likely represents the seasonal smear zone.

The analytical data confirmed field observations. Soil analytical data are summarized in Table 4. The laboratory report is included in Attachment B. Hydrocarbons were not detected in samples from B2 and B4. TPH-G, benzene, ethylbenzene, and xylenes were detected in



Mr. Bill Vivian
January 14, 2005
Page 5

samples from B1 and B3, with B3 containing the highest concentrations. TPH-D, TPH-O, methyl tert butyl ether (MTBE), toluene, and lead were not detected in either sample. Exceedences of the Model Toxics Control Act (MTCA) Method A cleanup levels occurred in samples from both B1 and B3, as shown in Table 4.

Groundwater

Groundwater analytical data are consistent with those observed for the soil samples. The laboratory results for the groundwater samples are summarized in Table 5 and compared against MTCA Method A groundwater cleanup levels. The laboratory report for the groundwater sample analyses is included in Attachment B.

TPH-G and BETX were all detected in B1 and B3, with the B3 groundwater sample containing the highest concentrations. (BETX were also reported in groundwater sampled from B2, but at much lower concentrations. MTCA Method A groundwater cleanup levels for TPH-G, benzene, ethylbenzene, and xylenes were exceeded in B3. TPH-G and benzene concentrations in B1 exceeded their respective cleanup levels. In B2 the benzene concentration slightly exceeded its Method A cleanup level. The total lead concentration groundwater sampled from B3 was reported at 5.4 micrograms per liter ($\mu\text{g/L}$), which is below the MTCA Method A cleanup level of 15 $\mu\text{g/L}$.

Conclusions and Recommendations

Field observations and analytical data confirm that a hydrocarbon release has occurred at the site. The hydrocarbon plume appears to be moving in generally westerly direction.

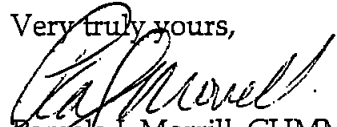
CDM recommends additional investigation to complete the delineation of the hydrocarbon plume, including installation of downgradient monitoring wells. In the next phase of investigation, CDM proposes to define the onsite plume and identify if contamination has migrated offsite. This will involve drilling borings and installing monitoring wells on the property line to the south and additional borings/wells to the west in the inferred direction of groundwater movement. B1 through B4 should be sampled to confirm hydrocarbon concentrations. We will prepare a separate proposal for this work and submit it for your approval. It will take approximately 60 days to complete this work and prepare a report on a non-expedited basis.

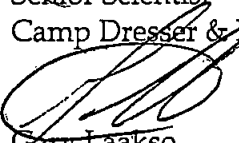


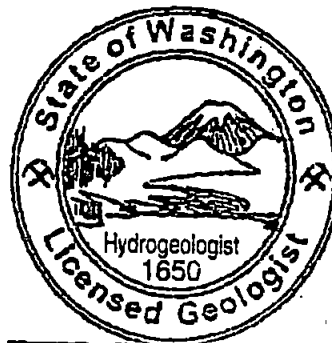
Mr. Bill Vivian
January 14, 2005
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We appreciate the opportunity to work on this project. If you have any questions, please call.

Very truly yours,


Pamela J. Morrill, CHMM, LHG
Senior Scientist
Camp Dresser & McKee Inc.


Gary Laakso
Associate
Camp Dresser & McKee Inc.



Pamela Jeanne Morrill

Attachments

Tables

CDM

Tables

Table 1
Summary of OVM-PID Readings
 Gull /Former Station No. 224
 Sedro-Woolley, Washington

Boring ID	Sample Depth (ft bgs)	OVM-PID (ppm)	Sample Analyzed
B1	7.5	0	
B1	9	8.9	
B1	12.5	370	Yes
B1	17.5	39	
B2	2.5	0	
B2	7.5	0	
B2	10.5	0	
B2	12.5	0	
B2	17.5	0	Yes
B3	2.5	4.5	
B3	7.5	4	
B3	12.5	348	Yes
B3	17.5	46	
B4	2.5	0	
B4	7.5	0	
B4	10	0	Yes
B4	12.5	0	
B4	17.5	0	

Notes:
 ft bgs - feet below ground surface.
 ppm - parts per million.

Table 2
Groundwater Parameters
 Gull/Former Station No. 224
 Sedro-Woolley, Washington

Monitoring Well I.D.	Date Sampled	Specific Conductance (μ S/cm)	pH (standard units)	Temperature ($^{\circ}$ C)	Turbidity (NTU)
B1	11/23/04	179	5.9	15.6	120
B2	11/23/04	203	5.9	15.3	95.6
B3	11/23/04	405	6.3	13.7	450
B4	11/23/04	NS	NS	NS	NS

Notes:

$^{\circ}$ C - degrees Celsius.

NTU - nephelometric turbidity units.

ms/cm - microsiemens per centimeter.

NS - not sampled.

Table 3
Groundwater Elevation Data
 Gull /Former Station No. 224
 Sedro-Woolley, Washington

Monitoring Well I.D.	Date Measured	Time (hours)	Top of Casing Elevation (feet)	Depth to Groundwater (ft TOC)	Groundwater Elevation (feet)
B1	11/23/04	1235	101.39	9.55	91.84
B2	11/23/04	1435	102.28	10.54	91.74
B3	11/23/04	1115	101.08	9.57	91.51
B4	11/23/04	NM	NM	NM	NM

Notes:

NM - not measured.

ft TOC - feet below top of casing.

Table 4
Analytical Summary - Soil
 Gull /Former Station No. 224
 Sedro-Woolley, Washington

Test Method and Analyte	Cleanup Level ^a	Sample I.D. and Date Sampled			
		B1-12.5' 11/22/04	B2-17.5' 11/22/04	B3-12.5' 11/22/04	B4-10' 11/22/04
mg/kg					
<u>NWTPH-G</u>					
Gasoline	30/100 ^b	390 ✓	<7.4	590	<7.3
<u>NWTPH-Dx</u>					
Diesel	2,000	<36	<34	<35	<32
Lube Oil	2,000	<72	<68	<70	<63
<u>EPA Method 8020B</u>					
MBTE	0.1	<0.16	<0.074	<1.5	<0.073
Benzene	0.03	0.99 ✓	<0.020	1.7	<0.020
Ethylbenzene	6	2.7	<0.074	10	<0.073
Toluene	7	<0.16	<0.074	<1.5	<0.073
m,p-Xylene	9 ^c	1.4	<0.074	41	<0.073
o-Xylene		<0.16	<0.074	15	<0.073
<u>EPA Method 6010B</u>					
Total Lead	250	<7.2	--	<7.0	--

Notes:

Boxed values exceed MTCA Method A cleanup levels.

a) Washington Administrative Code Chapter 173-340, Model Toxics Control Act Cleanup Regulation, Method A suggested soil cleanup level for unrestricted land uses; promulgated August 15, 2001.

b) 100 mg/kg without benzene and total of ethylbenzene, toluene, and xylene are less than 1% of the gasoline mixture; 30 mg/kg all other gasoline mixtures.

c) Cleanup level is for total m,p-, & o-xylenes.

mg/kg - milligrams per kilogram.

-- not analyzed.

< - analyte not detected at or greater than the listed concentration.

Table 5
Analytical Summary - Water
 Gull /Former Station No. 224
 Sedro-Woolley, Washington

Test Method and Analyte	Cleanup Level ^a	Boring I.D. and Date Sampled		
		B1 11/23/04	B2 11/23/04	B3 11/23/04
NWTPH-Gx (µg/L)				
Gasoline	800/1,000 ^b	2,100	<100	55,000
NWTPH-DX (mg/L)				
Diesel	0.5	<0.25	<0.26	<0.26
Lube Oil	0.5	<0.40	<0.41	<0.41
EPA Method 7021B (µg/L)				
MTBE	20	<10	<10	<10
Benzene	5	310	5.7	590
Ethylbenzene	700	33	6.7	2,300
Toluene	1,000	16	2.9	660
m,p-Xylene	1,000 ^c	74	29.0	11,000
o-Xylene		23	13.0	3,900
EPA Method 200.8 (µg/L)				
Total Lead	15	--	--	5.4

Notes:

Boxed values exceed MTCA Method A cleanup levels.

a) Washington Administrative Code Chapter 173-340, Model Toxics Control Act Cleanup

Regulation, Method A suggested groundwater cleanup level; promulgated August 15, 2001.

b) 800 µg/L if benzene is present in groundwater; 1,000 µg/L if no detectable benzene in groundwater.

c) Cleanup level is 1,000 µg/L for total xylenes.

mg/L - milligrams per liter.

µg/L - micrograms per liter.

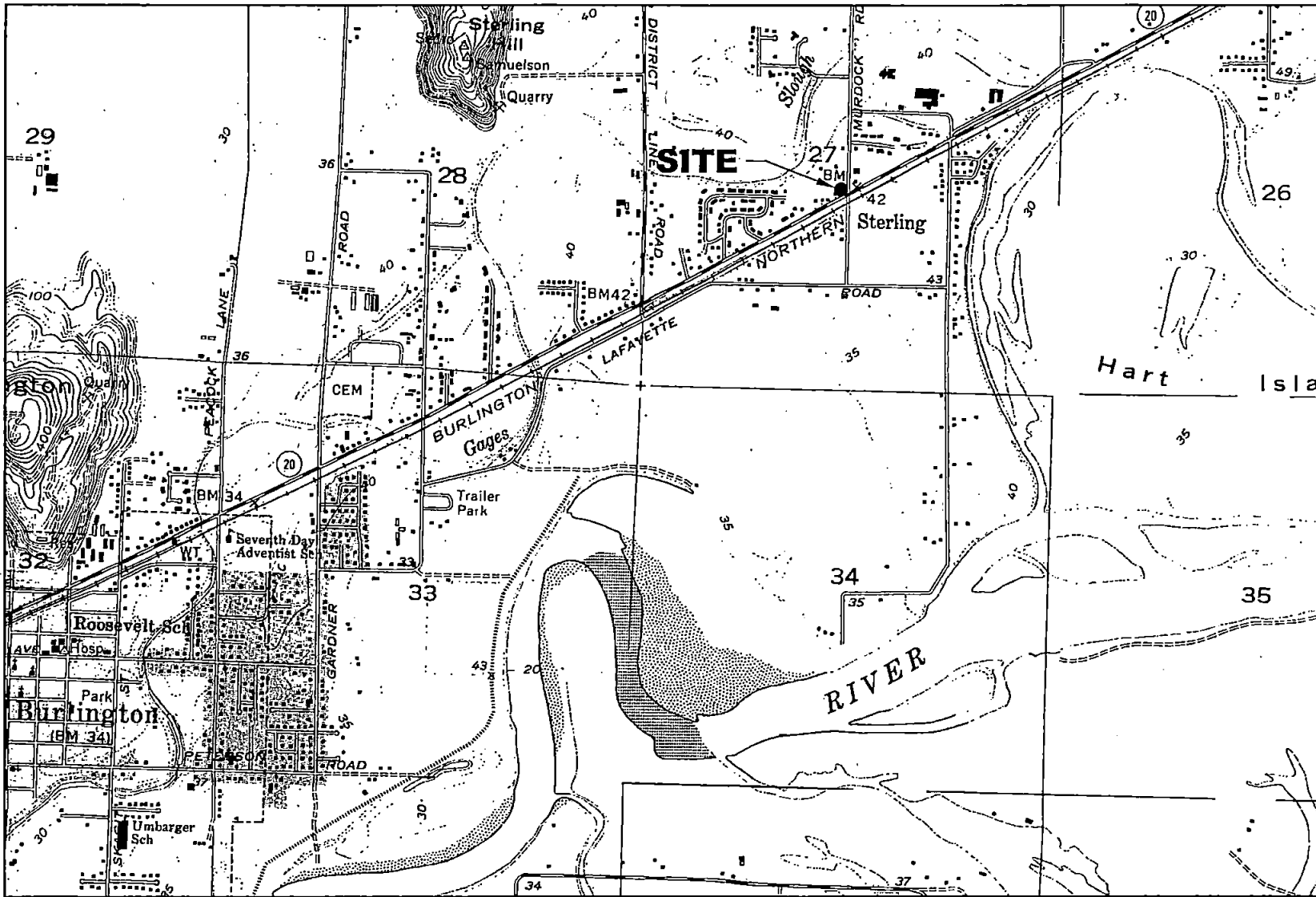
-- not analyzed.

< - analyte not detected at or greater than the listed concentration.

Figures

CDM

Figures



SOURCE: USGS MOUNT VERNON QUADRANGLE, 1981

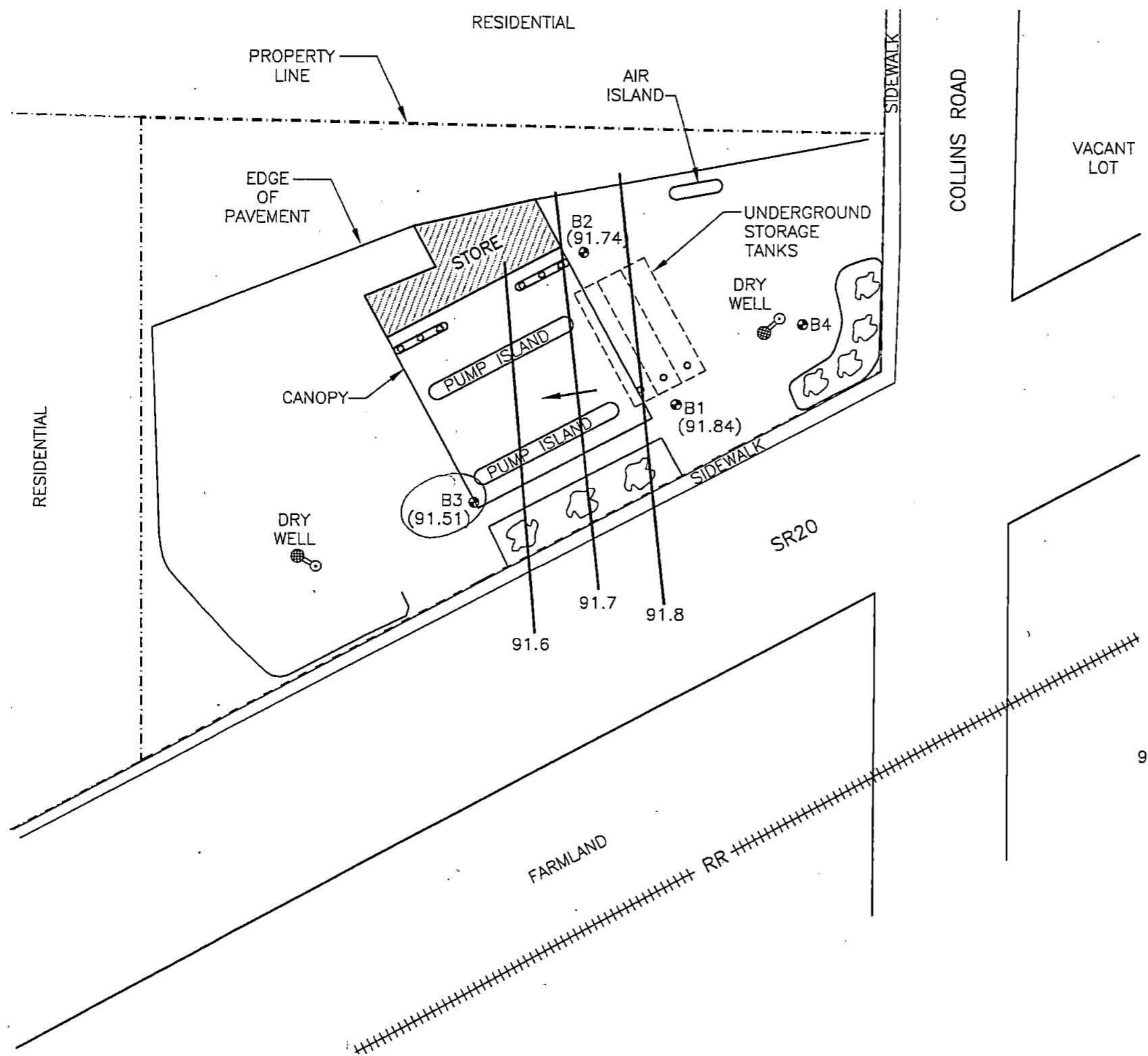


GULL / FORMER STATION NO 224
SEDRO WOOLLEY, WASHINGTON

Figure No. 1
Vicinity Map

P:\19932\4\ Woolley\ 12/30/04 08:14:35 37:37 richlepj

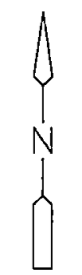
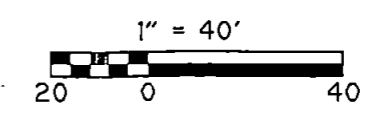
FIGURE 2



LEGEND

- MONITORING WELL LOCATION, DESIGNATION AND GROUNDWATER ELEVATION IN FEET IN NOVEMBER 23, 2004
- 91.8 ——— APPROXIMATE GROUNDWATER ELEVATION CONTOUR IN FEET
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE:
 BENCHMARK WAS THE TOP OF THE GRATE FOR THE DRY WELL LOCATED AT THE SOUTHEAST CORNER OF THE SITE. ASSUMED ELEVATION OF 100.00 FEET



GULL / FORMER STATION NO 224
 SEDRO WOOLLEY, WASHINGTON

Figure No. 2
 Site Plan

Attachments



Attachment A
Boring Logs

SOIL CLASSIFICATION LEGEND

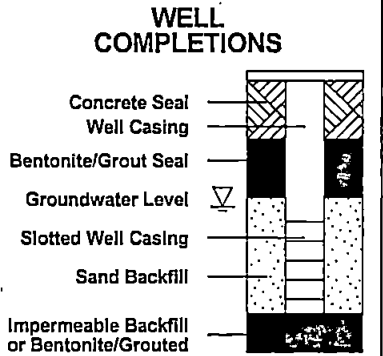
MAJOR DIVISIONS			TYPICAL NAMES			SAMPLE TYPE SYMBOLS		
COARSE GRAINED SOILS More than half is larger than No. 200 sieve	GRAVELS More than half coarse fraction is larger than No. 4 sieve size	Clean gravels with little or no fines	GW		Well graded gravels, gravel-sand mixtures	Disturbed bag or jar sample Std. Penetration Test (2.0" OD) Type U Ring Sampler (3.25" OD) California Sampler (3.0" OD) Undisturbed Tube Sample Grab Sample Core Run Non-standard Penetration Test (with split spoon sampler) Bulk Sample		
		Gravel with over 12% fines	GP		Poorly graded gravels, gravel-sand mixtures			
		SANDS More than half coarse fraction is smaller than No. 4 sieve size	Clean sands with little or no fines	GM			Silty gravels, gravel-sand-silt mixtures	
			Sands with over 12% fines	GC			Clayey gravels, gravel-sand-clay mixtures	
	FINE GRAINED SOILS More than half is smaller than No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50	Clean sands with little or no fines	SW			Well graded sands, gravelly sands	
			Poorly graded sands, gravelly sands	SP			Poorly graded sands, gravelly sands	
			Silty sand, sand-silt mixtures	SM			Silty sand, sand-silt mixtures	
		SILTS AND CLAYS Liquid limit greater than 50	Clayey sands, sand-clay mixtures	SC			Clayey sands, sand-clay mixtures	
			Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	ML			Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	
			Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	CL			Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
HIGHLY ORGANIC SOILS	SILTS AND CLAYS Liquid limit greater than 50	Organic clays and organic silty clays of low plasticity	OL		Organic clays and organic silty clays of low plasticity			
		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
		Inorganic clays of high plasticity, fat clays	CH		Inorganic clays of high plasticity, fat clays			
		Organic clays of medium to high plasticity, organic silts	OH		Organic clays of medium to high plasticity, organic silts			
DESCRIPTORS FOR SOIL STRATA AND STRUCTURE (ENGLISH/METRIC)		CONTACT BETWEEN UNITS		MOISTURE DESCRIPTION				

DESCRIPTORS FOR SOIL STRATA AND STRUCTURE (ENGLISH/METRIC)					
General Thickness or Spacing	Parting:	less than 1/16 in. (1/6 cm)	Structure	Pocket:	Erratic, discontinuous deposit of limited extent
	Seam:	1/16 to 1/2 in. (1/6 to 1 1/4 cm)		Lens:	Lenticular deposit
	Layer:	1/2 to 12 in. (1 1/4 to 30 1/2 cm)		Varved:	Alternating seams of silt and clay
	Stratum:	> 12 in. (30 1/2 cm)		Laminated:	Alternating seams
	Scattered:	< 1 per ft. (30 1/2 cm)		Interbedded:	Alternating layers
	Numerous:	> 1 per ft. (30 1/2 cm)			
General Attitude				Near horizontal:	0 to 10 deg.
				Low angle:	10 to 45 deg.
				High angle:	45 to 80 deg.
				Near Vertical:	80 to 90 deg.

STRUCTURE DESCRIPTION (cont.)	
Fractured	Breaks easily along definite fractured planes
Slickensided	Polished, glossy, fractured planes
Blocky, Diced	Breaks easily into small angular lumps
Sheared	Disturbed texture, mix of strengths
Homogenous	Same color and appearance throughout

RELATIVE DENSITY OR CONSISTENCY VS. SPT N-VALUE					
COARSE GRAINED			FINE GRAINED		
Density	N (blows/ft)	Approx. Relative Density (%)	Consistency	N (blows/ft)	Approx. Undrained Shear Str. (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	Over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

CONTACT BETWEEN UNITS	
	Change in geologic unit
	Soil type change within geologic unit
	Obscure or gradational change



PHYSICAL PROPERTY TEST	
AL	- Atterberg Limits
FC	- Fines Content
GSD	- Grain Size Distribution
MC	- Moisture Content
MD	- Moisture Content/Dry Density
Comp	- Compaction Test (Proctor)
SG	- Specific Gravity
CBR	- California Bearing Ratio
RM	- Resilient Modulus
Perm	- Permeability
TXP	- Triaxial Permeability
Cons	- Consolidation
Chem	- Analytical Chemical Analysis
Corr	- Corrosion
VS	- Vane Shear
DS	- Direct Shear
UC	- Unconfined Compression
TX	- Triaxial Compression
UU	- Unconsolidated, Undrained
CU	- Consolidated, Undrained
CD	- Consolidated, Drained

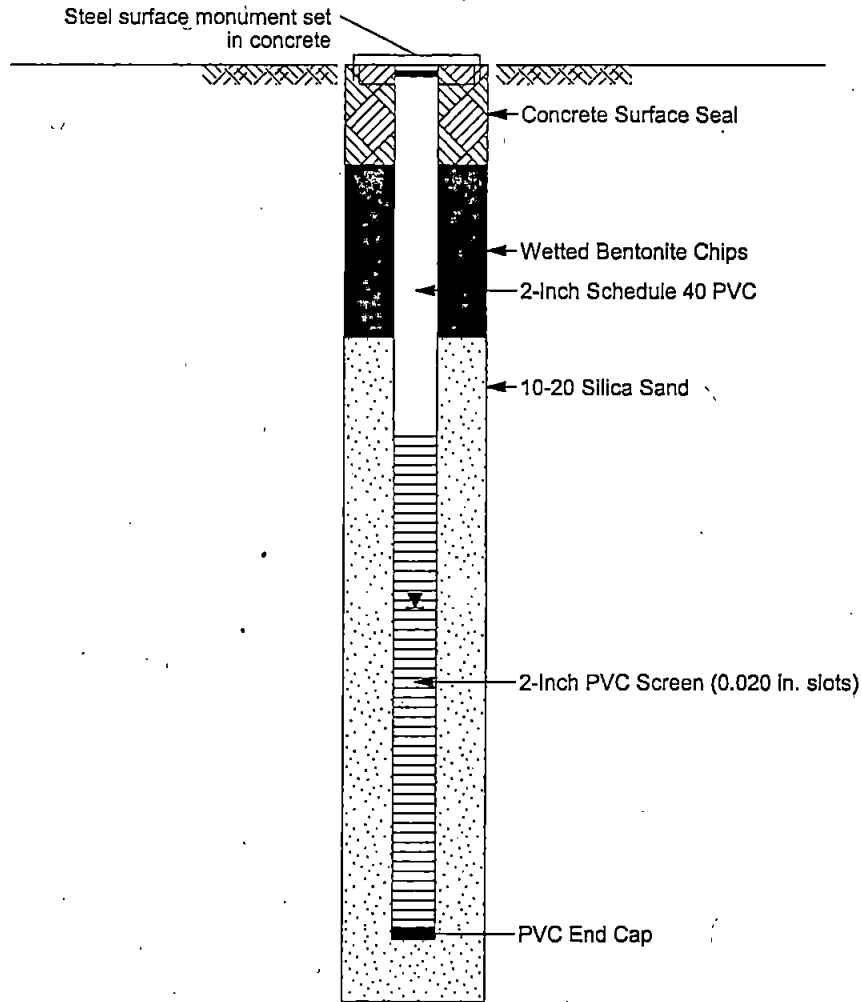
- Notes:**
- Sample descriptions in this report are based on visual field and laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates, and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual classification methods in accordance with ASTM D 2488 were used as an identification guide. Where laboratory data are available, soil classifications are in general accordance with ASTM D 2487.
 - Dual symbols are used to indicate gravel and sand units with 5 to 12 percent fines.
 - WOR = weight of rod.

Gull Industries, Inc.
Former Gull Station No. 224
Sedro-Woolley, Washington

Project No: 19932.43894 Figure: A1

SOIL CLASSIFICATION LEGEND SEDRO WOOLLEY WLG.PJ COM_BLLV.GDT 1/14/05 REV.





MONITORING WELL CONSTRUCTION SEDRO WOOLLEY WL GPJ CDM BLLV/GDT 1/14/05 REV.

TYPICAL MONITORING WELL CONSTRUCTION

Gull Industries, Inc.
Former Gull Station No. 224
Sedro-Woolley, Washington

Project No: 19932.43894 Figure: A2


1 of 1



LOG OF BORING WITH WELL SEDRO WOOLLEY WLGPJ.CDM.BLLV.GDT 1/14/05 REV.

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PI/D (ppm)	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	Boring Log B1 DESCRIPTION	Elev. (feet)	Well or Piezometer Completion
					101	2				GRAY SILTY SAND (SM) Soft, moist, with some gravel, hydrocarbon odor.		
					223	4	SM					
					324	6						
				0	101	8				GRAY SILT (ML) Medium stiff, moist, with fine-grained sand.		
				8.9	101	10				Becomes very soft with trace organics.		
						11				Becomes saturated at 11 ft bgs.		
				370	201	12						
						14	ML					
						16						
				38.6	468	18				Becomes stiff.		
						20				Boring terminated at 19 ft bgs. Groundwater encountered at 11 ft bgs.		
						22						
						24						

Location: _____	Drill Rig: <u>B52</u>
Surface Elevation: _____	Equipment/Hammer: <u>D&M/300/30</u>
Logged By: <u>KLW</u>	Date Completed: <u>11-22-04</u>

	Gull Industries, Inc. Former Gull Station No. 224 Sedro-Woolley, Washington
	Boring Log B1 Project No: 19932.43894

LOG OF BORING WITH WELL SEDRO WOOLLEY WL.GPJ CDM.BLLV.GDT 1/14/05 REV.

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PID (ppm)	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	Boring Log B2 DESCRIPTION	Elev. (feet)	Well or Piezometer Completion
				0	3 2 3	2				GRAY SAND (SP) Loose, moist, fine-grained sand, with some silt and trace fine gravel.		
						4		SP				
				0	2 2 3	8				BROWN SILT (ML) Medium stiff, moist. Becomes gray, soft, with trace organics (wood). Becomes saturated at 11 ft bgs. Becomes brown, sandy, medium stiff, very fine sand. Becomes gray, very stiff.		
				0	2 2 2	10						
				0	2 2 5	12						
				0	2 5	14		ML				
				0	6 4	18						
						20				Boring terminated at 19 ft bgs. Groundwater encountered at 11 ft bgs.		
						22						
						24						

Location: _____
 Surface Elevation: _____
 Logged By: KLW

Drill Rig: B52
 Equipment/Hammer: D&M/300/30
 Date Completed: 11-22-04

Gull Industries, Inc.
 Former Gull Station No. 224
 Sedro-Woolley, Washington



Boring Log B2
 Project No: 19932.43894

Figure: A4
 1 of 1

LOG OF BORING WITH WELL SEDRO WOOLLEY WL.GPJ_CDM_BLLV.GDT_1/14/05 REV.

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PIV (ppm)	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	Boring Log B3 DESCRIPTION	Elev. (feet)	Well or Piezometer Completion
						2				BROWN SANDY SILT (ML) Very soft, moist, with coarse sand.		
			4.5		211	4						
			4		435	8				Becomes gray, medium stiff, wet, with trace fine gravel.		
						10		ML		Becomes saturated.		
			348		778	14				Becomes stiff.		
			96.3		811	18				Becomes very stiff.		
						20				Boring terminated at 19 ft bgs. Groundwater encountered at 11 ft bgs.		
						22						
						24						

Location: _____	Drill Rig: B52
Surface Elevation: _____	Equipment/Hammer: D&M/300/30
Logged By: KLW	Date Completed: 11-22-04


	Gull Industries, Inc. Former Gull Station No. 224 Sedro-Woolley, Washington
	Boring Log B3 Project No: 19932.43894

Figure: A5
1 of 1

LOG OF BORING WITH WELL SEDRO WOOLLEY WL.GPJ CDM.BLLV.GDT 1/14/05 REV.

Other Tests	Sample No.	Moisture Content (%)	Dry Density (pcf)	PID (ppm)	Penetration Resistance (blows / 6 in.)	Depth (feet)	Sample	USCS	Symbol	DESCRIPTION	Elev. (feet)	Well or Piezometer Completion
				0	4 3 3	2		SM		GRAY SILTY SAND (SM) Medium stiff, moist, with very fine sand.		
				0	1 1 1	8		ML		BROWN SILT (ML) Very soft, moist, with many large wood fragments.		
				0	1 2 2	10		SM		Becomes soft, saturated at 11 ft bgs.		
				0	1 2 3	12		SM		BROWN-GRAY SILTY SAND (SM) Loose, wet, very fine grained, with some wood fragments.		
				0	6 6 6	18		ML		GRAY SILT (ML) Stiff, wet.		
						20				Boring terminated at 19 ft bgs. Groundwater encountered at 11 ft bgs.		

Location: _____
 Surface Elevation: _____
 Logged By: KLW

Drill Rig: B52
 Equipment/Hammer: D&M/300/30
 Date Completed: 11-22-04

Gull Industries, Inc.
 Former Gull Station No. 224
 Sedro-Woolley, Washington



Boring Log B4
 Project No: 19932.43894

Figure: A6
 1 of 1



Attachment B
Laboratory Reports



Received
DEC 10 2004
CDM

December 7, 2004

Ross Stainsby
CDM
P.O. Box 3885
Bellevue, WA 98009

Re: Analytical Data for Project 19932/Gull-Sedro Woolley
Laboratory Reference No. 0411-224

Dear Ross:

Enclosed are the analytical results and associated quality control data for samples submitted on November 24, 2004.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



David Baumeister
Project Manager

Enclosures

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 9932/Gull-Sedro Woolley

Case Narrative

Samples were collected on November 22, 2004 and received by the laboratory on November 24, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH-G/BTEX Analysis

Per EPA Method 5035A, samples were received by the laboratory in Encore sampler devices within 48 hours of sample collection. They were transferred into the proper analytical vials and then either stored in a freezer at between -7°C and -20°C or preserved with sodium bisulfate and/or methanol until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-224
 Project: 14932/Gull-Sedro Woolley

NWTPH-Dx

Date Extracted: 11-24-04
 Date Analyzed: 11-27-04

Matrix: Soil
 Units: mg/kg (ppm)

Client ID:	B3-12.5'	B1-12.5'	B2-17.5'
Lab ID:	11-224-03	11-224-07	11-224-12
Diesel Range:	ND	ND	ND
PQL:	35	36	34
Identification:	---	---	---
Lube Oil Range:	ND	ND	ND
PQL:	70	72	68
Identification:	---	---	---
Surrogate Recovery			
o-Terphenyl:	77%	69%	80%
Flags:	Y	Y	Y

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 19932/Gull-Sedro Woolley

NWTPH-Dx

Date Extracted: 11-24-04
Date Analyzed: 11-27-04

Matrix: Soil
Units: mg/kg (ppm)

Client ID: B4-10.0'
Lab ID: 11-224-15

Diesel Range: ND
PQL: 32
Identification: ---

Lube Oil Range: ND
PQL: 63
Identification: ---

Surrogate Recovery
o-Terphenyl: 68%

Flags: Y

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 3932/Gull-Sedro Woolley

**NWTPH-Dx
METHOD BLANK QUALITY CONTROL**

Date Extracted: 11-24-04
Date Analyzed: 11-27-04

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1124S1

Diesel Range: ND
PQL: 25
Identification: ---

Lube Oil Range: ND
PQL: 50
Identification: ---

Surrogate Recovery
o-Terphenyl: 75%

Flags: Y

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 19932/Gull-Sedro Woolley

**NWTPH-Dx
DUPLICATE QUALITY CONTROL**

Date Extracted: 11-24-04
Date Analyzed: 11-27-04

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-224-03 11-224-03 DUP

Diesel Range: ND ND
PQL: 25 25

RPD: N/A

Surrogate Recovery

o-Terphenyl: 77% 102%

Flags: Y Y

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-224
 Project: 19932/Gull-Sedro Woolley

NWTPH-Gx/BTEX

Date Extracted: 11-24-04
 Date Analyzed: 11-24&29-04

Matrix: Soil
 Units: mg/kg (ppm)

Client ID: **B3-12.5'** **B1-12.5'**
 Lab ID: 11-224-03 11-224-07

	Result	Flags	PQL	Result	Flags	PQL
MTBE	ND		1.5	ND		0.16
Benzene	1.7		0.29	0.99		0.032
Toluene	ND		1.5	ND		0.16
Ethyl Benzene	10		1.5	2.7		0.16
m,p-Xylene	41		1.5	1.4		0.16
o-Xylene	15		1.5	ND		0.16
TPH-Gas	590		150	390		16
Surrogate Recovery:						
Fluorobenzene	71%			83%		

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-224
 Project: 9932/Gull-Sedro Woolley

NWTPH-Gx/BTEX

Date Extracted: 11-24-04
 Date Analyzed: 11-24-04

Matrix: Soil
 Units: mg/kg (ppm)

Client ID: **B2-17.5'** **B4-10.0'**
 Lab ID: 11-224-12 11-224-15

	Result	Flags	PQL	Result	Flags	PQL
MTBE	ND		0.074	ND		0.073
Benzene	ND		0.020	ND		0.020
Toluene	ND		0.074	ND		0.073
Ethyl Benzene	ND		0.074	ND		0.073
m,p-Xylene	ND		0.074	ND		0.073
o-Xylene	ND		0.074	ND		0.073
TPH-Gas	ND		7.4	ND		7.3
Surrogate Recovery: Fluorobenzene	75%			77%		

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 19932/Gull-Sedro Woolley

**NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL**

Date Extracted: 11-24-04
Date Analyzed: 11-24-04

Matrix: So'l
Units: mg/kg (ppm)

Lab ID: MB1124S2

	Result	Flags	PQL
MTBE	ND		0.050
Benzene	ND		0.020
Toluene	ND		0.050
Ethyl Benzene	ND		0.050
m,p-Xylene	ND		0.050
o-Xylene	ND		0.050
TPH-Gas	ND		5.0
Surrogate Recovery: Fluorobenzene	94%		

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-224
 Project: 19932/Gull-Sedro Woolley

**NWTPH-Gx/BTEX
 DUPLICATE QUALITY CONTROL**

Date Extracted: 11-24-04
 Date Analyzed: 11-24-04

Matrix: Soil
 Units: mg/kg (ppm)

Lab ID:	11-224-15 Original	11-224-15 Duplicate	RPD	Flags
MTBE	ND	ND	NA	
Benzene	ND	ND	NA	
Toluene	ND	ND	NA	
Ethyl Benzene	ND	ND	NA	
m,p-Xylene	ND	ND	NA	
o-Xylene	ND	ND	NA	
TPH-Gas	ND	ND	NA	
Surrogate Recovery:				
Fluorobenzene	77%	79%		

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-224
 Project: 19932/Gull-Sedro Woolley

**NWTPH-Gx/BTEX
 MS/MSD QUALITY CONTROL**

Date Extracted: 11-24-04
 Date Analyzed: 11-24-04

Matrix: Soil
 Units: mg/kg (ppm)

Spike Level: 1.00 ppm

Lab ID:	11-211-02 MS	Percent Recovery	11-211-02 MSD	Percent Recovery	RPD	Flags
MTBE	0.974	87	0.965	86	1	
Benzene	0.870	87	0.857	86	2	
Toluene	0.917	92	0.903	90	2	
Ethyl Benzene	0.942	94	0.923	92	2	
m,p-Xylene	1.02	102	0.953	95	7	
o-Xylene	0.941	94	0.918	92	3	

Surrogate Recovery:

Fluorobenzene 85% 83%

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 19932/Gull-Sedro Woolley

**TOTAL LEAD
EPA 6010B**

Date Extracted: 11-30-04
Date Analyzed: 11-30-04

Matrix: Soil
Units: mg/kg (ppm)

Client ID	Lab ID	Result	PQL
B3-12.5'	11-224-03	ND	7.0
B1-12.5'	11-224-07	ND	7.2

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 19932/Gull-Sedro Woolley

**TOTAL LEAD
EPA 6010B
METHOD BLANK QUALITY CONTROL**

Date Extracted: 11-30-04
Date Analyzed: 11-30-04

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB1130S1

Analyte	Method	Result	PQL
Lead	6010B	ND	5.0

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 1-932/Gull-Sedro Woolley

**TOTAL LEAD
EPA 6010B
DUPLICATE QUALITY CONTROL**

Date Extracted: 11-30-04

Date Analyzed: 11-30-04

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 11-224-03

Analyte	Sample Result	Duplicate Result	RPD	Flags	PQL
Lead	ND	ND	NA		5.0

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 19932/Gull-Sedro Woolley

**TOTAL LEAD
EPA 6010B
MS/MSD QUALITY CONTROL**

Date Extracted: 11-30-04

Date Analyzed: 11-30-04

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 11-224-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	250	249	100	269	107	8	

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-224
Project: 19932/Gull-Sedro Woolley

% MOISTURE

Date Analyzed: 11-24-04

Client ID	Lab ID	% Moisture
B3-12.5'	11-224-03	29
B1-12.5'	11-224-07	31
B2-17.5'	11-224-12	26
B4-17.5'	11-224-15	21



Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

O - Hydrocarbons indicative of diesel fuel are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL

PQL - Practical Quantitation Limit

RPD - Relative Percent Difference



PROJECT INFORMATION					Laboratory Number: 11-224																															
Project Manager: <u>Ross Stansby</u>					ANALYSIS REQUEST																															
Project Name: <u>Gull Sediment</u>					PETROLEUM HYDROCARBONS			ORGANIC COMPOUNDS				PESTS/PCBS			METALS			LEACHING TESTS		OTHER		NUMBER OF CONTAINERS														
Project Number: <u>17932</u>					TPH-HCID	TPH-G	TPH-D	TPH-418.1	8015M Fuel Hydrocarbon	TPH Special Instructions	8010 Halogenated VOCs	8020 Aromatic VOCs	8020M - BETX only	8240 GC/MS Volatiles	8270 GC/MS Semivolatiles	8310 PAHs	8040 Phenols	DWS - Volatiles and Semivolatiles	8080 OC Pests/PCBs	8080M PCBs only	8140 OP Pesticides		8150 OC Herbicides	DWS - Herb/Pest	Selected Metals: list	Organic Lead (Ca)	TCL Metals (23)	Priority Poll. Metals (13)	DWS - Metals	MFSP - Metals (Wa)	TCLP - Volatiles (ZHE)	TCLP - Semivolatiles	TCLP - Pesticides	TCLP - Metals	Lead 6010 B	MTBE 18260
Site Location: <u>21431 5070</u> Sampled By: <u>KW</u>																																				
DISPOSAL INFORMATION																																				
<input checked="" type="checkbox"/> Lab Disposal (return if not indicated)																																				
Disposal Method: _____																																				
Disposed by: _____ Disposal Date: _____																																				
QC INFORMATION (check one)																																				
<input type="checkbox"/> SW-846 <input type="checkbox"/> CLP <input type="checkbox"/> Screening <input checked="" type="checkbox"/> CDM Std. <input type="checkbox"/> Special																																				
SAMPLE ID	DATE	TIME	MATRIX	LAB ID																																
B3-2.5'	11/22/04	1010	S	1																																
B3-7.5'		1013		2																																
B3-12.5'		1020		3																																
B3-17.5'		1030		4																																
B3-19.0'																																				
B1-7.5'		1300		5																																
B1-9.0'		1310		6																																
B1-12.5'		1318		7																																

LAB INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY: 1		RELINQUISHED BY: 2		RELINQUISHED BY: 3	
Lab Name: <u>On Site</u>	Total Number of Containers: _____	Signature: <u>[Signature]</u>	Time: <u>0700</u>	Signature: _____	Time: _____	Signature: _____	Time: _____	Signature: _____	Time: _____
Lab Address: <u>Redmond</u>	Chain-of-Custody Seals: Y/N/NA	Printed Name: <u>[Signature]</u>	Date: <u>11/24/04</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____
Via: <u>KW</u>	Intact?: Y/N/NA	Company: <u>CDM</u>	Company: _____	Company: _____	Company: _____	Company: _____	Company: _____	Company: _____	Company: _____
Turn Around Time: <input checked="" type="checkbox"/> Standard <input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 1 wk.	Received in Good Condition/Cold: _____	RECEIVED BY: 1		RECEIVED BY: 2		RECEIVED BY: 3			
PRIOR AUTHORIZATION IS REQUIRED FOR RUSH DATA		Signature: <u>[Signature]</u>	Time: <u>1030</u>	Signature: _____	Time: _____	Signature: _____	Time: _____	Signature: _____	Time: _____
Special Instructions: _____		Printed Name: <u>[Signature]</u>	Date: <u>11/24/04</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____
		Company: <u>On Site Inc.</u>	Company: _____	Company: _____	Company: _____	Company: _____	Company: _____	Company: _____	Company: _____



PROJECT INFORMATION					ANALYSIS REQUEST																																
Project Manager: <u>Ross Stainsby</u>					Laboratory Number: 11-224																																
Project Name: <u>Gull-Sediment Wadley</u>																																					
Project Number: <u>19932</u>																																					
Site Location: <u>2181 SR 20</u> Sampled By: <u>KW</u>																																					
DISPOSAL INFORMATION																																					
<input checked="" type="checkbox"/> Lab Disposal (return if not indicated)																																					
Disposal Method: _____																																					
Disposed by: _____ Disposal Date: _____																																					
QC INFORMATION (check one)																																					
<input type="checkbox"/> SW-846 <input type="checkbox"/> CLP <input type="checkbox"/> Screening <input checked="" type="checkbox"/> CDM Std. <input type="checkbox"/> Special																																					
SAMPLE ID	DATE	TIME	MATRIX	LAB ID	TPH-HC/D	TPH-G	TPH-D	TPH-418.1	8015M Fuel Hydrocarbon	TPH Special Instructions	8010 Halogenated VOCs	8020 Aromatic VOCs	8020M - BETX only	8240 GC/MS Volatiles	8270 GC/MS Semivolatiles	8310 PAHs	8040 Phenols	DWS - Volatiles and Semivolatiles	8080 OC Pest/PCBs	8080M PCBs only	8140 OP Pesticides	8150 OC Herbicides	DWS - Herb/Pest	Selected Metals: list	Organic Lead (Ca)	TCL Metals (23)	Priority Poll. Metals (13)	DWS - Metals	MFSP - Metals (Ma)	TCLP - Volatiles (ZHE)	TCLP - Semivolatiles	TCLP - Pesticides	TCLP - Metals	OTHER	NUMBER OF CONTAINERS		
B1-17.5'	11/27/04	1330	Soil	8																																4	
B1-19.0'																																					
B2-21.5'																																					
B2-7.5'		1506		9																																	1
B2-12.5/10.0		1515		10																																1	
B2-12.5/12.5		1519		11																																1	
B2-19.8/17.5'		1540		12																																4	
LAB INFORMATION				SAMPLE RECEIPT				RELINQUISHED BY: 1			RELINQUISHED BY: 2			RELINQUISHED BY: 3																							
Lab Name: <u>Onyx</u>				Total Number of Containers: _____				Signature: <u>[Signature]</u> Time: <u>0700</u>			Signature: _____ Time: _____			Signature: _____ Time: _____																							
Lab Address: <u>Redmond WA</u>				Chain-of-Custody Seals: Y/N/NA				Printed Name: <u>Kristy Wilson</u> Date: <u>11/24/04</u>			Printed Name: _____ Date: _____			Printed Name: _____ Date: _____																							
Via: _____				Intact?: Y/N/NA				Company: <u>cdm</u>			Company: _____			Company: _____																							
Turn Around Time: <input checked="" type="checkbox"/> Standard <input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 1 wk.				Received in Good Condition/Cold: _____				RECEIVED BY: 1			RECEIVED BY: 2			RECEIVED BY: 3																							
Special Instructions: _____				Signature: <u>[Signature]</u> Time: <u>1230</u>				Signature: _____ Time: _____			Signature: _____ Time: _____			Signature: _____ Time: _____																							
				Printed Name: <u>David Goodrow</u> Date: <u>11/22/04</u>				Printed Name: _____ Date: _____			Printed Name: _____ Date: _____			Printed Name: _____ Date: _____																							
				Company: <u>Onyx</u>				Company: _____			Company: _____			Company: _____																							



Received
DEC 10 2004
CDM

December 7, 2004

Ross Stainsby
CDM
P.O. Box 3885
Bellevue, WA 98009

Re: Analytical Data for Project 19932-Gull Sedro Woolley
Laboratory Reference No. 0411-223

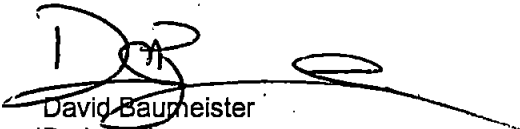
Dear Ross:

Enclosed are the analytical results and associated quality control data for samples submitted on November 24, 2004.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



David Baumeister
Project Manager

Enclosures

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

Case Narrative

Samples were collected on November 23, 2004 and received by the laboratory on November 24, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-223
 Project: 19932-Gull Sedro Woolley

NWTPH-Dx

Date Extracted: 11-29-04
 Date Analyzed: 12-2-04

Matrix: Water
 Units: mg/L (ppm)

	B1-11/23/04	B2-11/23/04	B3-11/23/04
Client ID:			
Lab ID:	11-223-01	11-223-02	11-223-03
Diesel Range:	ND	ND	ND
PQL:	0.25	0.26	0.26
Identification:	---	---	---
Lube Oil Range:	ND	ND	ND
PQL:	0.40	0.41	0.41
Identification:	---	---	---
Surrogate Recovery			
o-Terphenyl:	79%	85%	77%
Flags:	Y	Y	Y

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-29-04
Date Analyzed: 12-1-04

Matrix: Water
Units: mg/L (ppm)

Lab ID: MB1129W1

Diesel Range: ND
PQL: 0.25
Identification: ---

Lube Oil Range: ND
PQL: 0.40
Identification: ---

Surrogate Recovery
o-Terphenyl: 58%

Flags: Y

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

**NWTPH-Dx
DUPLICATE QUALITY CONTROL**

Date Extracted: 11-29-04
Date Analyzed: 12-1-04

Matrix: Water
Units: mg/L (ppm)

Lab ID: 11-222-01 11-222-01 DUP

Diesel Range: ND ND
PQL: 0.25 0.27

RPD: N/A

Surrogate Recovery

o-Terphenyl: 75% 81%

Flags: Y Y

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-223
 Project: 19932-Gull Sedro Woolley

NWTPH-Gx/BTEX

Date Extracted: 11-24&29-04
 Date Analyzed: 11-24&29-04

Matrix: Water
 Units: ug/L (ppb)

Client ID: **B1-11/23/04** **B2-11/23/04**
 Lab ID: 11-223-01 11-223-02

	Result	Flags	PQL	Result	Flags	PQL
MTBE	ND		10	ND		10
Benzene	310		20	5.7		1.0
Toluene	16		1.0	2.9		1.0
Ethyl Benzene	33		1.0	6.7		1.0
m,p-Xylene	74		1.0	29		1.0
o-Xylene	23		1.0	13		1.0
TPH-Gas	2100		100	100		100
Surrogate Recovery: Fluorobenzene	110%			98%		

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

NWTPH-Gx/BTEX

Date Extracted: 11-24&29-04
Date Analyzed: 11-24&29-04

Matrix: Water
Units: ug/l (ppb)

Client ID: **B3-11/23/04**
Lab ID: 11-223-03

	Result	Flags	PQL
MTBE	ND		10
Benzene	590		100
Toluene	660		100
Ethyl Benzene	2300		100
m,p-Xylene	11000		250
o-Xylene	3900		100
TPH-Gas	55000		10000
Surrogate Recovery: Fluorobenzene	104%		

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

**NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL**

Date Extracted: 11-24-04
Date Analyzed: 11-24-04

Matrix: Water
Units: ug/l (ppb)

Lab ID: MB1124W1

	Result	Flags	PQL
MTBE	ND		10
Benzene	ND		1.0
Toluene	ND		1.0
Ethyl Benzene	ND		1.0
m,p-Xylene	ND		1.0
o-Xylene	ND		1.0
TPH-Gas	ND		100
Surrogate Recovery: Fluorobenzene	96%		

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

**NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL**

Date Extracted: 11-29-04
Date Analyzed: 11-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1129W1

	Result	Flags	PQL
MTBE	ND		10
Benzene	ND		1.0
Toluene	ND		1.0
Ethyl Benzene	ND		1.0
m,p-Xylene	ND		1.0
o-Xylene	ND		1.0
TPH-Gas	ND		100
Surrogate Recovery: Fluorobenzene	103%		

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-223
 Project: 19932-Gull Sedro Woolley

**NWTPH-Gx/BTEX
 DUPLICATE QUALITY CONTROL**

Date Extracted: 11-24-04
 Date Analyzed: 11-24-04

Matrix: Water
 Units: ug/l. (ppb)

Lab ID:	11-214-04 Original	11-214-04 Duplicate	RPD	Flags
MTBE	ND	ND	NA	
Benzene	ND	ND	NA	
Toluene	ND	ND	NA	
Ethyl Benzene	ND	ND	NA	
m,p-Xylene	ND	ND	NA	
o-Xylene	ND	ND	NA	
TPH-Gas	ND	ND	NA	
Surrogate Recovery:				
Fluorobenzene	103%	100%		

Date of Report: December 7, 2004
 Samples Submitted: November 24, 2004
 Laboratory Reference: 0411-223
 Project: 19932-Gull Sedro Woolley

**NWTPH-Gx/BTEX
 MS/MSD QUALITY CONTROL**

Date Extracted: 11-24-04
 Date Analyzed: 11-24-04

Matrix: Water
 Units: ug/L (ppb)

Spike Level: 50.0 ppb

Lab ID:	11-214-04 MS	Percent Recovery	11-214-04 MSD	Percent Recovery	RPD	Flags
MTBE	47.0	94	52.9	106	12	
Benzene	47.5	95	50.8	102	7	
Toluene	49.0	98	52.2	104	6	
Ethyl Benzene	49.3	99	52.6	105	6	
m,p-Xylene	49.4	99	52.6	105	6	
o-Xylene	48.8	98	51.8	104	6	

Surrogate Recovery:

Fluorobenzene 100% 105%

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

TOTAL LEAD
EPA 200.8

Date Ext acted: 12-3-04

Date Analyzed: 12-3-04

Matrix: Water

Units: ug/L (ppb)

Client ID	Lab ID	Result	PQL
B3-11/23/04	11-223-03	5.4	1.1

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

**TOTAL LEAD
EPA 200.8
METHOD BLANK QUALITY CONTROL**

Date Extracted: 12-3-04
Date Analyzed: 12-3-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1203W1

Analyte	Method	Result	PQL
Lead	200.8	ND	1.1

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 19932-Gull Sedro Woolley

**TOTAL LEAD
EPA 200.8
DUPLICATE QUALITY CONTROL**

Date Extracted: 12-3-04
Date Analyzed: 12-3-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-250-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	5.76	6.06	5	1.1	

Date of Report: December 7, 2004
Samples Submitted: November 24, 2004
Laboratory Reference: 0411-223
Project: 9932-Gull Sedro Woolley

**TOTAL LEAD
EPA 200.8
MS/MSD QUALITY CONTROL**

Date Extracted: 12-3-04

Date Analyzed: 12-3-04

Matrix: Water

Units: ug/L (ppb)

Lab ID: 11-250-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	110	114	98	116	101	2	



Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
 - B - The analyte indicated was also found in the blank sample.
 - C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
 - E - The value reported exceeds the quantitation range and is an estimate.
 - F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
 - G - Insufficient sample quantity for duplicate analysis.
 - H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation and be impacting the sample result.
 - I - Compound recovery is outside of the control limits.
 - J - The value reported was below the practical quantitation limit. The value is an estimate.
 - K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
 - L - The RPD is outside of the control limits.
 - M - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
 - O - Hydrocarbons indicative of diesel fuel are present in the sample and are impacting the gasoline result.
 - P - The RPD of the detected concentrations between the two columns is greater than 40.
 - Q - Surrogate recovery is outside of the control limits.
 - S - Surrogate recovery data is not available due to the necessary dilution of the sample.
 - T - The sample chromatogram is not similar to a typical _____.
 - U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
 - V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
 - W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
 - X - Sample extract treated with a silica gel cleanup procedure.
 - Y - Sample extract treated with an acid/silica gel cleanup procedure.
 - Z -
- ND - Not Detected at PQL
 PQL - Practical Quantitation Limit
 RPD - Relative Percent Difference

PROJECT INFORMATION					Laboratory Number: _____																														
Project Manager: <u>Ross Starksby</u>					ANALYSIS REQUEST																														
Project Name: <u>Cull-Sediment Woolley</u>					PETROLEUM HYDROCARBONS			ORGANIC COMPOUNDS				PESTS/PCBS			METALS			LEACHING TESTS			OTHER		NUMBER OF CONTAINERS												
Project Number: <u>19932</u>					TPH-HCID	TPH-G	TPH-D	TPH-418.1	8015M Fuel Hydrocarbon	TPH Special Instructions	8010 Halogenated VOCs	8020 Aromatic VOCs	8020M - BETX only	8240 GC/MS Volatiles	8270 GC/MS Semivolatiles	8310 PAHs	8040 Phenols	DWS - Volatiles and Semivolatiles	8080 OC Pest/PCBs	8080M PCBs only	8140 OP Pesticides	8150 OC Herbicides		DWS - Herb/Pest	Selected Metals: list	Organic Lead (Ca)	TCL Metals (23)	Priority Pol. Metals (13)	DWS - Metals	MSP - Metals (Wa)	TCLP - Volatiles (ZHE)	TCLP - Semivolatiles	TCLP - Pesticides	TCLP - Metals	<u>Helio</u> <u>Lead/Leachate 200.8</u> <u>MTBE 1826.0</u> <u>Gas (NWTM) 670.2</u>
Site Location: <u>Sediment Woolley</u> Sampled By: <u>KW</u>					State:	State:	State:	State:																											
DISPOSAL INFORMATION																																			
<input checked="" type="checkbox"/> Lab Disposal (return if not indicated)																																			
Disposal Method: _____																																			
Disposed by: _____ Disposal Date: _____																																			
QC INFORMATION (check one)																																			
<input type="checkbox"/> SW-846 <input type="checkbox"/> CLP <input type="checkbox"/> Screening <input checked="" type="checkbox"/> CDM Std. <input type="checkbox"/> Special																																			
SAMPLE ID		DATE	TIME	MATRIX	LAB ID																														
B1-11/23/04		11/23/04	1410	W	1																														
B2-11/23/04		↓	1545	↓	2																														
B3-11/23/04		↓	1215	↓	3																														

LAB INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY: 1		RELINQUISHED BY: 2		RELINQUISHED BY: 3	
Lab Name: <u>OnSite Environmental</u>		Total Number of Containers: <u>21</u>		Signature: <u>[Signature]</u> Time: <u>0300</u>		Signature: _____ Time: _____		Signature: _____ Time: _____	
Lab Address: <u>Redmond WA</u>		Chain-of-Custody Seals: Y/N/NA		Printed Name: <u>Kristy Warr</u> Date: <u>11/24/04</u>		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
Via: <u>carrier</u>		Intact?: Y/N/NA		Company: <u>CDM</u>		Company: _____		Company: _____	
Turn Around Time: <input checked="" type="checkbox"/> Standard <input type="checkbox"/> 24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/> 72 hr. <input type="checkbox"/> 1 wk.		Received in Good Condition/Cold:		RECEIVED BY: 1		RECEIVED BY: 2		RECEIVED BY: 3	
PRIOR AUTHORIZATION IS REQUIRED FOR RUSH DATA				Signature: <u>[Signature]</u> Time: <u>1015</u>		Signature: _____ Time: _____		Signature: _____ Time: _____	
Special Instructions:				Printed Name: <u>Blair Goodson</u> Date: <u>11/24/04</u>		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
				Company: <u>OnSite Env</u>		Company: _____		Company: _____	