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GROUNDWATER MONITORING STATUS REPORT AUGUST 2012

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

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WA State Department
of Ecology (SWRO)

Submitted by:
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975 5th Avenue Northwest
Issaquah, Washington 98027
Farallon PN: 283-005

For:
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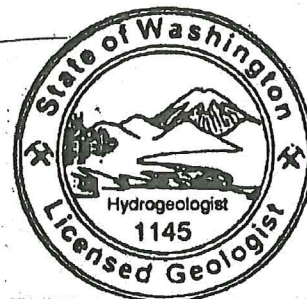
December 18, 2012

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Senior Project Manager



TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS.....	ii
1.0 INTRODUCTION.....	1-1
2.0 MONITORING ACTIVITIES AND RESULTS	2-1
2.1 GROUNDWATER MONITORING ACTIVITIES	2-1
2.2 GROUNDWATER MONITORING RESULTS	2-2
3.0 CONCLUSIONS	3-1
4.0 BIBLIOGRAPHY	4-1

FIGURES

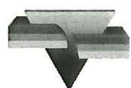
- Figure 1 *Site Vicinity Map*
Figure 2 *Groundwater Contour Map for August 2012*
Figure 3 *Groundwater Analytical Results*

TABLES

- Table 1 *Summary of Groundwater Elevation Data*
Table 2 *Groundwater Analytical Results for Petroleum Hydrocarbon Constituents*

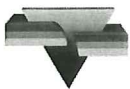
APPENDIX

- Appendix A *Laboratory Analytical Report*



ACRONYMS AND ABBREVIATIONS

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
MTCA	Washington State Model Toxics Control Act Cleanup Regulation
ORO	total petroleum hydrocarbons as oil-range organics
PQL	practical quantitation limit
Site	Former Cummings Oil Lease Site at 908 Northwest Kerron Avenue in 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</i> dated December 18, 2008, prepared by Farallon Consulting, L.L.C.



1.0 INTRODUCTION

This Groundwater Monitoring Status Report has been prepared by Farallon Consulting, L.L.C. (Farallon) on behalf of BNSF Railway Company to summarize the results of the groundwater monitoring and sampling event conducted on August 17 and 29, 2012 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 (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 concentrations of petroleum hydrocarbon constituents 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).

An assessment of the potential for natural attenuation via biodegradation processes to reduce concentrations of residual petroleum hydrocarbon constituents in groundwater was conducted during the December 27, 2010 groundwater monitoring and sampling event (Farallon 2011) using geochemical indicators and the Ecology (2005) Guidance on Remediation of Petroleum Contaminated Groundwater by Natural Attenuation. The results of the assessment projected with an 85 percent confidence level that concentrations of DRO exceeding the MTCA Method A cleanup level in monitoring wells MW-1 and MW-3 would reach the cleanup level through natural attenuation by January 2012 and March 2013, respectively.



The time frame in which concentrations of benzene exceeding the MTCA Method A cleanup level at each well location will reach the target clean up level could not be determined with the confidence level established by Ecology, although the data indicate that concentrations of benzene are decreasing.

Groundwater monitoring will continue to be conducted to assess the progress of natural attenuation at the Site and to evaluate the need for and frequency of subsequent sampling events.



2.0 MONITORING ACTIVITIES AND RESULTS

The monitoring and sampling activities conducted at the Site by Farallon on August 17 and 29, 2012 included measuring groundwater levels and collecting groundwater quality data and samples for laboratory analysis. The monitoring and sampling activities and results are summarized in the following sections.

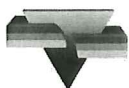
2.1 GROUNDWATER MONITORING ACTIVITIES

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; and
- Submitting the groundwater samples for laboratory analysis.

Farallon opened monitoring wells MW-1, MW-2, and MW-5 on August 17, 2012 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. Farallon could not locate monitoring wells MW-3 or MW-4 during the August 17, 2012 site visit due to overgrown vegetation and gravel covering the wells.

On August 17, 2012, monitoring wells MW-1, MW-2, and MW-5 were purged and sampled. A subsequent site visit on August 29, 2012 was conducted to locate monitoring wells MW-3 and MW-4. Farallon was able to locate, purge, and sample monitoring wells MW-3 and MW-4 at that time. Purging and sampling of monitoring wells MW-1 through MW-5 was conducted using a peristaltic pump and polyethylene tubing. The purging was conducted at flow rates ranging from 200 to 250 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. 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 under standard chain-of-custody protocols to an Ecology-accredited laboratory. The groundwater samples were analyzed for DRO and ORO by Northwest Method NWTPH-Dx; GRO by Northwest Method NWTPH-Gx; and BTEX by EPA Method 5030B/8260.



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 in August 2012. The August 2012 groundwater level measurements indicate a groundwater flow direction of west/southwest, and an average hydraulic gradient at the Site of approximately 0.05 foot per foot.

Groundwater analytical results for petroleum hydrocarbon constituents are summarized in Table 2. The analytical results for the groundwater samples collected in August 2012 are depicted on Figure 3.

The laboratory analytical results for the August 2012 groundwater monitoring and sampling event are summarized as follows:

- Concentrations of DRO exceeded the MTCA Method A cleanup level of 500 micrograms per liter ($\mu\text{g/l}$) in the groundwater sample collected from monitoring well MW-3. DRO was detected at concentrations above the laboratory practical quantitation limit (PQL) in the groundwater sample collected from monitoring wells MW-1 and MW-2. DRO was not detected at concentrations at or above the laboratory PQL in the groundwater samples collected from up-gradient monitoring well MW-4 or down-gradient monitoring well MW-5.
- 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 GRO were detected above the laboratory PQL but below the MTCA Method A cleanup level in the groundwater sample collected from monitoring well MW-2. Concentrations of GRO were not detected at or above the laboratory PQL in the groundwater samples collected from monitoring wells MW-1 or MW-3 through MW-5.
- Concentrations of the BTEX constituents were detected at or above the laboratory PQLs but below MTCA Method A cleanup levels in the groundwater samples collected from monitoring wells MW-1 and MW-2, 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. Concentrations of the BTEX constituents were not detected at concentrations at or above the laboratory PQLs in the groundwater samples collected from monitoring wells MW-3 through MW-5.

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



3.0 CONCLUSIONS

The groundwater flow direction for the August 2012 groundwater monitoring event was west/southwest at an average estimated hydraulic gradient of approximately 0.05 foot per foot. The groundwater flow direction is consistent with that for the March 2011 sampling event.

Concentrations of DRO and/or benzene above MTCA Method A cleanup levels were detected in groundwater samples collected from monitoring wells MW-2 and MW-3 in the area west of the former underground storage tank excavation on the western portion of the Site, and the aboveground storage tank excavation area on the central portion of the Site. Concentrations of GRO, DRO, ORO, and BTEX constituents at monitoring wells MW-1, MW-4, and MW-5 were below MTCA Method A cleanup levels.

Based on the decrease in concentrations of petroleum hydrocarbon constituents from 2010 to the August 2012 groundwater sampling event, it is apparent that natural attenuation continues to occur at the Site. In addition, the biodegradation rate confirms the results of the natural attenuation assessment conducted in 2011 (Farallon 2011). The results of the assessment projected with an 85 percent confidence level that concentrations of DRO exceeding the MTCA Method A cleanup level in monitoring wells MW-1 and MW-3 would reach the cleanup level through natural attenuation by January 2012 and March 2013, respectively. During the August 2012 groundwater sampling event, the DRO concentration at monitoring well MW-1 was below the MTCA Method A cleanup level, and the DRO concentration at monitoring well MW-3 showed a decreasing trend. The decreasing trends are overall consistent and independent of seasonal groundwater fluctuations. Based on GRO concentrations consistently below the MTCA Method A cleanup level, GRO will no longer be analyzed for in monitoring wells MW-1 through MW-5.

The time frame in which concentrations of benzene exceeding the MTCA Method A cleanup level in monitoring well MW-2 will reach the cleanup level could not be determined in the 2011 assessment due to fluctuations in benzene concentrations associated with seasonal groundwater fluctuations (Farallon 2011). However, a non-parametric statistical test using the Ecology (2005) Guidance on Remediation of Petroleum Contaminated Groundwater by Natural Attenuation tools indicated that concentrations of benzene likely were attenuating. This indication is supported by the continued decrease in benzene concentrations over the past 2 years. Annual groundwater monitoring for DRO, ORO, and BTEX will be conducted in August 2013 to continue to assess the progress of natural attenuation of these constituents at the Site.



4.0 BIBLIOGRAPHY

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- . 2010. *Tank Closure Report, Former Cummings Oil Lease Site, 908 Northwest Kerron Avenue, Winlock, Washington*. Prepared for BNSF Railway Company, Seattle, Washington. March 11.
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FIGURES

GROUNDWATER MONITORING STATUS REPORT

AUGUST 2012

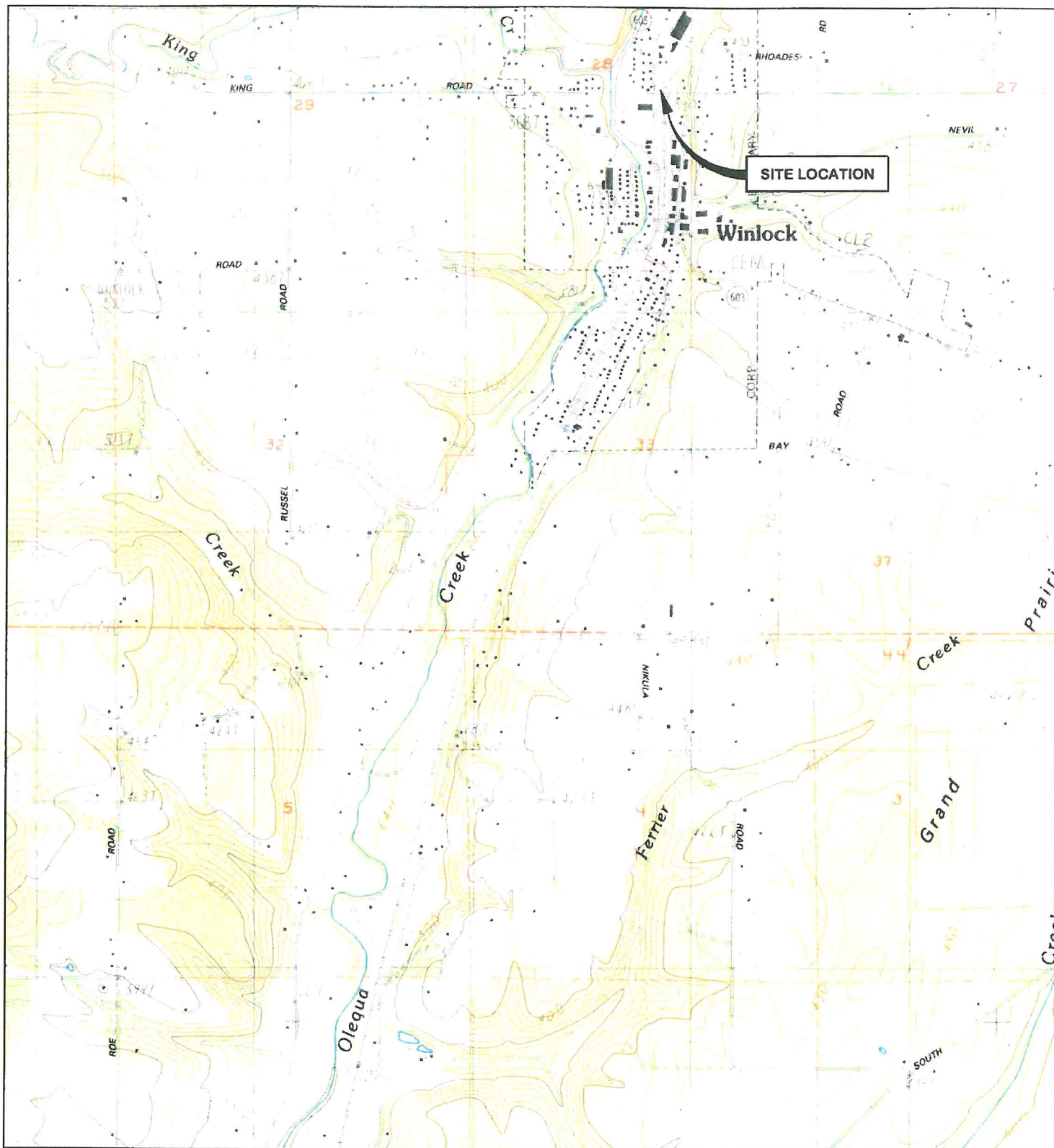
Former Cummings Oil Lease Site

908 Northwest Kerron Avenue

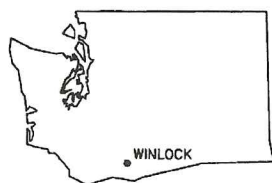
Winlock, Washington

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

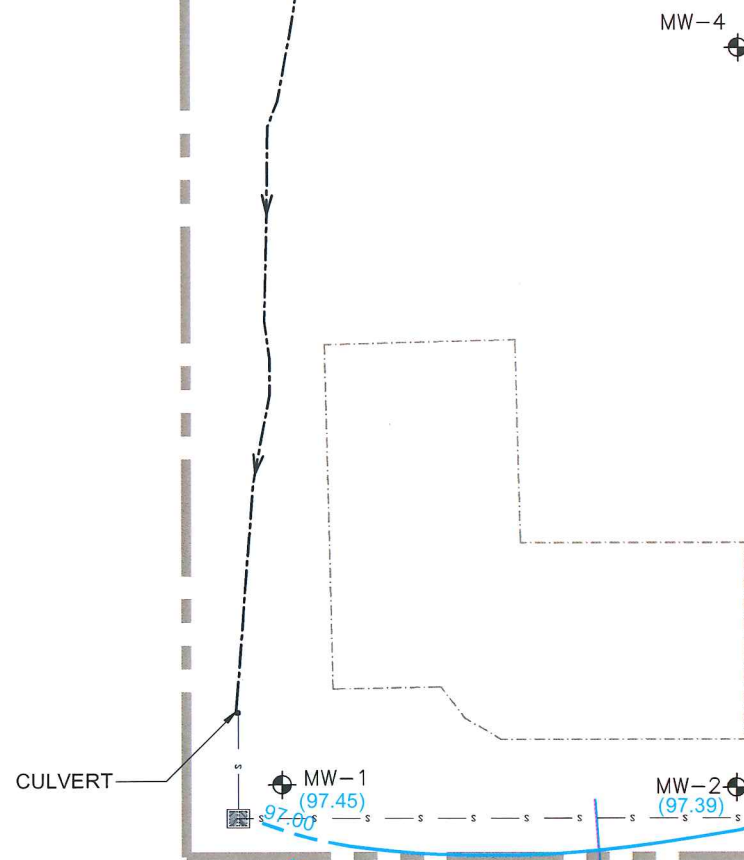
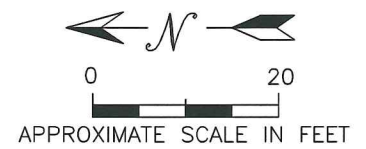
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Disk Reference: 283005

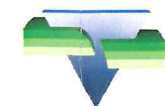
BNSF MAIN LINE

LEGEND

- — — — — PROPERTY BOUNDARY
- +++++ RAILROAD TRACKS
- - - - - DRAINAGE DITCH AND DIRECTION OF FLOW
- s - s - s - STORM SEWER LINE
- ss - ss - ss - SANITARY SEWER
- MW-3  MONITORING WELL (FARALLON 2006)
- (97.16) GROUNDWATER ELEVATION (AUGUST 17, 2012)
- 97.00 — — — — — GROUNDWATER ELEVATION CONTOUR
-  APPROXIMATE DIRECTION OF GROUNDWATER FLOW
-  CATCH BASIN



NORTHWEST KERRON AVENUE



FARALLON CONSULTING
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Issaquah, WA 98027

FIGURE 2

GROUNDWATER CONTOUR MAP
FOR AUGUST 17, 2012
FORMER CUMMINGS OIL LEASE SITE
908 NORTHWEST KERRON AVENUE
WINLOCK, WASHINGTON

FARALLON PN: 283-005

Drawn By:DEW

Checked By:SP

Date:12/2/12

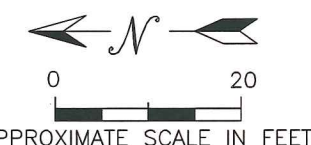
Disk Reference:283005

BNSF MAIN LINE

LEGEND

- PROPERTY BOUNDARY
- RAILROAD TRACKS
- STORM SEWER LINE
- SANITARY SEWER
- DRAINAGE DITCH AND DIRECTION OF FLOW
- MW-3 MONITORING WELL
- CATCH BASIN

ALL RESULTS IN MICROGRAMS PER LITER
GRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE-RANGE ORGANICS
DRO = TPH AS DIESEL-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
B = BENZENE
T = TOLUENE
E = ETHYLBENZENE
X = TOTAL XYLENES
BOLD = INDICATES CONCENTRATIONS EXCEED WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION METHOD A GROUNDWATER CLEANUP LEVELS
< = INDICATES CONCENTRATIONS NOT DETECTED AT OR ABOVE THE STATED LABORATORY PRACTICAL QUANTITATION LIMIT
-- = NOT ANALYZED



DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00	--
8/18/2008	<50.0	<243	<485	<0.500	<0.500	<0.500	<1.00	--
3/11/2010	<50.0	<78	<390	<1.0	<1.0	<1.0	<3.0	<0.016
6/9/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0	<0.014
10/20/2010	<50.0	<86	<430	<1.0	<1.0	<1.0	<3.0	---
12/27/2010	<50.0	<83	<420	<1.0	<1.0	<1.0	<3.0	---
3/22/2011	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0	<0.016
8/29/2012	<50.0	<78	<390	<1.0	<1.0	<1.0	<3.0	---



MW-4



AST EXCAVATION

UST EXCAVATION

DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00	--
8/18/2008	<50.0	1,480	836	<0.500	<0.500	<0.500	<1.00	--
3/11/2010	<50.0	590	540	<1.0	<1.0	<1.0	<3.0	<0.016
6/9/2010	<50.0	720	<460	<1.0	<1.0	<1.0	<3.0	0.020
10/20/2010	<50.0	670	<430	<1.0	<1.0	<1.0	<3.0	---
12/27/2010	<50.0	520	<380	<1.0	<1.0	<1.0	<3.0	---
3/22/2011	<50.0	630	<410	<1.0	<1.0	<1.0	<3.0	<0.016
8/17/2012	<50.0	470	<380	<1.0	<1.0	3.1	4.2	---

FORMER UST EXCAVATION AREA

CULVERT



MW-1



MW-2



MW-3

GRAVEL

GRAVEL PARKING

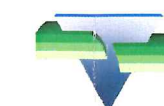
DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
12/23/2005	<50.0	<238	<476	<0.500	<0.500	<0.500	<1.00	--
8/18/2008	<50.0	1,660	887	<0.500	<0.500	<0.500	<1.00	--
3/11/2010	NOT SAMPLED							
6/9/2010	<50.0	830	<400	<1.0	<1.0	<1.0	<3.0	<0.014
10/20/2010	<50.0	900	460	<1.0	<1.0	<1.0	<3.0	---
12/27/2010	<50.0	630	<410	<1.0	<1.0	<1.0	<3.0	---
3/22/2011	<50.0	780	<380	<1.0	<1.0	<1.0	<3.0	<0.016
8/29/2012	<50.0	660	<400	<1.0	<1.0	<1.0	<3.0	---

NORTHWEST KERRON AVENUE



MW-5

DATE	GRO	DRO	ORO	B	T	E	X	NAPHTHALENE
8/18/2008	<50.0	433	<481	<0.500	<0.500	<0.500	<1.00	--
3/11/2010	<50.0	<82	<410	<1.0	<1.0	<1.0	<3.0	<0.01
6/9/2010	<50.0	<84	<420	<1.0	<1.0	<1.0	<3.0	<0.014
10/20/2010	<50.0	<85	<430	<1.0	<1.0	<1.0	<3.0	---
12/27/2010	<50.0	<87	<430	<1.0	<1.0	<1.0	<3.0	---
3/22/2011	<50.0	<75	<380	<1.0	<1.0	<1.0	<3.0	<0.015
8/17/2012	<50.0	<76	<380	<1.0	<1.0	<1.0	<3.0	---



FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 3

GROUNDWATER ANALYTICAL RESULTS
FORMER CUMMINGS OIL LEASE SITE
908 NW KERRON AVE
WINLOCK, WASHINGTON

FARALLON PN: 283-005

Drawn By:DEW Checked By:SP Date:12/2/12 Disk Reference:283005

TABLES

GROUNDWATER MONITORING STATUS REPORT

AUGUST 2012

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
	8/17/2012				3.01	97.45
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
	8/17/2012				3.01	97.39
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
	8/29/2012				3.02	97.16
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
	8/29/2012				3.48	98.97
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
	8/17/2012				5.47	94.45

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)						Total Xylenes ³
			GRO ¹	DRO ²	ORO ²	Benzene ³	Toluene ³	Ethylbenzene 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
MW1-081712		8/17/2012	<50.0	470	<380	<1.0	<1.0	3.1	4.2
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
MW2-081712		8/17/2012	158	500	<380	12.6	<1.0	5.2	9.6
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
MW3-082912		8/29/2012	<50.0	660	<400	<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
MW4-082912		8/29/2012	<50.0	<78	<390	<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
MW5-081712		8/17/2012	<50.0	<76	<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
Farallon PN: 283-005

Sample Identification	Well Identification	Sample Date	Analytical Results (micrograms per liter)												Total cPAHs TEC ^{2,3}		
			Naphthalene	Carcinogenic Polycyclic Aromatic Hydrocarbons ¹					Phenanthrene ¹	Fluorene ¹	Chrysene						
				Acenaphthene	Acenaphthylene	Benzo(a)pyrene	Dibenzo(a,b)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	<0.016	<0.016	<0.016
MW1-060910		6/9/2010	0.020	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.016
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	<0.016	<0.016	<0.016
MW2-031110	MW-2	3/11/2010	<0.016	0.059	<0.015	0.12	0.023	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
MW2-060910		6/9/2010	0.056	0.074	0.019	0.26	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.016
MW2-032511		3/25/2011	0.18	0.075	<0.017	0.17	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
MW3-031110	MW-3	3/11/2010	Not Sampled												<0.013		
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	<0.014	<0.016	
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	<0.016	<0.016	
MW4-031110	MW-4	3/11/2010	<0.015	<0.016	<0.015	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	
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	<0.014	<0.016	
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	<0.016	<0.016	
MW5-031110	MW-5	3/11/2010	<0.016	<0.016	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.013	
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	<0.014	<0.016	
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	<0.015	<0.013	
MTCA Method A Cleanup Levels for Groundwater			160 ⁴	960 ⁵	NR	160 ⁵	NR									0.10	

NOTES:

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

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

^{2,3} Total carcinogenic polycyclic aromatic hydrocarbons derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-540 of the Washington Administrative Code.

⁴ For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate the TEC.

⁵ Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Cleanup Levels for Groundwater. Table 720-1 of Section 900 of Chapter 173-540 of the Washington Administrative Code, as revised November 2007.

⁶ 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

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

² Analyzed by Method RSK 175.

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

⁴ Total nitrogen

°C = degrees Celsius

µg/l = micrograms per liter

mg/l = milligrams per liter

mS/cm = millisiemens per centimeter

mV = millivolts

**APPENDIX A
LABORATORY ANALYTICAL REPORT**

**GROUNDWATER MONITORING STATUS REPORT
AUGUST 2012**

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

Farallon PN: 283-005

September 04, 2012

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

RE: Project: CUMMINGS OIL
Pace Project No.: 2513370

Dear Stacy Patterson:

Enclosed are the analytical results for sample(s) received by the laboratory on August 21, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Gossett

dan.gossett@pacelabs.com
Project Manager

Enclosures

cc: Brett Carp, Farallon Consulting, LLC
Tad Cline, Farallon Consulting LLC



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: CUMMINGS OIL

Pace Project No.: 2513370

Washington Certification IDs

940 South Harney Street, Seattle, WA 98108

Alaska CS Certification #: UST-025

Arizona Certification #: AZ0770

California Certification #: 01153CA

Florida/NELAP Certification #: E87617

Oregon Certification #: WA200007

Washington Certification #: C555

REPORT OF LABORATORY ANALYSIS

Page 2 of 14

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SAMPLE ANALYTE COUNT

Project: CUMMINGS OIL

Pace Project No.: 2513370

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2513370001	MW-5-081712	EPA 5030B/8260	BAG	8	PASI-S
		NWTPH-Gx	BAG	2	PASI-S
2513370002	MW-2-081712	EPA 5030B/8260	BAG	8	PASI-S
		NWTPH-Gx	BAG	2	PASI-S
2513370003	MW-1-081712	EPA 5030B/8260	BAG	8	PASI-S
		NWTPH-Gx	BAG	2	PASI-S

REPORT OF LABORATORY ANALYSIS

Page 3 of 14

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PROJECT NARRATIVE

Project: CUMMINGS OIL

Pace Project No.: 2513370

Method: EPA 5030B/8260

Description: 8260 MSV

Client: Farallon Consulting LLC

Date: September 04, 2012

General Information:

3 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.

QC Batch: MSV/7640

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 2513387002

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

- MS (Lab ID: 128285)
 - Benzene
 - Ethylbenzene
 - Toluene
 - Xylene (Total)
- MSD (Lab ID: 128286)
 - Benzene
 - Ethylbenzene
 - Toluene
 - Xylene (Total)

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 4 of 14

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PROJECT NARRATIVE

Project: CUMMINGS OIL

Pace Project No.: 2513370

Method: NWTPH-Gx

Description: NWTPH-Gx MSV

Client: Farallon Consulting LLC

Date: September 04, 2012

General Information:

3 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.

QC Batch: MSV/7641

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

QC Batch: MSV/7653

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

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: CUMMINGS OIL

Pace Project No.: 2513370

Sample: MW-5-081712		Lab ID: 2513370001		Collected: 08/17/12 16:23		Received: 08/21/12 14:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
Analytical Method: NWTPH-Dx Preparation Method: EPA 3510									
Diesel Range	ND	mg/L	0.076	1	08/24/12 09:55	08/25/12 05:47			
Motor Oil Range	ND	mg/L	0.38	1	08/24/12 09:55	08/25/12 05:47	64742-65-0		
Surrogates									
n-Octacosane (S)	97 %		50-150	1	08/24/12 09:55	08/25/12 05:47	630-02-4		
o-Terphenyl (S)	86 %		50-150	1	08/24/12 09:55	08/25/12 05:47	84-15-1		
8260 MSV									
Analytical Method: EPA 5030B/8260									
Benzene	ND	ug/L	1.0	1		08/27/12 18:01	71-43-2		
Ethylbenzene	ND	ug/L	1.0	1		08/27/12 18:01	100-41-4		
Toluene	ND	ug/L	1.0	1		08/27/12 18:01	108-88-3		
Xylene (Total)	ND	ug/L	3.0	1		08/27/12 18:01	1330-20-7		
Surrogates									
4-Bromofluorobenzene (S)	112 %		79-121	1		08/27/12 18:01	460-00-4		
Dibromofluoromethane (S)	98 %		81-119	1		08/27/12 18:01	1868-53-7		
1,2-Dichloroethane-d4 (S)	95 %		72-127	1		08/27/12 18:01	17060-07-0		
Toluene-d8 (S)	105 %		77-120	1		08/27/12 18:01	2037-26-5		
NWTPH-Gx MSV									
Analytical Method: NWTPH-Gx									
Gasoline Range Organics	ND	ug/L	50.0	1		08/27/12 18:01			
Surrogates									
4-Bromofluorobenzene (S)	112 %		50-150	1		08/27/12 18:01	460-00-4		

Sample: MW-2-081712		Lab ID: 2513370002		Collected: 08/17/12 17:00		Received: 08/21/12 14:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
Analytical Method: NWTPH-Dx Preparation Method: EPA 3510									
Diesel Range	0.50	mg/L	0.076	1	08/24/12 09:55	08/25/12 06:04			
Motor Oil Range	ND	mg/L	0.38	1	08/24/12 09:55	08/25/12 06:04	64742-65-0		
Surrogates									
n-Octacosane (S)	88	%	50-150	1	08/24/12 09:55	08/25/12 06:04	630-02-4		
o-Terphenyl (S)	80	%	50-150	1	08/24/12 09:55	08/25/12 06:04	84-15-1		
8260 MSV									
Analytical Method: EPA 5030B/8260									
Benzene	12.6	ug/L	1.0	1		08/24/12 07:19	71-43-2		
Ethylbenzene	5.2	ug/L	1.0	1		08/24/12 07:19	100-41-4		
Toluene	ND	ug/L	1.0	1		08/24/12 07:19	108-88-3		
Xylene (Total)	9.6	ug/L	3.0	1		08/24/12 07:19	1330-20-7		
Surrogates									
4-Bromofluorobenzene (S)	104	%	79-121	1		08/24/12 07:19	460-00-4		
Dibromofluoromethane (S)	100	%	81-119	1		08/24/12 07:19	1868-53-7		
1,2-Dichloroethane-d4 (S)	94	%	72-127	1		08/24/12 07:19	17060-07-0		
Toluene-d8 (S)	102	%	77-120	1		08/24/12 07:19	2037-26-5		
NWTPH-Gx MSV									
Analytical Method: NWTPH-Gx									
Gasoline Range Organics	158	ug/L	50.0	1		08/27/12 15:13			

Date: 09/04/2012 04:42 PM

REPORT OF LABORATORY ANALYSIS

Page 6 of 14

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ANALYTICAL RESULTS

Project: CUMMINGS OIL

Pace Project No.: 2513370

Sample: MW-2-081712		Lab ID: 2513370002	Collected: 08/17/12 17:00	Received: 08/21/12 14:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Surrogates								
4-Bromofluorobenzene (S)	107 %		50-150	1		08/27/12 15:13	460-00-4	

Sample: MW-1-081712		Lab ID: 2513370003	Collected: 08/17/12 17:50	Received: 08/21/12 14:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510						
Diesel Range	0.47 mg/L		0.076	1	08/24/12 09:55	08/25/12 06:38		
Motor Oil Range	ND mg/L		0.38	1	08/24/12 09:55	08/25/12 06:38	64742-65-0	
Surrogates								
n-Octacosane (S)	99 %		50-150	1	08/24/12 09:55	08/25/12 06:38	630-02-4	
o-Terphenyl (S)	88 %		50-150	1	08/24/12 09:55	08/25/12 06:38	84-15-1	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND ug/L		1.0	1		08/24/12 07:37	71-43-2	
Ethylbenzene	3.1 ug/L		1.0	1		08/24/12 07:37	100-41-4	
Toluene	ND ug/L		1.0	1		08/24/12 07:37	108-88-3	
Xylene (Total)	4.2 ug/L		3.0	1		08/24/12 07:37	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	108 %		79-121	1		08/24/12 07:37	460-00-4	
Dibromofluoromethane (S)	100 %		81-119	1		08/24/12 07:37	1868-53-7	
1,2-Dichloroethane-d4 (S)	95 %		72-127	1		08/24/12 07:37	17060-07-0	
Toluene-d8 (S)	100 %		77-120	1		08/24/12 07:37	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		08/24/12 07:37		
Surrogates								
4-Bromofluorobenzene (S)	108 %		50-150	1		08/24/12 07:37	460-00-4	

QUALITY CONTROL DATA

Project: CUMMINGS OIL
Pace Project No.: 2513370

QC Batch: MSV/7640 Analysis Method: EPA 5030B/8260
QC Batch Method: EPA 5030B/8260 Analysis Description: 8260 MSV Water 10 mL Purge
Associated Lab Samples: 2513370002, 2513370003

METHOD BLANK: 128283 Matrix: Water
Associated Lab Samples: 2513370002, 2513370003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	08/24/12 03:01	
Ethylbenzene	ug/L	ND	1.0	08/24/12 03:01	
Toluene	ug/L	ND	1.0	08/24/12 03:01	
Xylene (Total)	ug/L	ND	3.0	08/24/12 03:01	
1,2-Dichloroethane-d4 (S)	%	98	72-127	08/24/12 03:01	
4-Bromofluorobenzene (S)	%	113	79-121	08/24/12 03:01	
Dibromofluoromethane (S)	%	103	81-119	08/24/12 03:01	
Toluene-d8 (S)	%	100	77-120	08/24/12 03:01	

LABORATORY CONTROL SAMPLE: 128284

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	17.7	89	66-123	
Ethylbenzene	ug/L	20	18.4	92	67-122	
Toluene	ug/L	20	18.3	91	64-118	
Xylene (Total)	ug/L	60	55.5	92	68-122	
1,2-Dichloroethane-d4 (S)	%			101	72-127	
4-Bromofluorobenzene (S)	%			96	79-121	
Dibromofluoromethane (S)	%			103	81-119	
Toluene-d8 (S)	%			99	77-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 128285 128286

Parameter	Units	2513387002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Benzene	ug/L	544	20	20	539	552	-25	38	63-138	2	M1
Ethylbenzene	ug/L	1500	20	20	982	1000	-2580	-2470	65-135	2	M1
Toluene	ug/L	30.8	20	20	85.7	79.8	274	245	64-128	7	M1
Xylene (Total)	ug/L	2290	60	60	2000	2040	-475	-423	65-133	2	M1
1,2-Dichloroethane-d4 (S)	%						97	100	72-127		
4-Bromofluorobenzene (S)	%						91	91	79-121		
Dibromofluoromethane (S)	%						95	97	81-119		
Toluene-d8 (S)	%						100	98	77-120		

QUALITY CONTROL DATA

Project: CUMMINGS OIL

Pace Project No.: 2513370

QC Batch: MSV/7652

Analysis Method: EPA 5030B/8260

QC Batch Method: EPA 5030B/8260

Analysis Description: 8260 MSV Water 10 mL Purge

Associated Lab Samples: 2513370001

METHOD BLANK: 128494

Matrix: Water

Associated Lab Samples: 2513370001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane-d4 (S)	%	95	72-127	08/27/12 14:18	
4-Bromofluorobenzene (S)	%	115	79-121	08/27/12 14:18	
Dibromofluoromethane (S)	%	99	81-119	08/27/12 14:18	
Toluene-d8 (S)	%	103	77-120	08/27/12 14:18	

LABORATORY CONTROL SAMPLE: 128495

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%			98	72-127	
4-Bromofluorobenzene (S)	%			97	79-121	
Dibromofluoromethane (S)	%			101	81-119	
Toluene-d8 (S)	%			100	77-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 128536 128537

Parameter	Units	2513400002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dichloroethane-d4 (S)	%						100	98	72-127		
4-Bromofluorobenzene (S)	%						98	95	79-121		
Dibromofluoromethane (S)	%						100	99	81-119		
Toluene-d8 (S)	%						100	99	77-120		

QUALITY CONTROL DATA

Project: CUMMINGS OIL

Pace Project No.: 2513370

QC Batch: MSV/7641

Analysis Method: NWTPH-Gx

QC Batch Method: NWTPH-Gx

Analysis Description: NWTPH-Gx MSV Water

Associated Lab Samples: 2513370003

METHOD BLANK: 128287

Matrix: Water

Associated Lab Samples: 2513370003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	50.0	08/24/12 03:01	
4-Bromofluorobenzene (S)	%	113	50-150	08/24/12 03:01	

LABORATORY CONTROL SAMPLE: 128288

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	ug/L	500	440	88	65-139	
4-Bromofluorobenzene (S)	%			103	50-150	

QUALITY CONTROL DATA

Project: CUMMINGS OIL

Pace Project No.: 2513370

QC Batch: MSV/7653

Analysis Method: NWTPH-Gx

QC Batch Method: NWTPH-Gx

Analysis Description: NWTPH-Gx MSV Water

Associated Lab Samples: 2513370001, 2513370002

METHOD BLANK: 128496

Matrix: Water

Associated Lab Samples: 2513370001, 2513370002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
4-Bromofluorobenzene (S)	%	115	50-150	08/27/12 14:18	

LABORATORY CONTROL SAMPLE & LCSD: 128497

128498

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
4-Bromofluorobenzene (S)	%				106	107	50-150			

QUALITY CONTROL DATA

Project: CUMMINGS OIL

Pace Project No.: 2513370

QC Batch: OEXT/6004

Analysis Method: NWTTPH-Dx

QC Batch Method: EPA 3510

Analysis Description: NWTTPH-Dx GCS

Associated Lab Samples: 2513370001, 2513370002, 2513370003

METHOD BLANK: 128304

Matrix: Water

Associated Lab Samples: 2513370001, 2513370002, 2513370003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range	mg/L	ND	0.080	08/25/12 04:38	
Motor Oil Range	mg/L	ND	0.40	08/25/12 04:38	
n-Octacosane (S)	%	108	50-150	08/25/12 04:38	
o-Terphenyl (S)	%	98	50-150	08/25/12 04:38	

LABORATORY CONTROL SAMPLE: 128305

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range	mg/L	4	4.2	105	51-114	
Motor Oil Range	mg/L	4	4.1	103	62-120	
n-Octacosane (S)	%			108	50-150	
o-Terphenyl (S)	%			96	50-150	

SAMPLE DUPLICATE: 128306

Parameter	Units	2513370002 Result	Dup Result	RPD	Qualifiers
Diesel Range	mg/L	0.50	0.50	2	
Motor Oil Range	mg/L	ND	.26J		
n-Octacosane (S)	%	88	98	10	
o-Terphenyl (S)	%	80	88	9	

QUALIFIERS

Project: CUMMINGS OIL
Pace Project No.: 2513370

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.

PRL - Pace Reporting Limit.

RL - Reporting 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 TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-S Pace Analytical Services - Seattle

BATCH QUALIFIERS

Batch: MSV/7641

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

Batch: MSV/7653

[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: CUMMINGS OIL
Pace Project No.: 2513370

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2513370001	MW-5-081712	EPA 5030B/8260	MSV/7652		
2513370002	MW-2-081712	EPA 5030B/8260	MSV/7640		
2513370003	MW-1-081712	EPA 5030B/8260	MSV/7640		
2513370001	MW-5-081712	NWTPH-Gx	MSV/7653		
2513370002	MW-2-081712	NWTPH-Gx	MSV/7653		
2513370003	MW-1-081712	NWTPH-Gx	MSV/7641		

Sample Container Count

2513370

CLIENT: Farallon

COC PAGE 1 of 1

COC ID# _____

Trip Blank(s) Provided?

Y N

Pace Analytical
www.paceanalytical.com

Sample Line Item	VG9H	AG1H	AG1U	BP1U	BP2U	BP3U	BP3N	BP3S	WGKU	WG2U	DG9M	DG9B	VG9W	VSG	Comments
1	3	214													
2	↓	↓													
3	↓	↓													
4	4														
5															
6															
7															
8															
9															
10															
11															
12															

AG1H	1 liter HCL amber glass	BP2S	500mL H2SO4 plastic	JGFU	4 oz amber glass soil jar
AG1U	1 liter unpreserved amber glass	BP2U	500mL unpreserved plastic	WGKU	8 oz clear glass soil jar
AG2S	500mL H2SO4 amber glass	BP2Z	500mL NaOH, Zn Ac	WG2U	4 oz clear glass soil jar
AG2U	500mL unpreserved amber glass	BP3C	250mL NaOH plastic	WG2U	2 oz clear glass soil jar
AG3S	250mL H2SO4 amber glass	BP3N	250mL HNO3 plastic	JGFM	4 oz amber glass soil jar with MeOH
BG1H	1 liter HCL clear glass	BP3S	250mL H2SO4 plastic	VG9U	40mL unpreserved clear vial
BG1U	1 liter unpreserved glass	BP3U	250mL unpreserved plastic	VG9W	40mL clear vial pre-weighted with DI water
BP1N	1 liter HNO3 plastic	DG9B	40mL Na Bisulfate clear vial	VSG	Headspace septa vial
BP1S	1 liter H2SO4 plastic	DG9H	40mL HCL amber vial	VG9H	40mL HCL clear vial
BP1U	1 liter unpreserved plastic	DG9M	40mL MeOH clear vial	WGFX	4oz wide jar w/hexane wipe
BP1Z	1 liter NaOH, Zn, Ac	DG9T	40mL Na Thio amber vial	VG9T	40mL Na Thio. clear vial
BP2N	500mL HNO3 plastic	DG9U	40mL unpreserved amber vial	ZPLC	Ziploc Bag
BP2O	500mL NaOH plastic	U	Summa Can	U	Summa Can

Client Name:

Fargallon

Project #

2513370

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other B11

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 101731942 or 226089 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature

1.8

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 8/21/22 LSTemp should be above freezing $\leq 6^{\circ}\text{C}$

Comments:

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.
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.
-Includes date/time/ID/Analysis Matrix:	<u>WTP</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: <u>(2)</u> VOA, coliform, TOC, O&G	☒ Yes ☐ No ☐ N/A	Initial when completed <u>LS</u> Lot # of added preservative
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 Creation Date:	<u>8/7/22</u>	

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted:

J. Runk

Date/Time:

1302 8/22

Comments/ Resolution:

BUSF Project - minor B. Sheppard
 no SGC on DT

Project Manager Review:

Date:

8/22

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)

September 14, 2012

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

RE: Project: Cummings Oil 283-005
Pace Project No.: 2513441

Dear Stacy Patterson:

Enclosed are the analytical results for sample(s) received by the laboratory on August 30, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Ely Bair for
Dan Gossett
dan.gossett@pacelabs.com
Project Manager

Enclosures

cc: Brett Carp, Farallon Consulting, LLC
Tad Cline, Farallon Consulting LLC



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Washington Certification IDs

940 South Harney Street, Seattle, WA 98108

Alaska CS Certification #: UST-025

Arizona Certification #: AZ0770

California Certification #: 01153CA

Florida/NELAP Certification #: E87617

Oregon Certification #: WA200007

Washington Certification #: C555

REPORT OF LABORATORY ANALYSIS

Page 2 of 13

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SAMPLE ANALYTE COUNT

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
2513441001	MW-4-082912	NWTPH-Dx	AY1	4	PASI-S
		EPA 5030B/8260	BAG	8	PASI-S
		NWTPH-Gx	BAG	2	PASI-S
2513441002	MW-3-082912	NWTPH-Dx	AY1	4	PASI-S
		EPA 5030B/8260	BAG	8	PASI-S
		NWTPH-Gx	BAG	2	PASI-S

REPORT OF LABORATORY ANALYSIS

Page 3 of 13

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PROJECT NARRATIVE

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Method: NWTPH-Dx

Description: NWTPH-Dx GCS

Client: Farallon Consulting LLC

Date: September 14, 2012

General Information:

2 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

Page 4 of 13

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PROJECT NARRATIVE

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Method: EPA 5030B/8260

Description: 8260 MSV

Client: Farallon Consulting LLC

Date: September 14, 2012

General Information:

2 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.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Page 5 of 13

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PROJECT NARRATIVE

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Method: NWTPH-Gx

Description: NWTPH-Gx MSV

Client: Farallon Consulting LLC

Date: September 14, 2012

General Information:

2 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:

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

REPORT OF LABORATORY ANALYSIS

Page 6 of 13

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ANALYTICAL RESULTS

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Sample: MW-4-082912		Lab ID: 2513441001	Collected: 08/29/12 15:06	Received: 08/30/12 12:25	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510						
Diesel Range	ND mg/L		0.078	1	09/07/12 10:50	09/07/12 17:34		
Motor Oil Range	ND mg/L		0.39	1	09/07/12 10:50	09/07/12 17:34	64742-65-0	
Surrogates								
n-Octacosane (S)	87 %		50-150	1	09/07/12 10:50	09/07/12 17:34	630-02-4	
o-Terphenyl (S)	88 %		50-150	1	09/07/12 10:50	09/07/12 17:34	84-15-1	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND ug/L		1.0	1		08/31/12 19:21	71-43-2	
Ethylbenzene	ND ug/L		1.0	1		08/31/12 19:21	100-41-4	
Toluene	ND ug/L		1.0	1		08/31/12 19:21	108-88-3	
Xylene (Total)	ND ug/L		3.0	1		08/31/12 19:21	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	114 %		79-121	1		08/31/12 19:21	460-00-4	
Dibromofluoromethane (S)	103 %		81-119	1		08/31/12 19:21	1868-53-7	
1,2-Dichloroethane-d4 (S)	103 %		72-127	1		08/31/12 19:21	17060-07-0	
Toluene-d8 (S)	101 %		77-120	1		08/31/12 19:21	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		08/30/12 22:29		
Surrogates								
4-Bromofluorobenzene (S)	113 %		50-150	1		08/30/12 22:29	460-00-4	

Sample: MW-3-082912		Lab ID: 2513441002	Collected: 08/29/12 15:44	Received: 08/30/12 12:25	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Dx GCS		Analytical Method: NWTPH-Dx Preparation Method: EPA 3510						
Diesel Range	0.66 mg/L		0.080	1	09/07/12 10:50	09/07/12 18:09		
Motor Oil Range	ND mg/L		0.40	1	09/07/12 10:50	09/07/12 18:09	64742-65-0	
Surrogates								
n-Octacosane (S)	96 %		50-150	1	09/07/12 10:50	09/07/12 18:09	630-02-4	
o-Terphenyl (S)	95 %		50-150	1	09/07/12 10:50	09/07/12 18:09	84-15-1	
8260 MSV		Analytical Method: EPA 5030B/8260						
Benzene	ND ug/L		1.0	1		08/31/12 19:40	71-43-2	
Ethylbenzene	ND ug/L		1.0	1		08/31/12 19:40	100-41-4	
Toluene	ND ug/L		1.0	1		08/31/12 19:40	108-88-3	
Xylene (Total)	ND ug/L		3.0	1		08/31/12 19:40	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	110 %		79-121	1		08/31/12 19:40	460-00-4	
Dibromofluoromethane (S)	99 %		81-119	1		08/31/12 19:40	1868-53-7	
1,2-Dichloroethane-d4 (S)	96 %		72-127	1		08/31/12 19:40	17060-07-0	
Toluene-d8 (S)	103 %		77-120	1		08/31/12 19:40	2037-26-5	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx						
Gasoline Range Organics	ND ug/L		50.0	1		08/30/12 22:48		

Date: 09/14/2012 10:38 AM

REPORT OF LABORATORY ANALYSIS

Page 7 of 13

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ANALYTICAL RESULTS

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Sample: MW-3-082912		Lab ID: 2513441002		Collected: 08/29/12 15:44		Received: 08/30/12 12:25		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
NWTPH-Gx MSV		Analytical Method: NWTPH-Gx							
Surrogates									
4-Bromofluorobenzene (S)	109 %		50-150	1		08/30/12 22:48	460-00-4		

QUALITY CONTROL DATA

Project: Cummings Oil 283-005

Pace Project No.: 2513441

QC Batch:	MSV/7692	Analysis Method:	EPA 5030B/8260
QC Batch Method:	EPA 5030B/8260	Analysis Description:	8260 MSV Water 10 mL Purge
Associated Lab Samples:	2513441001, 2513441002		

METHOD BLANK: 129052 Matrix: Water

Associated Lab Samples: 2513441001, 2513441002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	08/31/12 19:03	
Ethylbenzene	ug/L	ND	1.0	08/31/12 19:03	
Toluene	ug/L	ND	1.0	08/31/12 19:03	
Xylene (Total)	ug/L	ND	3.0	08/31/12 19:03	
1,2-Dichloroethane-d4 (S)	%	99	72-127	08/31/12 19:03	
4-Bromofluorobenzene (S)	%	113	79-121	08/31/12 19:03	
Dibromofluoromethane (S)	%	100	81-119	08/31/12 19:03	
Toluene-d8 (S)	%	101	77-120	08/31/12 19:03	

LABORATORY CONTROL SAMPLE: 129053

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.4	92	66-123	
Ethylbenzene	ug/L	20	19.9	100	67-122	
Toluene	ug/L	20	19.6	98	64-118	
Xylene (Total)	ug/L	60	59.8	100	68-122	
1,2-Dichloroethane-d4 (S)	%			100	72-127	
4-Bromofluorobenzene (S)	%			97	79-121	
Dibromofluoromethane (S)	%			98	81-119	
Toluene-d8 (S)	%			100	77-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 129054 129055

Parameter	Units	2513450005 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	19.2	98	96	63-138	2	
Ethylbenzene	ug/L	ND	20	20	20.5	19.9	102	100	65-135	3	
Toluene	ug/L	ND	20	20	19.7	19.3	98	97	64-128	2	
Xylene (Total)	ug/L	ND	60	60	61.5	59.8	102	100	65-133	3	
1,2-Dichloroethane-d4 (S)	%						105	105	72-127		
4-Bromofluorobenzene (S)	%						97	97	79-121		
Dibromofluoromethane (S)	%						101	101	81-119		
Toluene-d8 (S)	%						99	99	77-120		

Date: 09/14/2012 10:38 AM

REPORT OF LABORATORY ANALYSIS

Page 9 of 13

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QUALITY CONTROL DATA

Project: Cummings Oil 283-005

Pace Project No.: 2513441

QC Batch: MSV/7691

Analysis Method: NWTPH-Gx

QC Batch Method: NWTPH-Gx

Analysis Description: NWTPH-Gx MSV Water

Associated Lab Samples: 2513441001, 2513441002

METHOD BLANK: 128931

Matrix: Water

Associated Lab Samples: 2513441001, 2513441002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	50.0	08/30/12 16:00	
4-Bromofluorobenzene (S)	%	111	50-150	08/30/12 16:00	

LABORATORY CONTROL SAMPLE: 128932

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec. Limits	Qualifiers
Gasoline Range Organics	ug/L	500	383	77	65-139	
4-Bromofluorobenzene (S)	%			104	50-150	

SAMPLE DUPLICATE: 128933

Parameter	Units	2513438002 Result	Dup Result	RPD	Qualifiers
Gasoline Range Organics	ug/L	ND	47.2J		
4-Bromofluorobenzene (S)	%	109	109		

QUALITY CONTROL DATA

Project: Cummings Oil 283-005

Pace Project No.: 2513441

QC Batch: OEXT/6045

Analysis Method: NWTPH-Dx

QC Batch Method: EPA 3510

Analysis Description: NWTPH-Dx GCS

Associated Lab Samples: 2513441001, 2513441002

METHOD BLANK: 129395

Matrix: Water

Associated Lab Samples: 2513441001, 2513441002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range	mg/L	ND	0.080	09/07/12 16:59	
Motor Oil Range	mg/L	ND	0.40	09/07/12 16:59	
n-Octacosane (S)	%	77	50-150	09/07/12 16:59	
o-Terphenyl (S)	%	80	50-150	09/07/12 16:59	

LABORATORY CONTROL SAMPLE: 129396

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range	mg/L	4	3.5	88	51-114	
Motor Oil Range	mg/L	4	3.4	84	62-120	
n-Octacosane (S)	%			84	50-150	
o-Terphenyl (S)	%			84	50-150	

SAMPLE DUPLICATE: 129397

Parameter	Units	2513441001 Result	Dup Result	RPD	Qualifiers
Diesel Range	mg/L	ND	.049J		
Motor Oil Range	mg/L	ND	ND		
n-Octacosane (S)	%	87	94	11	
o-Terphenyl (S)	%	88	95	11	

QUALIFIERS

Project: Cummings Oil 283-005

Pace Project No.: 2513441

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.

PRL - Pace Reporting Limit.

RL - Reporting 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 TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-S Pace Analytical Services - Seattle

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Cummings Oil 283-005

Pace Project No.: 2513441

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
2513441001	MW-4-082912	EPA 3510	OEXT/6045	NWTPH-Dx	GCSV/3819
2513441002	MW-3-082912	EPA 3510	OEXT/6045	NWTPH-Dx	GCSV/3819
2513441001	MW-4-082912	EPA 5030B/8260	MSV/7692		
2513441002	MW-3-082912	EPA 5030B/8260	MSV/7692		
2513441001	MW-4-082912	NWTPH-Gx	MSV/7691		
2513441002	MW-3-082912	NWTPH-Gx	MSV/7691		

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Important Note: By signing this form you are accepting Pepsi's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Sample Container Count

2513441



CLIENT: Ferrallion

Trip Blank(s) Provided?
Y / N

COC PAGE 1 of 1
COC ID# 1648849

Sample Line Item	VG9H	AG1H	AG1U	BP1U	BP2U	BP3U	BP3N	BP3S	WGKU	WGFU	WG2U	DG9M	DG9B	VG9W	VSG	Comments
1	3	2														
2	3	2														
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

AG1H	1 liter HCL amber glass	BP2S	500mL H2SO4 plastic	JGFU	4 oz amber glass soil jar
AG1U	1 liter unpreserved amber glass	BP2U	500mL unpreserved plastic	WGKU	8 oz clear glass soil jar
AG2S	500mL H2SO4 amber glass	BP2Z	500mL NaOH, Zn Ac	WGFU	4 oz clear glass soil jar
AG2U	500mL unpreserved amber glass	BP3C	250mL NaOH plastic	WG2U	2 oz clear glass soil jar
AG3S	250mL H2SO4 amber glass	BP3N	250mL HNO3 plastic	JGFM	4 oz amber glass soil jar with MeOH
BG1H	1 liter HCL clear glass	BP3S	250mL H2SO4 plastic	VG9U	40mL unpreserved clear vial
BG1U	1 liter unpreserved glass	BP3U	250mL unpreserved plastic	VG9W	40mL clear vial pre-weighted with DI water
BP1N	1 liter HNO3 plastic	DG9B	40mL Na Bisulfate clear vial	VSG	Headspace septa vial
BP1S	1 liter H2SO4 plastic	DG9H	40mL HCL amber vial	VG9H	40mL HCL clear vial
BP1U	1 liter unpreserved plastic	DG9M	40mL MeOH clear vial	WGFU	4oz wide jar w/hexane wipe
BP1Z	1 liter NaOH, Zn, Ac	DG9T	40mL Na Thio amber vial	VG9T	40mL Na Thio. clear vial
BP2N	500mL HNO3 plastic	DG9U	40mL unpreserved amber vial	ZPLC	Ziploc Bag
BP2O	500mL NaOH plastic	1	Wipe/Swab	U	Summa Can

Client Name: FarallonProject # 2513441Courier: ☐ 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 _____ No ☒Thermometer Used 132013 or 101731962 or 226099 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begunCooler Temperature 5.8c

Biological Tissue Is Frozen: Yes No

Date and Initials of person examining contents: 083012 CWTemp should be above freezing $\leq 6^{\circ}\text{C}$

Comments:

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.
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.
-Includes date/time/ID/Analysis Matrix: <u>INT</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: <u>VOA, uniform, TOC, O&G</u>	☒ Yes ☐ No ☐ N/A	Initial when completed
		Lot # of added preservative
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 Creation Date:		

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Date: 8/9

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)