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GROUNDWATER MONITORING STATUS REPORT MARCH 2011

FORMER CUMMINGS OIL LEASE SITE
908 NORTHWEST KERRON AVENUE
WINLOCK, WASHINGTON
VCP NO. SW0775

Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027
Farallon PN: 283-005

RECEIVED

MAY 15 2013

WA State Department
of Ecology (SWRO)

For:



2454 Occidental Avenue South, Suite 1A
Seattle, Washington

August 19, 2011

Prepared by:

A handwritten signature in black ink, appearing to read "Javan Ruark".

Javan Ruark
Staff Geologist

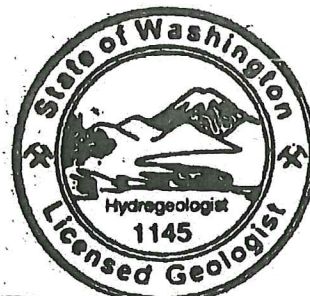
Reviewed by:

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Stacy Patterson
Senior Environmental Scientist

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Jeffrey Kasper, L.G., L.H.G.
Senior Project Manager



Jeffrey Kasper



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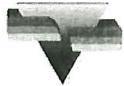
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ACRONYMS AND ABBREVIATIONS

BNSF	BNSF Railway Company
BTEX	benzene, toluene, ethylbenzene, and xylenes
DRO	total petroleum hydrocarbons as diesel-range organics
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
Farallon	Farallon Consulting, L.L.C.
GRO	total petroleum hydrocarbons as gasoline-range organics
µg/l	micrograms per liter
mg/l	milligrams per liter
MTCA	Washington State Model Toxics Control Act Cleanup Regulation
ORO	total petroleum hydrocarbons as oil-range organics.
ORP	oxidation-reduction potential
PAHs	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
Site	Former Cummings Oil Lease Site at 908 Northwest Kerron Avenue, Winlock, Lewis County, Washington
VCP	Voluntary Cleanup Program
Work Plan	<i>Cleanup Action Work Plan, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, Washington dated December 18, 2008, prepared by Farallon Consulting, L.L.C.</i>



1.0 INTRODUCTION

This Groundwater Monitoring Status Report has been prepared on behalf of BNSF Railway Company (BNSF) to summarize the results of the groundwater monitoring and sampling event conducted on March 22, 2011 at the former Cummings Oil Lease Site at 908 Northwest Kerron Avenue in Winlock, Lewis County, Washington (herein referred to as the Site) (Figure 1). Prior site investigations and a tank removal and soil excavation cleanup action have confirmed that concentrations of total petroleum hydrocarbons as gasoline-range organics (GRO), as diesel-range organics (DRO), and as oil-range organics (ORO); and benzene, toluene, ethylbenzene, and xylenes (BTEX) were released to the subsurface as a result of historical activities at the Site. The groundwater monitoring and sampling is being performed to: monitor concentrations of petroleum hydrocarbon constituents previously detected in groundwater above Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A cleanup levels; assess the effectiveness of the cleanup action; and determine whether natural attenuation of residual petroleum hydrocarbon constituents is occurring.

The cleanup action at the Site was performed under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) in accordance with MTCA, as established in Chapter 173-340 of the Washington Administrative Code, and the *Cleanup Action Work Plan, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, Washington* dated December 18, 2008, prepared by Farallon Consulting, L.L.C. (Farallon) (2008) (Work Plan). The Site was entered into the Ecology VCP in 2006 and assigned VCP Identification No. SW0775 under the Ecology Toxics Cleanup Program.

The Work Plan presented the selected cleanup approach and specified the cleanup standards and associated requirements for the cleanup action. The selected cleanup action for the Site was executed in conjunction with tank closure activities conducted at the Site between March 10 and August 1, 2008. The tank closure and cleanup action included removal of two underground storage tanks and four aboveground storage tanks, excavation and off-Site disposal of soil with petroleum hydrocarbon concentrations above MTCA cleanup levels, and installation of monitoring wells to delineate the nature and extent of petroleum hydrocarbon constituents in groundwater and to assess the progress of groundwater cleanup by natural attenuation processes. The results of the tank closure and cleanup action are summarized in the *Tank Closure Report, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, Washington* dated March 11, 2010, prepared by Farallon (2010).



2.0 MONITORING ACTIVITIES AND RESULTS

The monitoring activities conducted at the Site by Farallon on March 22, 2011 included measuring groundwater levels and collecting groundwater quality data and samples for laboratory analysis. The monitoring activities and results are summarized in the following sections.

2.1 GROUNDWATER MONITORING ACTIVITIES

The groundwater monitoring and sampling event included the following elements:

- Measuring the depth to groundwater in monitoring wells MW-1 through MW-5;
- Purging and sampling monitoring wells MW-1 through MW-5 using U.S. Environmental Protection Agency (EPA) low-flow sampling methods;
- Measuring water quality parameters during monitoring well purging to assess the potential for natural attenuation processes to mitigate residual petroleum hydrocarbon constituents present in groundwater; and
- Submitting the groundwater samples for laboratory analysis.

Farallon opened monitoring wells MW-1 through MW-5 to allow the water levels to equilibrate with atmospheric pressure for a minimum of 15 minutes prior to obtaining groundwater level measurements. Groundwater levels in the monitoring wells were measured to an accuracy of 0.01 foot using an electronic water-level meter.

Following collection of groundwater level measurements, monitoring wells MW-1 through MW-5 were purged and sampled using a peristaltic pump and polyethylene tubing. The purging was conducted at flow rates ranging from 150 to 200 milliliters per minute, with the intake tubing placed a maximum of 3 feet below the water table in each monitoring well. During purging, water quality was monitored using a Yellow Springs Instruments water-quality meter equipped with a flow-through cell. Water quality parameters monitored and recorded during purging and sampling included temperature, pH, specific conductance, dissolved oxygen, and oxidation-reduction potential (ORP). The monitoring wells were purged until the water quality parameters stabilized in accordance with EPA guidelines for low-flow sampling. The groundwater samples were transferred directly from the tubing into laboratory-prepared containers. The containers from each sampling event were placed on ice in a cooler and transported to an Ecology-accredited laboratory under standard chain-of-custody protocols. The groundwater samples were analyzed for DRO and ORO by Northwest Method NWTPH-Dx; GRO by Northwest Method NWTPH-Gx; BTEX by EPA Method 5030B/8260; polycyclic aromatic hydrocarbons (PAHs), including naphthalene by EPA Method 8270 with selective ion monitoring; methane by Method RSK 175; total nitrate by EPA Method 353.2; and sulfate by EPA Method 300.0. Ferrous iron concentrations in groundwater were determined using reagent field test kits. Ferrous iron concentrations were determined using laboratory analytical Method SM 3500-FE during previous sampling events. Due to holding time considerations, ferrous iron reagent field test kits will continue to be used for future sampling events.



Purge water generated during groundwater sampling was stored in a 5-gallon drum on the Site. The purge water will be scheduled for disposal during a future groundwater monitoring and sampling event.

2.2 GROUNDWATER MONITORING RESULTS

Groundwater level measurements and elevations are summarized in Table 1. Figure 2 provides a groundwater elevation contour map illustrating the estimated groundwater flow direction and gradient for the groundwater monitoring and sampling event conducted on March 22, 2011. The March 2011 groundwater level measurements indicate a groundwater flow direction to the west, and an average hydraulic gradient at the Site of approximately 0.04 foot per foot. The groundwater flow direction during previous groundwater monitoring events has varied from northwest to southwest.

Groundwater analytical results for petroleum hydrocarbon constituents and PAHs are summarized in Tables 2 and 3. The analytical results for the groundwater samples collected on March 22, 2011 are depicted on Figure 3.

The laboratory analytical results for the March 22, 2011 groundwater monitoring and sampling event are summarized as follows:

- Concentrations of GRO were detected above the laboratory quantitation limit (PQL) but below the MTCA Method A cleanup level in the groundwater sample collected from monitoring well MW-2.
- Concentrations of DRO exceeded the MTCA Method A cleanup level of 500 micrograms per liter ($\mu\text{g/l}$) in groundwater samples collected from monitoring wells MW-1 through MW-3.
- ORO was not detected at concentrations at or above the laboratory PQL in the groundwater samples collected from monitoring wells MW-1 through MW-5.
- Concentrations of the BTEX constituents were not detected at or above the laboratory PQLs, with the exception of benzene, which exceeded the MTCA Method A cleanup level of 5 $\mu\text{g/l}$ in the groundwater sample collected from monitoring well MW-2.
- With the exception of monitoring well MW-2, concentrations of carcinogenic PAHs were not detected above the laboratory PQL in the groundwater samples collected, and the calculated toxicity equivalent factor for carcinogenic PAHs did not exceed the MTCA Method A cleanup level of 0.1 $\mu\text{g/l}$ in the groundwater samples collected.
- With the exception of monitoring well MW-2, naphthalene was not detected at concentrations at or above the laboratory PQL. Naphthalene was detected in monitoring well MW-2 at a concentration of 0.18 $\mu\text{g/l}$, which is below the MTCA Method A cleanup level of 160 $\mu\text{g/l}$.

The laboratory analytical report for the groundwater monitoring event is provided in Appendix A.



2.3 NATURAL ATTENUATION ASSESSMENT RESULTS

An assessment of the potential for natural attenuation processes to reduce concentrations of residual petroleum hydrocarbon constituents in groundwater via biodegradation was conducted during the March 22, 2011 groundwater monitoring and sampling event. The assessment included laboratory analyses and measurement of field parameters that provide data to assess whether biodegradation is occurring, and if so by what process(es). Laboratory analyses and field measurements for the assessment included the following:

- Primary electron receptors that are potential energy sources for native bacteria capable of biodegradation of petroleum compounds, and indicators of groundwater geochemistry:
 - Dissolved oxygen (O_2);
 - Nitrate (NO_3^-); and
 - Sulfate (SO_4^{2-}).
- Metabolic byproducts of biodegradation and indicators of groundwater geochemistry:
 - Ferrous iron (Fe^{+2});
 - Nitrite (NO_2^-); and
 - Methane (CH_4).
- Geochemical indicators of whether the subsurface environment is amenable to biodegradation of petroleum compounds:
 - ORP;
 - Temperature; and
 - pH.

Laboratory analytical results and field measurements for the natural attenuation parameters and geochemical indicators are summarized in Table 4. To assess whether natural attenuation is occurring in groundwater monitoring wells at the Site, the concentrations of primary electron receptors, the concentrations of metabolic by-products of biodegradation, and the geochemical indicators for monitoring wells MW-1 through MW-3 within the petroleum hydrocarbon plume were compared to these data for down-gradient monitoring well MW-5, which is outside the petroleum hydrocarbon plume. The results of the natural attenuation assessment for the March 22, 2011 sampling event are summarized as follows:

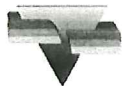
- **Dissolved Oxygen**—Measurements of less than 1 milligram per liter (mg/l) of available oxygen within the petroleum hydrocarbon plume indicate that groundwater is trending toward more anaerobic conditions. The concentrations of dissolved oxygen in groundwater at monitoring wells MW-1 through MW-3 ranged from 0.15 to 0.57 mg/l during the March 22, 2011 monitoring and sampling event. These dissolved oxygen measurements indicate that the available oxygen likely is being used as an energy source for biodegradation in areas with residual petroleum hydrocarbon constituents. Available oxygen was 6.02 mg/l in monitoring well MW-5, which indicates aerobic conditions outside the petroleum hydrocarbon plume.

- 
- **Nitrate and Nitrite**—Nitrite is formed by anaerobic microbial nitrate reduction during biodegradation of petroleum hydrocarbon constituents, referred to as de-nitrification. The anaerobic respiratory process reduces nitrate (NO_3^-) to nitrite (NO_2^-). The concentrations of nitrate and nitrite could not be compared during the March 22, 2011 monitoring and sampling event because the laboratory analyzed the samples for total nitrogen as nitrate plus nitrite.
 - **Ferrous Iron**—Ferrous iron is formed by anaerobic microbial ferric iron reduction during the biodegradation of petroleum hydrocarbon constituents. Concentrations of ferrous iron in the groundwater samples collected from monitoring wells MW-1 through MW-3 ranged from 3.2 to 4.2 mg/l during the March 22, 2011 monitoring and sampling event at the Site. The elevated concentrations of ferrous iron indicate that ferric iron is being reduced through anaerobic microbial respiration in these monitoring wells. Ferrous iron was detected at a concentration of 0.50 mg/l in monitoring well MW-5. The elevated concentrations of ferrous iron in monitoring wells MW-1 through MW-3 relative to monitoring well MW-5 indicate that biodegradation of petroleum hydrocarbons is occurring within the residual petroleum hydrocarbon plume.
 - **Sulfate**—Concentrations of sulfate greater than 1 mg/l indicate a favorable environment for sulfate-reducing conditions. The concentrations of sulfate in groundwater samples collected from monitoring wells MW-1 through MW-3 and MW-5 ranged from 7.0 to 34.3 mg/l. Sulfate was present at monitoring well locations both inside and outside the petroleum hydrocarbon plume, which indicates a favorable environment for sulfate-reducing conditions. However, microbial respiration via sulfate reduction is not occurring at a detectable rate in these monitoring wells based on the high concentrations of sulfate present.
 - **Methane**—Methane is a metabolic by-product of biodegradation of petroleum hydrocarbon constituents. Concentrations of methane in the groundwater samples collected from monitoring wells MW-1 through MW-3 ranged from 22 to 1,160 $\mu\text{g/l}$ during the monitoring and sampling event conducted at the Site. Methane was not detected at concentrations at or above the PQL in monitoring well MW-5. The elevated concentrations of methane at monitoring wells MW-1 through MW-3 relative to monitoring well MW-5 indicate that biodegradation of petroleum hydrocarbons is occurring within the plume area.
 - **ORP**—The ORP measured at monitoring wells MW-1 and MW-3 during the monitoring event were -61.9 and -78.2 millivolts, respectively, which indicate an anaerobic environment. The ORP measured in monitoring wells MW-2 and MW-5 during the monitoring event were 191.6 and 47.2 millivolts, respectively, which is within a range typically considered indicative of moderately aerobic conditions. Excluding the ORP measured in monitoring well MW-2 within the plume, these results correspond with the trend in dissolved-oxygen measurements. Dissolved oxygen was present in monitoring well MW-5 outside the plume, and was degraded in monitoring wells MW-1 through MW-3 inside the plume where biodegradation of petroleum hydrocarbons is occurring.
 - **Temperature**—The groundwater temperature measured at monitoring wells MW-1 through MW-3 and MW-5 ranged from 8.89 to 9.72 degrees Celsius during the



groundwater monitoring and sampling event. Biodegradation processes occur at these temperatures, but typically are accelerated at temperatures approaching 20 degrees Celsius or greater.

- **pH**—The values for pH measured at monitoring wells MW-1 through MW-3 and MW-5 ranged from 5.62 to 8.06, with 7 as a neutral value. These pH values are within a range amenable to the bacteria capable of petroleum hydrocarbon biodegradation.



3.0 CONCLUSIONS

The groundwater flow direction for the March 22, 2011 groundwater monitoring event was to the west at an average estimated hydraulic gradient of approximately 0.04 foot per foot. During previous monitoring events, the groundwater flow direction has ranged from northwest to southwest.

Concentrations of GRO, DRO, ORO, PAHs, naphthalene, or the BTEX constituents at or above the laboratory PQLs were not detected in groundwater samples collected from monitoring wells MW-4 and MW-5 during the March 2011 groundwater monitoring and sampling event. Concentrations of PAHs and naphthalene were detected above laboratory PQLs, but below the MTCA Method A cleanup levels in monitoring well MW-2. Concentrations of DRO and/or benzene above MTCA Method A cleanup levels were detected in samples collected from monitoring wells MW-1 through MW-3 in the area west of the former underground storage tank excavation on the western portion of the Site and the AST excavation area on the central portion of the Site.

The assessment of natural attenuation in groundwater using geochemical indicators at monitoring wells where petroleum hydrocarbon constituents are present relative to monitoring well MW-5, where no petroleum hydrocarbons are present, indicates that biodegradation of petroleum hydrocarbons is occurring under anaerobic conditions. The electron receptor dissolved oxygen appears to be depleted at monitoring wells MW-1 through MW-3, indicating that available oxygen is being used as an energy source for biodegradation. Concentrations of the metabolic by-product indicators ferrous iron and methane have been detected in groundwater at higher concentrations at monitoring wells MW-1 through MW-3 than at monitoring well MW-5, further indicating that biodegradation of petroleum hydrocarbons is occurring.

Annual groundwater monitoring for DRO, GRO, ORO, and BTEX will be conducted in August 2012 to assess the progress of natural attenuation at the Site and evaluate the need for and frequency of subsequent sampling events. Historically, the highest concentrations of petroleum hydrocarbon constituents were detected at the Site during the month of August. The August 2012 monitoring event will provide an assessment of groundwater quality at the Site during dry seasonal conditions.



4.0 BIBLIOGRAPHY

- Farallon Consulting, L.L.C. (Farallon). 2006. *Supplemental Subsurface Investigation, BNSF Winlock, 908 Northwest Kerron Avenue, Winlock, Washington*. Prepared for BNSF Railway Company, Seattle, Washington. May 31.
- . 2008. *Cleanup Action Work Plan, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, Washington*. Prepared for BNSF Railway Company, Seattle, Washington. December 18.
- . 2010. *Tank Closure Report, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, Washington*. Prepared for BNSF Railway Company, Seattle, Washington. March 11.

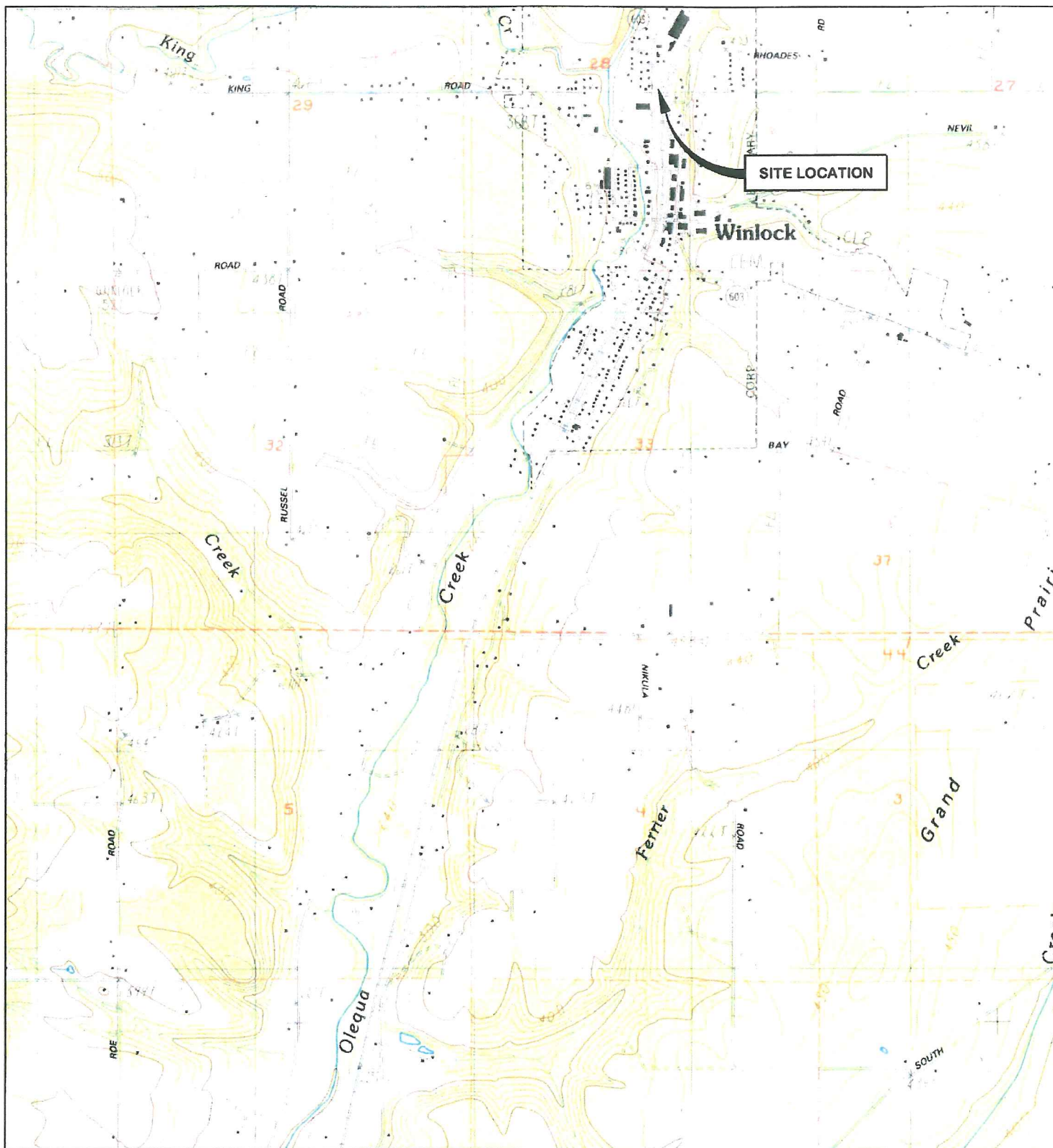
FIGURES

GROUNDWATER MONITORING STATUS REPORT

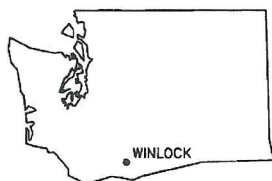
MARCH 2011

**Former Cummings Oil Lease Site
908 Northwest Kerron Avenue
Winlock, Washington
VCP No. SW0775**

Farallon PN: 283-005



REFERENCE: 7.5 MINUTE USGS QUADRANGLE WINLOCK, WASHINGTON. DATED 1985



WASHINGTON



FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 1

SITE VICINITY MAP
FORMER CUMMINGS OIL LEASE SITE
908 NORTHWEST KERRON AVENUE
WINLOCK, WASHINGTON

FARALLON PN: 283-005

Drawn By: DEW

Checked By: SP

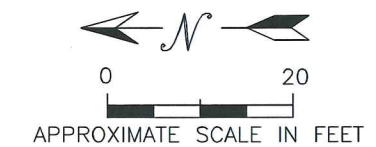
Date: 2/22/11

Disk Reference: 283005

BNSF MAIN LINE

LEGEND

- — — — — PROPERTY BOUNDARY
- +++++ RAILROAD TRACKS
- > DRAINAGE DITCH AND DIRECTION OF FLOW
- s - s - s - STORM SEWER LINE
- ss - ss - ss - SANITARY SEWER
- MW3 + MONITORING WELL (FARALLON 2006)
- (98.00) GROUNDWATER ELEVATION (DECEMBER 2010)
- 98.00 - - - GROUNDWATER ELEVATION CONTOUR
- ← APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- ▣ CATCH BASIN



MW-4
(101.12)

SPUR

GRAVEL PARKING

FORMER UST EXCAVATION AREA

GRAVEL PARKING

CULVERT

MW-1
(97.87)

MW-2
(98.31)

MW-3
(98.02)

NORTHWEST KERRON AVENUE

MW-5
(95.41)



FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 2

GROUNDWATER CONTOUR MAP
FOR MARCH 22, 2011
FORMER CUMMINGS OIL LEASE SITE
908 NORTHWEST KERRON AVENUE
WINLOCK, WASHINGTON

FARALLON PN: 283-005

Drawn By: DEW

Checked By: SP

Date: 6/13/11

Disk Reference: 283005

TABLES

GROUNDWATER MONITORING STATUS REPORT

MARCH 2011

Former Cummings Oil Lease Site

908 Northwest Kerron Avenue

Winlock, Washington

VCP No. SW0775

Farallon PN: 283-005

Table 1
Summary of Groundwater Elevation Data
Former Cummings Oil Lease Site
Winlock, Washington
Farallon PN: 283-005

Well Identification	Monitoring Date	Depth of Monitoring Well (feet)	Monitoring Well Screened Interval (feet bgs)	Wellhead Elevation ¹ (feet)	Depth to Water (feet bgs)	Groundwater Elevation (feet)
MW-1	12/23/2005	12	5-12	100.46	2.13	98.33
	8/18/2008				4.50	95.96
	3/11/2010				3.00	97.46
	6/8/2010				4.20	96.26
	10/20/2010				3.00	97.46
	12/27/2010				1.95	98.51
	3/22/2011				2.59	97.87
MW-2	12/23/2005	11	5-11	100.4	2.50	97.90
	8/18/2008				4.67	95.73
	3/11/2010				1.88	98.52
	6/8/2010				2.28	98.12
	10/20/2010				2.65	97.75
	12/27/2010				1.52	98.88
	3/22/2011				2.09	98.31
MW-3	12/23/2005	10	5-10	100.18	2.21	97.97
	8/18/2008				4.40	95.78
	3/11/2010				--	--
	6/8/2010				2.26	97.92
	10/20/2010				2.68	97.50
	12/27/2010				1.98	98.20
	3/22/2011				2.16	98.02
MW-4	12/23/2005	12	5-12	102.45	0.50	101.95
	8/18/2008				5.02	97.43
	3/11/2010				1.9	100.55
	6/8/2010				1.45	101.00
	10/20/2010				2.40	100.05
	12/27/2010				0.48	101.97
	3/22/2011				1.33	101.12
MW-5	8/18/2008	10	5-10	99.92	5.54	94.38
	3/11/2010				3.29	96.63
	6/8/2010				4.00	95.92
	10/20/2010				5.25	94.67
	12/27/2010				3.17	96.75
	3/22/2011				4.51	95.41

NOTES:

¹Elevations based on survey conducted by Farallon Consulting, L.L.C. to a benchmark of 105.59.

bgs = below ground surface

-- denotes depth not measured

Table 2
Groundwater Analytical Results for Petroleum Hydrocarbon Constituents
Former Cummings Oil Lease Site
Winlock, Washington
Farallon PN: 283-005

Sample Identification	Well Identification	Sample Date	Analytical Results (micrograms per liter)						
			GRO ¹	DRO ²	ORO ²	Benzene ³	Toluene ³	Ethylbenzene ³	Total Xylenes ³
MW1-122305	MW-1	12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00
MW1-081808		8/18/2008	<50.0	1,480	836	<0.500	<0.500	<0.500	<1.00
MW1-031110		3/11/2010	<50.0	590	540	<1.0	<1.0	<1.0	<6.0
MW1-060910		6/9/2010	<50.0	720	<460	<1.0	<1.0	<1.0	<3.0
MW1-102010		10/20/2010	<50.0	670	<430	<1.0	<1.0	<1.0	<3.0
MW1-122710		12/27/2010	<50.0	520	<380	<1.0	<1.0	<1.0	<3.0
MW1-032211		3/22/2011	<50.0	630	<410	<1.0	<1.0	<1.0	<3.0
MW2-122305	MW-2	12/23/2005	465	<238	<476	55.2	2.84	3.46	35.6
MW2-081808		8/18/2008	606	876	<500	30.6	1.12	2.56	30.9
MW2-031110		3/11/2010	150	660	470	27.7	<1.0	<1.0	<6.0
MW2-060910		6/9/2010	116	690	440	22.4	<1.0	<1.0	<3.0
MW2-102010		10/20/2010	95.2	810	590	10.6	<1.0	<1.0	<3.0
MW2-122710		12/27/2010	130	400	<380	18.6	<1.0	<1.0	<3.0
MW2-032211		3/22/2011	196	660	<430	47.8	<1.0	<1.0	<3.0
MW3-122305	MW-3	12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00
MW3-081808		8/18/2008	<50.0	1,660	887	<0.500	<0.500	<0.500	<1.00
Not Sampled		3/11/2010	--	--	--	--	--	--	--
MW3-060910		6/9/2010	<50.0	830	<400	<1.0	<1.0	<1.0	<3.0
MW3-102010		10/20/2010	<50.0	900	460	<1.0	<1.0	<1.0	<3.0
MW3-122710		12/27/2010	<50.0	630	<410	<1.0	<1.0	<1.0	<3.0
MW3-032211		3/22/2011	<50.0	780	<380	<1.0	<1.0	<1.0	<3.0
MW4-122305	MW-4	12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00
MW4-081808		8/18/2008	<50.0	<243	<485	<0.500	<0.500	<0.500	<1.00
MW4-031110		3/11/2010	<50.0	<78	<390	<1.0	<1.0	<1.0	<6.0
MW4-060910		6/9/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0
MW4-102010		10/20/2010	<50.0	<86	<430	<1.0	<1.0	<1.0	<3.0
MW4-122710		12/27/2010	<50.0	<83	<420	<1.0	<1.0	<1.0	<3.0
MW4-032211		3/22/2011	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0
MW5-081808	MW-5	8/18/2008	<50.0	433	<481	<0.500	<0.500	<0.500	<1.00
MW5-031110		3/11/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<6.0
MW5-060910		6/9/2010	<50.0	<84	<420	<1.0	<1.0	<1.0	<3.0
MW5-102010		10/20/2010	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0
MW5-122710		12/27/2010	<50.0	<87	<430	<1.0	<1.0	<1.0	<3.0
MW5-032211		3/22/2011	<50.0	<75	<380	<1.0	<1.0	<1.0	<3.0
MTCA Method A Cleanup Levels ⁴			800	500	500	5	1,000	700	1,000

NOTES:

Results in **bold** denote concentrations above applicable cleanup levels.

< denotes analyte not detected at or above the reporting limit listed.

-- denotes sample not analyzed.

¹ Analyzed by Northwest Method NWTPH-Gx.

² Analyzed by Northwest Method NWTPH-Dx.

³ Analyzed by U.S. Environmental Protection Agency (EPA) Method 8260B.

⁴ Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised November 2007.

DRO = total petroleum hydrocarbons (TPH) as diesel-range organics

GRO = TPH as gasoline-range organics

ORO = TPH as oil-range organics

Table 3
Summary of Groundwater Analytical Results for Polycyclic Aromatic Hydrocarbons
Former Cummings Oil Lease Site
Winlock, Washington 283-005

Sample Identification	Well Identification	Sample Date	Analytical Results (micrograms per liter)											Total cPAHs TEC ^{2,3}	
			Carcinogenic Polycyclic Aromatic Hydrocarbons ¹												
			Acenaphthene	Acenaphthylene	Fluorene ¹	Phenanthrene ¹	Benzo(a)pyrene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-c,d)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene		
MW1-031110	MW-1	3/11/2010	<0.016	<0.015	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW1-060910		6/9/2010	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106	
MW1-032511		3/25/2011	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW2-031110	MW-2	3/11/2010	0.059	<0.015	0.12	0.023	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW2-060910		6/9/2010	0.074	0.019	0.26	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW2-032511		3/25/2011	0.075	<0.017	0.17	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.0128
MW3-031110	MW-3	3/11/2010	Not Sampled												
MW3-060910		6/9/2011	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW3-032511		3/25/2011	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW4-031110	MW-4	3/11/2010	<0.015	<0.015	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW4-060910		6/9/2010	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW4-032511		3/25/2011	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	0.0121
MW5-031110	MW-5	3/11/2010	<0.016	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0113
MW5-060910		6/9/2010	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0106
MW5-032511		3/25/2011	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0113
MTCA Method A Cleanup Levels for Groundwater			960 ⁴	NR	160 ⁵	NR	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.10

NOTES:

< Denotes analyte not detected at or above the reporting limit listed.

¹ Analyzed by U.S. Environmental Protection Agency Method 8270C.

² Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 175-340 of the Washington Administrative Code.

³ For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate the TEC.

⁴ Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater, Table 72A-1 of Section 900 of Chapter 175-340 of the Washington Administrative Code, as revised November 2007.

⁵ Washington State Department of Ecology Cleanup Levels and Risk Calculations under MTCA Standard Method B Formula Values for Groundwater

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

NR = not researched

TEC = toxic equivalent concentration

Table 4
Summary of Groundwater Geochemical Parameters
Former Cummings Oil Lease Site
Winlock, Washington
Farallon PN: 283-005

Well Identification	Sample Date	Temperature (°C)	Specific Conductance (mS/cm)	pH (pH units)	Dissolved Oxygen (mg/l)	Oxidation-Reduction Potential (mV)	Sulfate ¹ (mg/l)	Nitrate ¹ (mg/l as Nitrogen)	Nitrite ¹ (mg/l)	Methane ² (µg/l)	Ferrous Iron ³ (mg/l)
MW-1	8/18/2008	17.60	0.221	6.03	0.92	-7.70	—	—	—	—	—
	3/11/2010	10.08	0.289	6.70	0.47	117.7	74.4	<0.20	<0.20	289	—
	6/9/2010	14.21	0.348	6.21	0.42	11.1	59.4	<0.050	0.012	520	9.8
	10/20/2010	16.20	0.234	6.13	0.64	12.1	59.1	<0.20	<0.10	388	2.3
	12/27/2010	10.65	0.28	6.16	0.29	-1.2	38.3	<0.20	<0.10	668	15.3
	3/22/2011	9.27	0.308	7.29	0.15	-61.9	34.3	0.080 ⁴	—	22.0	3.2
MW-2	8/18/2008	17.65	0.316	6.64	0.99	-77.20	0.420	<0.200	—	1,660	—
	3/11/2010	9.93	0.247	7.28	0.77	101.2	30.31	<0.20	<0.10	1,620	—
	6/9/2010	14.48	0.277	6.84	1.00	75.8	7.9	<0.050	<0.010	3,500	3.2
	10/20/2010	16.76	0.279	6.61	0.91	-50.3	11.2	<0.20	<0.10	6,320	1.3
	12/27/2010	10.39	0.305	6.60	0.39	-78.5	12.5	<0.20	<0.10	2,980	30.2
	3/22/2011	8.97	0.253	6.63	0.57	191.6	8.3	0.10 ⁴	—	1,160	1.8
MW-3	8/18/2008	17.38	0.382	6.34	1.08	-75.60	—	—	—	—	—
	3/11/2010	—	—	—	—	—	—	—	—	—	—
	6/9/2010	13.87	0.387	6.36	0.50	-6.80	13.4	<0.050	<0.010	380	3.90
	10/20/2010	17.26	0.321	6.57	0.87	-33.4	14.6	<0.20	<0.10	338	1.50
	12/27/2010	11.09	0.378	6.48	0.45	-50.8	13.9	<0.20	<0.10	339	23.2
	3/22/2011	9.72	0.416	8.06	0.25	-78.2	17.8	0.073 ⁴	—	224	4.2
MW-4	8/18/2008	13.78	0.241	6.75	0.97	-74.90	16.7	<0.200	—	22.8	—
	3/11/2010	9.59	0.255	7.92	0.57	85.60	17.6	<0.20	<0.20	47.6	—
	6/9/2010	12.42	0.260	7.16	0.51	85.5	12.5	<0.050	0.011	93	1.2
	10/20/2010	12.96	0.206	7.42	0.66	-77.8	14.1	<0.20	<0.10	16.9	0.52
	12/27/2010	10.84	0.205	6.11	0.49	53.5	9.1	<0.20	<0.10	51.6	19.5
	3/22/2011	9.20	0.196	6.01	0.91	211.2	14.3	0.12 ⁴	—	<10.0	2.2
MW-5	8/18/2008	17.57	0.466	6.62	1.45	-31.60	8.03	<0.200	—	40.6	—
	3/11/2010	10.30	0.067	7.63	5.66	107.9	3.2	0.61	<0.10	<10.0	—
	6/9/2010	14.74	0.074	5.76	2.27	213.5	4.7	0.87	<0.010	<2.3	<0.17
	10/20/2010	17.59	0.085	6.03	1.34	75.5	6.3	0.65	<0.10	<10.0	<0.20
	12/27/2010	10.69	0.073	5.72	5.62	140.7	3.9	1.2	<0.10	<10.0	<0.20
	3/22/2011	8.89	0.072	5.62	6.02	47.2	7.0	0.48 ⁴	—	<10.0	0.50

NOTES

— = not measured/analyzed

°C = degrees Celsius

µg/l = micrograms per liter

mg/l = milligrams per liter

mS/cm = millisiemens per centimeter

mV = millivolts

¹Analyzed by U.S. Environmental Protection Agency (EPA) Method 300.0. Samples collected on 3/22/2011 were analyzed by EPA Method 353.2.

²Analyzed by Method RSK 175.

³Analyzed by SM 3500-FE B#4. Samples collected on 3/22/2011 were analyzed in the field using Ferrous iron reagent test kits.

⁴Total nitrogen

**APPENDIX A
LABORATORY ANALYTICAL REPORT**

GROUNDWATER MONITORING STATUS REPORT

MARCH 2011

**Former Cummings Oil Lease Site
908 Northwest Kerron Avenue
Winlock, Washington
VCP No. SW0775**

Farallon PN: 283-005

April 06, 2011

Stacy Patterson
Farallon Consulting LLC
975 5th Avenue Northwest
Issaquah, WA 98027

RE: Project: Winlock 623-009
Pace Project No.: 257037

Dear Stacy Patterson:

Enclosed are the analytical results for sample(s) received by the laboratory on March 23, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Andy Brownfield

andy.brownfield@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Winlock 623-009

Pace Project No.: 257037

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

EPA Region 8 Certification #: Pace

Florida/NELAP Certification #: E87605

Georgia Certification #: 959

Idaho Certification #: MN00064

Illinois Certification #: 200011

Iowa Certification #: 368

Kansas Certification #: E-10167

Louisiana Certification #: 03086

Louisiana Certification #: LA080009

Maine Certification #: 2007029

Maryland Certification #: 322

Michigan DEQ Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT CERT0092

Nebraska Certification #: Pace

Nevada Certification #: MN_00064

New Jersey Certification #: MN-002

New Mexico Certification #: Pace

New York Certification #: 11647

North Carolina Certification #: 530

North Dakota Certification #: R-036

North Dakota Certification #: R-036A

Ohio VAP Certification #: CL101

Oklahoma Certification #: D9921

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Tennessee Certification #: 02818

Texas Certification #: T104704192

Washington Certification #: C754

Wisconsin Certification #: 999407970

Washington Certification IDs

940 South Harney Street, Seattle, WA 98108

Alaska CS Certification #: UST-025

Alaska Drinking Water VOC Certification #: WA01230

Alaska Drinking Water Micro Certification #: WA01230

California Certification #: 01153CA

Florida/NELAP Certification #: E87617

Oregon Certification #: WA200007

Washington Certification #: C1229

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SAMPLE ANALYTE COUNT

Project: Winlock 623-009

Pace Project No.: 257037

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
257037001	MW5-032211	RSK 175	CJR	1	PASI-M
		NWTPH-Dx	DMT	4	PASI-S
		EPA 8270 by SIM	ERB	20	PASI-S
		EPA 5030B/8260	LPM	8	PASI-S
		NWTPH-Gx	LNH	2	PASI-S
		EPA 300.0	CMS	1	PASI-S
		EPA 353.2	CMS	1	PASI-S
257037002	MW4-032211	RSK 175	CJR	1	PASI-M
		NWTPH-Dx	DMT	4	PASI-S
		EPA 8270 by SIM	ERB	20	PASI-S
		EPA 5030B/8260	LPM	8	PASI-S
		NWTPH-Gx	LNH	2	PASI-S
		EPA 300.0	CMS	1	PASI-S
		EPA 353.2	CMS	1	PASI-S
257037003	MW1-032211	RSK 175	CJR	1	PASI-M
		NWTPH-Dx	DMT	4	PASI-S
		EPA 8270 by SIM	ERB	20	PASI-S
		EPA 5030B/8260	LPM	8	PASI-S
		NWTPH-Gx	LNH	2	PASI-S
		EPA 300.0	CMS	1	PASI-S
		EPA 353.2	CMS	1	PASI-S
257037004	MW2-032211	RSK 175	CJR	1	PASI-M
		NWTPH-Dx	DMT	4	PASI-S
		EPA 8270 by SIM	ERB	20	PASI-S
		EPA 5030B/8260	LPM	8	PASI-S
		NWTPH-Gx	LNH	2	PASI-S
		EPA 300.0	CMS	1	PASI-S
		EPA 353.2	CMS	1	PASI-S
257037005	MW3-032211	RSK 175	CJR	1	PASI-M
		NWTPH-Dx	DMT	4	PASI-S
		EPA 8270 by SIM	ERB	20	PASI-S
		EPA 5030B/8260	LPM	8	PASI-S
		NWTPH-Gx	LNH	2	PASI-S
		EPA 300.0	CMS	1	PASI-S
		EPA 353.2	CMS	1	PASI-S
257037006	TRIP BLANKS	EPA 5030B/8260	LPM	8	PASI-S
		NWTPH-Gx	LNH	2	PASI-S

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Winlock 623-009

Pace Project No.: 257037

Method: RSK 175

Description: RSK 175 AIR Headspace

Client: BNSF_Farallon - WA

Date: April 06, 2011

General Information:

5 samples were analyzed for RSK 175. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Winlock 623-009
Pace Project No.: 257037

Method: NWTPH-Dx
Description: NWTPH-Dx GCS
Client: BNSF_Farallon - WA
Date: April 06, 2011

General Information:

5 samples were analyzed for NWTPH-Dx. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Winlock 623-009
Pace Project No.: 257037

Method: EPA 8270 by SIM
Description: 8270 MSSV Low Level PAH SIM
Client: BNSF_Farallon - WA
Date: April 06, 2011

General Information:

5 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSSV/1562

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Winlock 623-009
Pace Project No.: 257037

Method: EPA 5030B/8260
Description: 8260 MSV
Client: BNSF_Farallon - WA
Date: April 06, 2011

General Information:

6 samples were analyzed for EPA 5030B/8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Winlock 623-009
Pace Project No.: 257037

Method: NWTPH-Gx
Description: NWTPH-Gx MSV
Client: BNSF_Farallon - WA
Date: April 06, 2011

General Information:

6 samples were analyzed for NWTPH-Gx. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Winlock 623-009
Pace Project No.: 257037

Method: EPA 300.0
Description: 300.0 IC Anions 28 Days
Client: BNSF_Farallon - WA
Date: April 06, 2011

General Information:

5 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Winlock 623-009

Pace Project No.: 257037

Method: EPA 353.2

Description: 353.2 Nitrogen, NO₂/NO₃ pres.

Client: BNSF_Farallon - WA

Date: April 06, 2011

General Information:

5 samples were analyzed for EPA 353.2. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/1947

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 257037001, 257037002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 65128)
 - Nitrogen, NO₂ plus NO₃
- MSD (Lab ID: 65129)
 - Nitrogen, NO₂ plus NO₃

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Winlock 623-009
Pace Project No.: 257037

Sample: MW5-032211		Lab ID: 257037001	Collected: 03/22/11 09:20	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Methane	ND ug/L		10.0	1		03/29/11 05:12	74-82-8	
NWTPH-Dx GCS		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510						
Diesel Range	ND mg/L		0.075	1	03/31/11 16:00	04/01/11 14:36		
Motor Oil Range	ND mg/L		0.38	1	03/31/11 16:00	04/01/11 14:36	64742-65-0	
n-Octacosane (S)	104 %		50-150	1	03/31/11 16:00	04/01/11 14:36	630-02-4	
o-Terphenyl (S)	100 %		50-150	1	03/31/11 16:00	04/01/11 14:36	84-15-1	
8270 MSSV Low Level PAH SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1-Methylnaphthalene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	90-12-0	
2-Methylnaphthalene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	91-57-6	
Acenaphthene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	83-32-9	
Acenaphthylene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	208-96-8	
Anthracene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	120-12-7	
Benzo(a)anthracene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	56-55-3	
Benzo(a)pyrene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	50-32-8	
Benzo(b)fluoranthene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	205-99-2	
Benzo(g,h,i)perylene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	191-24-2	
Benzo(k)fluoranthene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	207-08-9	
Chrysene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	218-01-9	
Dibenz(a,h)anthracene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	53-70-3	
Fluoranthene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	206-44-0	
Fluorene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	86-73-7	
Indeno(1,2,3-cd)pyrene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	193-39-5	
Naphthalene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	91-20-3	
Phenanthrene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	85-01-8	
Pyrene	ND ug/L		0.015	1	03/24/11 11:00	03/25/11 16:33	129-00-0	
2-Fluorobiphenyl (S)	62 %		19-118	1	03/24/11 11:00	03/25/11 16:33	321-60-8	
Terphenyl-d14 (S)	73 %		37-127	1	03/24/11 11:00	03/25/11 16:33	1718-51-0	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND ug/L		1.0	1		03/28/11 15:34	71-43-2	
Ethylbenzene	ND ug/L		1.0	1		03/28/11 15:34	100-41-4	
Toluene	ND ug/L		1.0	1		03/28/11 15:34	108-88-3	
Xylene (Total)	ND ug/L		3.0	1		03/28/11 15:34	1330-20-7	
4-Bromofluorobenzene (S)	102 %		80-120	1		03/28/11 15:34	460-00-4	
Dibromofluoromethane (S)	92 %		80-122	1		03/28/11 15:34	1868-53-7	
1,2-Dichloroethane-d4 (S)	82 %		80-124	1		03/28/11 15:34	17060-07-0	
Toluene-d8 (S)	100 %		80-123	1		03/28/11 15:34	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		03/30/11 06:44		
4-Bromofluorobenzene (S)	103 %		50-150	1		03/30/11 06:44	460-00-4	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	7.0 mg/L		1.0	1		03/25/11 17:56	14808-79-8	

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ANALYTICAL RESULTS

Project: Winlock 623-009
Pace Project No.: 257037

Sample: MW5-032211		Lab ID: 257037001	Collected: 03/22/11 09:20	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	0.48	mg/L	0.050	1		04/04/11 16:28		

ANALYTICAL RESULTS

Project: Winlock 623-009

Pace Project No.: 257037

Sample: MW4-032211		Lab ID: 257037002		Collected: 03/22/11 09:36		Received: 03/23/11 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
RSK 175 AIR Headspace		Analytical Method: RSK 175							
Methane	ND ug/L		10.0	1		03/29/11 06:54	74-82-8		
NWTPH-Dx GCS		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510							
Diesel Range	ND mg/L		0.085	1	03/31/11 16:00	04/01/11 15:09			
Motor Oil Range	ND mg/L		0.43	1	03/31/11 16:00	04/01/11 15:09	64742-65-0		
n-Octacosane (S)	103 %		50-150	1	03/31/11 16:00	04/01/11 15:09	630-02-4		
o-Terphenyl (S)	100 %		50-150	1	03/31/11 16:00	04/01/11 15:09	84-15-1		
8270 MSSV Low Level PAH SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510							
1-Methylnaphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	90-12-0		
2-Methylnaphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	91-57-6		
Acenaphthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	83-32-9		
Acenaphthylene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	208-96-8		
Anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	120-12-7		
Benzo(a)anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	56-55-3		
Benzo(a)pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	50-32-8		
Benzo(b)fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	205-99-2		
Benzo(g,h,i)perylene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	191-24-2		
Benzo(k)fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	207-08-9		
Chrysene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	218-01-9		
Dibenz(a,h)anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	53-70-3		
Fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	206-44-0		
Fluorene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	86-73-7		
Indeno(1,2,3-cd)pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	193-39-5		
Naphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	91-20-3		
Phenanthrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	85-01-8		
Pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 16:50	129-00-0		
2-Fluorobiphenyl (S)	62 %		19-118	1	03/24/11 11:00	03/25/11 16:50	321-60-8		
Terphenyl-d14 (S)	80 %		37-127	1	03/24/11 11:00	03/25/11 16:50	1718-51-0		
8260 MSV		Analytical Method: EPA 5030B/8260							
Benzene	ND ug/L		1.0	1		03/28/11 16:32	71-43-2		
Ethylbenzene	ND ug/L		1.0	1		03/28/11 16:32	100-41-4		
Toluene	ND ug/L		1.0	1		03/28/11 16:32	108-88-3		
Xylene (Total)	ND ug/L		3.0	1		03/28/11 16:32	1330-20-7		
4-Bromofluorobenzene (S)	101 %		80-120	1		03/28/11 16:32	460-00-4		
Dibromofluoromethane (S)	94 %		80-122	1		03/28/11 16:32	1868-53-7		
1,2-Dichloroethane-d4 (S)	81 %		80-124	1		03/28/11 16:32	17060-07-0		
Toluene-d8 (S)	98 %		80-123	1		03/28/11 16:32	2037-26-5		
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx							
Gasoline Range Organics	ND ug/L		50.0	1		03/30/11 07:23			
4-Bromofluorobenzene (S)	97 %		50-150	1		03/30/11 07:23	460-00-4		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	14.3 mg/L		1.0	1		03/25/11 18:14	14808-79-8		

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ANALYTICAL RESULTS

Project: Winlock 623-009
Pace Project No.: 257037

Sample: MW4-032211		Lab ID: 257037002	Collected: 03/22/11 09:36		Received: 03/23/11 12:30	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	0.12	mg/L	0.050	1		04/04/11 16:32		

ANALYTICAL RESULTS

Project: Winlock 623-009

Pace Project No.: 257037

Sample: MW1-032211		Lab ID: 257037003	Collected: 03/22/11 10:45	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Methane	22.0 ug/L		10.0	1		03/29/11 05:37	74-82-8	
NWTPH-Dx GCS		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510						
Diesel Range	0.63 mg/L		0.082	1	03/31/11 16:00	04/01/11 15:25		
Motor Oil Range	ND mg/L		0.41	1	03/31/11 16:00	04/01/11 15:25	64742-65-0	
n-Octacosane (S)	111 %		50-150	1	03/31/11 16:00	04/01/11 15:25	630-02-4	
o-Terphenyl (S)	106 %		50-150	1	03/31/11 16:00	04/01/11 15:25	84-15-1	
8270 MSSV Low Level PAH SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1-Methylnaphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	90-12-0	
2-Methylnaphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	91-57-6	
Acenaphthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	83-32-9	
Acenaphthylene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	208-96-8	
Anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	120-12-7	
Benzo(a)anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	56-55-3	
Benzo(a)pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	50-32-8	
Benzo(b)fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	205-99-2	
Benzo(g,h,i)perylene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	191-24-2	
Benzo(k)fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	207-08-9	
Chrysene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	218-01-9	
Dibenz(a,h)anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	53-70-3	
Fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	206-44-0	
Fluorene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	86-73-7	
Indeno(1,2,3-cd)pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	193-39-5	
Naphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	91-20-3	
Phenanthrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	85-01-8	
Pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:07	129-00-0	
2-Fluorobiphenyl (S)	48 %		19-118	1	03/24/11 11:00	03/25/11 17:07	321-60-8	
Terphenyl-d14 (S)	69 %		37-127	1	03/24/11 11:00	03/25/11 17:07	1718-51-0	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND ug/L		1.0	1		03/28/11 16:52	71-43-2	
Ethylbenzene	ND ug/L		1.0	1		03/28/11 16:52	100-41-4	
Toluene	ND ug/L		1.0	1		03/28/11 16:52	108-88-3	
Xylene (Total)	ND ug/L		3.0	1		03/28/11 16:52	1330-20-7	
4-Bromofluorobenzene (S)	102 %		80-120	1		03/28/11 16:52	460-00-4	
Dibromofluoromethane (S)	94 %		80-122	1		03/28/11 16:52	1868-53-7	
1,2-Dichloroethane-d4 (S)	84 %		80-124	1		03/28/11 16:52	17060-07-0	
Toluene-d8 (S)	96 %		80-123	1		03/28/11 16:52	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		03/30/11 07:43		
4-Bromofluorobenzene (S)	99 %		50-150	1		03/30/11 07:43	460-00-4	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	34.3 mg/L		5.0	5		03/25/11 18:32	14808-79-8	

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ANALYTICAL RESULTS

Project: Winlock 623-009

Pace Project No.: 257037

Sample: MW1-032211		Lab ID: 257037003	Collected: 03/22/11 10:45		Received: 03/23/11 12:30	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	0.080	mg/L	0.050	1		04/04/11 16:34		

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ANALYTICAL RESULTS

Project: Winlock 623-009

Pace Project No.: 257037

Sample: MW2-032211		Lab ID: 257037004	Collected: 03/22/11 10:45	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Methane	1160 ug/L		10.0	1		03/29/11 06:03	74-82-8	
NWTPH-Dx GCS		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510						
Diesel Range	0.66 mg/L		0.085	1	03/31/11 16:00	04/01/11 15:42		
Motor Oil Range	ND mg/L		0.43	1	03/31/11 16:00	04/01/11 15:42	64742-65-0	
n-Octacosane (S)	105 %		50-150	1	03/31/11 16:00	04/01/11 15:42	630-02-4	
o-Terphenyl (S)	104 %		50-150	1	03/31/11 16:00	04/01/11 15:42	84-15-1	
8270 MSSV Low Level PAH SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1-Methylnaphthalene	0.77 ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	90-12-0	
2-Methylnaphthalene	0.031 ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	91-57-6	
Acenaphthene	0.075 ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	83-32-9	
Acenaphthylene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	208-96-8	
Anthracene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	120-12-7	
Benzo(a)anthracene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	56-55-3	
Benzo(a)pyrene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	50-32-8	
Benzo(b)fluoranthene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	205-99-2	
Benzo(g,h,i)perylene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	191-24-2	
Benzo(k)fluoranthene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	207-08-9	
Chrysene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	218-01-9	
Dibenz(a,h)anthracene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	53-70-3	
Fluoranthene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	206-44-0	
Fluorene	0.17 ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	86-73-7	
Indeno(1,2,3-cd)pyrene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	193-39-5	
Naphthalene	0.18 ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	91-20-3	
Phenanthrene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	85-01-8	
Pyrene	ND ug/L		0.017	1	03/24/11 11:00	03/25/11 17:23	129-00-0	
2-Fluorobiphenyl (S)	55 %		19-118	1	03/24/11 11:00	03/25/11 17:23	321-60-8	
Terphenyl-d14 (S)	72 %		37-127	1	03/24/11 11:00	03/25/11 17:23	1718-51-0	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	47.8 ug/L		1.0	1		03/28/11 17:12	71-43-2	
Ethylbenzene	ND ug/L		1.0	1		03/28/11 17:12	100-41-4	
Toluene	ND ug/L		1.0	1		03/28/11 17:12	108-88-3	
Xylene (Total)	ND ug/L		3.0	1		03/28/11 17:12	1330-20-7	
4-Bromofluorobenzene (S)	102 %		80-120	1		03/28/11 17:12	460-00-4	
Dibromofluoromethane (S)	95 %		80-122	1		03/28/11 17:12	1868-53-7	
1,2-Dichloroethane-d4 (S)	86 %		80-124	1		03/28/11 17:12	17060-07-0	
Toluene-d8 (S)	95 %		80-123	1		03/28/11 17:12	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	196 ug/L		50.0	1		03/30/11 08:03		
4-Bromofluorobenzene (S)	103 %		50-150	1		03/30/11 08:03	460-00-4	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	8.3 mg/L		1.0	1		03/25/11 18:51	14808-79-8	

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ANALYTICAL RESULTS

Project: Winlock 623-009

Pace Project No.: 257037

Sample: MW2-032211		Lab ID: 257037004	Collected: 03/22/11 10:45	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	0.10	mg/L	0.050	1		04/04/11 16:35		

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ANALYTICAL RESULTS

Project: Winlock 623-009

Pace Project No.: 257037

Sample: MW3-032211		Lab ID: 257037005	Collected: 03/22/11 00:00	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Methane	224 ug/L		10.0	1		03/29/11 06:28	74-82-8	
NWTPH-Dx GCS		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510						
Diesel Range	0.78 mg/L		0.075	1	03/31/11 16:00	04/01/11 15:58		
Motor Oil Range	ND mg/L		0.38	1	03/31/11 16:00	04/01/11 15:58	64742-65-0	
n-Octacosane (S)	101 %		50-150	1	03/31/11 16:00	04/01/11 15:58	630-02-4	
o-Terphenyl (S)	99 %		50-150	1	03/31/11 16:00	04/01/11 15:58	84-15-1	
8270 MSSV Low Level PAH SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1-Methylnaphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	90-12-0	
2-Methylnaphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	91-57-6	
Acenaphthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	83-32-9	
Acenaphthylene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	208-96-8	
Anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	120-12-7	
Benzo(a)anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	56-55-3	
Benzo(a)pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	50-32-8	
Benzo(b)fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	205-99-2	
Benzo(g,h,i)perylene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	191-24-2	
Benzo(k)fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	207-08-9	
Chrysene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	218-01-9	
Dibenz(a,h)anthracene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	53-70-3	
Fluoranthene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	206-44-0	
Fluorene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	86-73-7	
Indeno(1,2,3-cd)pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	193-39-5	
Naphthalene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	91-20-3	
Phenanthrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	85-01-8	
Pyrene	ND ug/L		0.016	1	03/24/11 11:00	03/25/11 17:40	129-00-0	
2-Fluorobiphenyl (S)	63 %		19-118	1	03/24/11 11:00	03/25/11 17:40	321-60-8	
Terphenyl-d14 (S)	75 %		37-127	1	03/24/11 11:00	03/25/11 17:40	1718-51-0	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND ug/L		1.0	1		03/28/11 17:32	71-43-2	
Ethylbenzene	ND ug/L		1.0	1		03/28/11 17:32	100-41-4	
Toluene	ND ug/L		1.0	1		03/28/11 17:32	108-88-3	
Xylene (Total)	ND ug/L		3.0	1		03/28/11 17:32	1330-20-7	
4-Bromofluorobenzene (S)	100 %		80-120	1		03/28/11 17:32	460-00-4	
Dibromofluoromethane (S)	93 %		80-122	1		03/28/11 17:32	1868-53-7	
1,2-Dichloroethane-d4 (S)	83 %		80-124	1		03/28/11 17:32	17060-07-0	
Toluene-d8 (S)	99 %		80-123	1		03/28/11 17:32	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		03/30/11 08:23		
4-Bromofluorobenzene (S)	99 %		50-150	1		03/30/11 08:23	460-00-4	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	17.8 mg/L		1.0	1		03/25/11 19:09	14808-79-8	

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ANALYTICAL RESULTS

Project: Winlock 623-009

Pace Project No.: 257037

Sample: MW3-032211		Lab ID: 257037005	Collected: 03/22/11 00:00	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	0.073	mg/L	0.050	1		04/04/11 16:37		

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ANALYTICAL RESULTS

Project: Winlock 623-009
Pace Project No.: 257037

Sample: TRIP BLANKS		Lab ID: 257037006	Collected: 03/19/11 00:00	Received: 03/23/11 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND ug/L		1.0	1		03/28/11 14:53	71-43-2	
Ethylbenzene	ND ug/L		1.0	1		03/28/11 14:53	100-41-4	
Toluene	ND ug/L		1.0	1		03/28/11 14:53	108-88-3	
Xylene (Total)	ND ug/L		3.0	1		03/28/11 14:53	1330-20-7	
4-Bromofluorobenzene (S)	105 %		80-120	1		03/28/11 14:53	460-00-4	
Dibromofluoromethane (S)	94 %		80-122	1		03/28/11 14:53	1868-53-7	
1,2-Dichloroethane-d4 (S)	81 %		80-124	1		03/28/11 14:53	17060-07-0	
Toluene-d8 (S)	99 %		80-123	1		03/28/11 14:53	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		03/30/11 05:44		
4-Bromofluorobenzene (S)	104 %		50-150	1		03/30/11 05:44	460-00-4	

QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

QC Batch:	AIR/11981	Analysis Method:	RSK 175
QC Batch Method:	RSK 175	Analysis Description:	RSK 175 AIR HEADSPACE
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005			

METHOD BLANK:	948699	Matrix:	Water
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005			

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methane	ug/L	ND	10.0	03/28/11 21:58	

LABORATORY CONTROL SAMPLE & LCSD: 948700		948701								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Methane	ug/L	60.7	58.6	50.8	97	84	70-130	14	30	

QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

QC Batch: OEXT/3500 Analysis Method: NWTPH-Dx
QC Batch Method: EPA 3510 Analysis Description: NWTPH-Dx GCS
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

METHOD BLANK: 64834 Matrix: Water
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range	mg/L	ND	0.080	04/01/11 14:03	
Motor Oil Range	mg/L	ND	0.40	04/01/11 14:03	
n-Octacosane (S)	%	104	50-150	04/01/11 14:03	
o-Terphenyl (S)	%	97	50-150	04/01/11 14:03	

LABORATORY CONTROL SAMPLE: 64835

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range	mg/L	5	4.7	94	51-147	
Motor Oil Range	mg/L	5	4.9	97	20-160	
n-Octacosane (S)	%			104	50-150	
o-Terphenyl (S)	%			117	50-150	

SAMPLE DUPLICATE: 64836

Parameter	Units	257037001 Result	Dup Result	RPD	Qualifiers
Diesel Range	mg/L	ND	.025J		
Motor Oil Range	mg/L	ND	.058J		
n-Octacosane (S)	%	104	108	4	
o-Terphenyl (S)	%	100	105	5	

SAMPLE DUPLICATE: 64837

Parameter	Units	257037005 Result	Dup Result	RPD	Qualifiers
Diesel Range	mg/L	0.78	0.85	8	
Motor Oil Range	mg/L	ND	.32J		
n-Octacosane (S)	%	101	106	18	
o-Terphenyl (S)	%	99	103	17	

QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

QC Batch: OEXT/3464

Analysis Method: EPA 8270 by SIM

QC Batch Method: EPA 3510

Analysis Description: 8270 Low Level PAH SIM

Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

METHOD BLANK: 63818

Matrix: Water

Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	ND	0.015	03/24/11 15:26	
2-Methylnaphthalene	ug/L	ND	0.015	03/24/11 15:26	
Acenaphthene	ug/L	ND	0.015	03/24/11 15:26	
Acenaphthylene	ug/L	ND	0.015	03/24/11 15:26	
Anthracene	ug/L	ND	0.015	03/24/11 15:26	
Benzo(a)anthracene	ug/L	ND	0.015	03/24/11 15:26	
Benzo(a)pyrene	ug/L	ND	0.015	03/24/11 15:26	
Benzo(b)fluoranthene	ug/L	ND	0.015	03/24/11 15:26	
Benzo(g,h,i)perylene	ug/L	ND	0.015	03/24/11 15:26	
Benzo(k)fluoranthene	ug/L	ND	0.015	03/24/11 15:26	
Chrysene	ug/L	ND	0.015	03/24/11 15:26	
Dibenz(a,h)anthracene	ug/L	ND	0.015	03/24/11 15:26	
Fluoranthene	ug/L	ND	0.015	03/24/11 15:26	
Fluorene	ug/L	ND	0.015	03/24/11 15:26	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.015	03/24/11 15:26	
Naphthalene	ug/L	ND	0.015	03/24/11 15:26	
Phenanthrene	ug/L	ND	0.015	03/24/11 15:26	
Pyrene	ug/L	ND	0.015	03/24/11 15:26	
2-Fluorobiphenyl (S)	%	56	19-118	03/24/11 15:26	
Terphenyl-d14 (S)	%	78	37-127	03/24/11 15:26	

LABORATORY CONTROL SAMPLE: 63819

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/L	2	1.2	58	33-103	
2-Methylnaphthalene	ug/L	2	1.1	56	30-107	
Acenaphthene	ug/L	2	1.3	63	31-112	
Acenaphthylene	ug/L	2	1.3	67	25-127	
Anthracene	ug/L	2	1.4	72	27-127	
Benzo(a)anthracene	ug/L	2	1.6	79	44-128	
Benzo(a)pyrene	ug/L	2	1.7	83	37-132	
Benzo(b)fluoranthene	ug/L	2	1.5	76	47-131	
Benzo(g,h,i)perylene	ug/L	2	1.5	76	45-130	
Benzo(k)fluoranthene	ug/L	2	1.6	80	50-133	
Chrysene	ug/L	2	1.6	80	46-133	
Dibenz(a,h)anthracene	ug/L	2	1.5	74	49-132	
Fluoranthene	ug/L	2	1.5	76	43-133	
Fluorene	ug/L	2	1.5	74	29-136	
Indeno(1,2,3-cd)pyrene	ug/L	2	1.5	76	50-130	
Naphthalene	ug/L	2	1.1	56	27-108	
Phenanthrene	ug/L	2	1.4	72	41-119	

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QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

LABORATORY CONTROL SAMPLE: 63819

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Pyrene	ug/L	2	1.6	80	50-127	
2-Fluorobiphenyl (S)	%			63	19-118	
Terphenyl-d14 (S)	%			82	37-127	

QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

QC Batch: MSV/4087 Analysis Method: EPA 5030B/8260
QC Batch Method: EPA 5030B/8260 Analysis Description: 8260 MSV Water 10 mL Purge
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005, 257037006

METHOD BLANK: 63770

Matrix: Water

Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005, 257037006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/28/11 10:14	
Ethylbenzene	ug/L	ND	1.0	03/28/11 10:14	
Toluene	ug/L	ND	1.0	03/28/11 10:14	
Xylene (Total)	ug/L	ND	3.0	03/28/11 10:14	
1,2-Dichloroethane-d4 (S)	%	84	80-124	03/28/11 10:14	
4-Bromofluorobenzene (S)	%	101	80-120	03/28/11 10:14	
Dibromofluoromethane (S)	%	97	80-122	03/28/11 10:14	
Toluene-d8 (S)	%	96	80-123	03/28/11 10:14	

LABORATORY CONTROL SAMPLE: 63771

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.5	92	76-127	
Ethylbenzene	ug/L	20	18.0	90	72-125	
Toluene	ug/L	20	17.4	87	69-125	
Xylene (Total)	ug/L	60	54.7	91	74-124	
1,2-Dichloroethane-d4 (S)	%			82	80-124	
4-Bromofluorobenzene (S)	%			101	80-120	
Dibromofluoromethane (S)	%			97	80-122	
Toluene-d8 (S)	%			103	80-123	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 64412

64413

Parameter	Units	257037003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	ND	20	20	19.5	21.9	97	110	75-124	12	
Ethylbenzene	ug/L	ND	20	20	18.3	21.0	92	105	76-124	13	
Toluene	ug/L	ND	20	20	18.1	20.4	90	102	75-124	12	
Xylene (Total)	ug/L	ND	60	60	53.9	61.3	89	102	76-123	13	
1,2-Dichloroethane-d4 (S)	%						83	83	80-124		
4-Bromofluorobenzene (S)	%						102	104	80-120		
Dibromofluoromethane (S)	%						94	96	80-122		
Toluene-d8 (S)	%						100	102	80-123		

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QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

QC Batch: MSV/4123 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx MSV Water
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005, 257037006

METHOD BLANK: 64562

Matrix: Water

Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005, 257037006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	50.0	03/30/11 02:29	
4-Bromofluorobenzene (S)	%	104	50-150	03/30/11 02:29	

LABORATORY CONTROL SAMPLE: 64563

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	ug/L	500	496	99	50-163	
4-Bromofluorobenzene (S)	%			99	50-150	

SAMPLE DUPLICATE: 64920

Parameter	Units	257037001 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	ug/L	ND	8.5J		
4-Bromofluorobenzene (S)	%	103	101	1	

SAMPLE DUPLICATE: 64921

Parameter	Units	257055007 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	ug/L	ND	8.8J		
4-Bromofluorobenzene (S)	%	99	103	3	

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QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

QC Batch: WETA/1929 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

METHOD BLANK: 63785 Matrix: Water
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	03/25/11 12:22	

LABORATORY CONTROL SAMPLE: 63786

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	15	15.7	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 63787 63788

Parameter	Units	257034001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Sulfate	mg/L	6.6	15	15	22.7	22.0	107	103	90-110	3	

QUALITY CONTROL DATA

Project: Winlock 623-009

Pace Project No.: 257037

QC Batch: WETA/1947 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

METHOD BLANK: 65126 Matrix: Water
Associated Lab Samples: 257037001, 257037002, 257037003, 257037004, 257037005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.050	04/04/11 16:23	

LABORATORY CONTROL SAMPLE: 65127

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.1	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 65128 65129

Parameter	Units	257037001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.48	1	1	1.6	1.6	114	111	90-110	1	M1

MATRIX SPIKE SAMPLE: 65130

Parameter	Units	257037002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.12	1	1.2	110	90-110	

QUALIFIERS

Project: Winlock 623-009

Pace Project No.: 257037

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel Clean-Up

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-S Pace Analytical Services - Seattle

BATCH QUALIFIERS

Batch: MSSV/1562

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Winlock 623-009
Pace Project No.: 257037

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
257037001	MW5-032211	RSK 175	AIR/11981		
257037002	MW4-032211	RSK 175	AIR/11981		
257037003	MW1-032211	RSK 175	AIR/11981		
257037004	MW2-032211	RSK 175	AIR/11981		
257037005	MW3-032211	RSK 175	AIR/11981		
257037001	MW5-032211	EPA 3510	OEXT/3500	NWTPH-Dx	GCSV/2378
257037002	MW4-032211	EPA 3510	OEXT/3500	NWTPH-Dx	GCSV/2378
257037003	MW1-032211	EPA 3510	OEXT/3500	NWTPH-Dx	GCSV/2378
257037004	MW2-032211	EPA 3510	OEXT/3500	NWTPH-Dx	GCSV/2378
257037005	MW3-032211	EPA 3510	OEXT/3500	NWTPH-Dx	GCSV/2378
257037001	MW5-032211	EPA 3510	OEXT/3464	EPA 8270 by SIM	MSSV/1562
257037002	MW4-032211	EPA 3510	OEXT/3464	EPA 8270 by SIM	MSSV/1562
257037003	MW1-032211	EPA 3510	OEXT/3464	EPA 8270 by SIM	MSSV/1562
257037004	MW2-032211	EPA 3510	OEXT/3464	EPA 8270 by SIM	MSSV/1562
257037005	MW3-032211	EPA 3510	OEXT/3464	EPA 8270 by SIM	MSSV/1562
257037001	MW5-032211	EPA 5030B/8260	MSV/4087		
257037002	MW4-032211	EPA 5030B/8260	MSV/4087		
257037003	MW1-032211	EPA 5030B/8260	MSV/4087		
257037004	MW2-032211	EPA 5030B/8260	MSV/4087		
257037005	MW3-032211	EPA 5030B/8260	MSV/4087		
257037006	TRIP BLANKS	EPA 5030B/8260	MSV/4087		
257037001	MW5-032211	NWTPH-Gx	MSV/4123		
257037002	MW4-032211	NWTPH-Gx	MSV/4123		
257037003	MW1-032211	NWTPH-Gx	MSV/4123		
257037004	MW2-032211	NWTPH-Gx	MSV/4123		
257037005	MW3-032211	NWTPH-Gx	MSV/4123		
257037006	TRIP BLANKS	NWTPH-Gx	MSV/4123		
257037001	MW5-032211	EPA 300.0	WETA/1929		
257037002	MW4-032211	EPA 300.0	WETA/1929		
257037003	MW1-032211	EPA 300.0	WETA/1929		
257037004	MW2-032211	EPA 300.0	WETA/1929		
257037005	MW3-032211	EPA 300.0	WETA/1929		
257037001	MW5-032211	EPA 353.2	WETA/1947		
257037002	MW4-032211	EPA 353.2	WETA/1947		
257037003	MW1-032211	EPA 353.2	WETA/1947		
257037004	MW2-032211	EPA 353.2	WETA/1947		
257037005	MW3-032211	EPA 353.2	WETA/1947		

Section A

Required Client Information:

Company: Furillon
Address: 4735 N. Ave NW
City: Issaquah WA 98027
Phone: 760-398-0812
Fax:
Requested Due Date/TAT:

Section B

Required Project Information:

Report To: Shay Patterson
Copy To:
Purchase Order No.:
Project Name: Winlock
Project Number: 623-009

Section C

Invoice Information:

Attention:
Company Name:
Address:
City:
State: WA
Zip:

Section D

Required Analysis Filtered (Y/N)

NPDES ☒ GROUND WATER ☐ DRINKING WATER
UST ☐ RCRA ☐ OTHER ☐
Site Location: Winlock
STATE: WA

Section E

Page: 1 of 1

Section F

Invoice Number: 1468078

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water Waste Water Product Solid/Liquid Oil Wipe Air Tissue Other	SAMPLE TYPE (G=GRAB C=COMP) (see valid codes to left)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Analysis Test ↑ Y/N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				COMPOSITE START	COMPOSITE END/GRAB			Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ SO ₃	Methanol	Other																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1	MW5-032211		WTC	3-23-11 0430		3-23-11 0420	18	X	X		X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

ADDITIONAL COMMENTS: See notes for Furillon
Buck Pace
3-23-11 0435
3-23-11 1230
Bel & Tigothe Swan

RELINQUISHED BY / AFFILIATION: Buck Pace

DATE: 3-23-11 TIME: 0435

ACCEPTED BY / AFFILIATION: Bel & Tigothe Swan

DATE: 3-23-11 TIME: 1230

Temp in °C: 5.2 4.0 5.2

Received on: Y Y Y

Sealed Cooler: Y Y Y

Custody: Y Y Y

Samples Intact: Y Y Y

ORIGINAL

5.2, 4.0, 5.2

Sample Container Count

CLIENT:

BNSF - Fallon

COC PAGE

1 of 1
COC ID# 1468078

Face Analytical
www.faceanalytical.com

257037

JS9

Sample Line

Item	VG9H	AG1H	AG1U	BG1H	BP1U	BP2U	BP3U	BP2N	BP2S	WG9U	WGKU	Comments
1	9	22	2				1		12			
2	9						1					
3	9						1					
4	8						1					
5	9						1					
6	3											
7												
8												
9												
10												
11												
12												Trip Blank?

AG1H	1 liter HCL amber glass											
AG1U	1 liter unpreserved amber glass											
AG2S	500mL H2SO4 amber glass											
AG2U	500mL unpreserved amber glass											
AG3S	250mL H2SO4 amber glass											
BG1H	1 liter HCL clear glass											
BG1U	1 liter unpreserved glass											
BP1N	1 liter HNO3 plastic											
BP1S	1 liter H2SO4 plastic											
BP1U	1 liter unpreserved plastic											
BP1Z	1 liter NaOH, Zn, Ac											
BP2N	500mL HNO3 plastic											
BP2O	500mL NaOH plastic											
BP2S	500mL H2SO4 plastic											
BP2U	500mL unpreserved plastic											
BP2Z	500mL NaOH, Zn Ac											
BP3C	250mL NaOH plastic											
BP3N	250mL HNO3 plastic											
BP3S	250mL H2SO4 plastic											
BP3U	250mL unpreserved plastic											
DG9B	40mL Na Bisulfate amber vial											
DG9H	40mL HCL amber vial											
DG9M	40mL MeOH clear vial											
DG9T	40mL Na Thio amber vial											
DG9U	40mL unpreserved amber vial											
I	Wipe/Swab											
JGFU	4oz unpreserved amber wide terra core kit											
R	Summa Can											
U	40mL HCL clear vial											
VG9H	40mL Na Thio. clear vial											
VG9T	40mL unpreserved clear vial											
VG9U	40mL glass vial preweighted (EPA 5035)											
VG9W	Headspace septa vial & HCL											
VSG	4oz clear soil jar											
WGFU	4oz wide jar w/hexane wipe											
WGFH	Ziploc Bag											
ZPLC												



Sample Condition Upon Receipt

257037

Client Name: BNSF - Farallon Project # _____Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ Yes ☒ No Seals intact: ☐ Yes ☐ NoPacking Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____ Temp. Blank ☒ Yes ☐ NoThermometer Used 132013 or 101731952 or 226099 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begunCooler Temperature 5.2, 4.0, 5.2 Biological Tissue is Frozen: Yes ☐ No ☐Temp should be above freezing $\leq 6^{\circ}\text{C}$

Comments:

Date and Initials of person examining contents: NS 3/23/11

Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☐ Yes ☒ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72hr):	☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Follow Up / Hold Analysis Requested:	☐ Yes ☒ No ☐ N/A	8.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	9. <u>See #13.</u>
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	10.
-Pace Containers Used:	☒ Yes ☐ No ☐ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	11.
Filtered volume received for Dissolved tests	☐ Yes ☐ No ☒ N/A	12.
Sample Labels match COC:	☐ Yes ☒ No ☐ N/A	13. <u>MW4 - 032211 = no methane vials received.</u>
-Includes date/time/ID/Analysis Matrix:	<u>Water</u>	
All containers needing preservation have been checked	☒ Yes ☐ No ☐ N/A	14.
All containers needing preservation are found to be in compliance with EPA recommendation.	☒ Yes ☐ No ☐ N/A	
Exceptions: VOA, coliform, TOC, O&G		Initial when completed
Samples checked for dechlorination:	☐ Yes ☐ No ☒ N/A	15.
Headspace in VOA Vials (>6mm):	☐ Yes ☒ No ☐ N/A	16.
Trip Blanks Present:	☒ Yes ☐ No ☐ N/A	17.
Trip Blank Custody Seals Present	☒ Yes ☐ No ☐ N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: JuanDate/Time: 3/23/11 1625

Comments/ Resolution:

No methane vials rec'd for MW-4. OK to split off of 1460 into 3ml vials. No MS/MSD required.

Project Manager Review:

ARBDate: 3/23/11

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)