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ENVIRONMENT

Sonia Fernandez
Washington State Department of Ecology
NW Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Subject:
Annual Site Status Report 2014
Former ARCO Facility No. 11060
Multi-Site VCP No. NW2463
4580 Fauntleroy Way Southwest
Seattle, WA 98126

Date:
July 31, 2015

Contact:
Samuel Miles

Phone:
206-726-4720

Email:
Samuel.Miles
@arcadis-us.com

Our ref:
GP09BPNA.WA48.N0000

Dear Ms. Fernandez:

On behalf of BP West Coast Products, LLC. (BP), ARCADIS U.S., Inc. (ARCADIS) is pleased to submit this *Annual Site Status Report 2014* for the above referenced facility (the Site). The Site is currently an active Shell gas station and convenience store located at the southwest corner of the intersection of Southwest Alaska Street and Fauntleroy Way Southwest, in King County, Washington. During 2014, ARCADIS conducted one groundwater monitoring event at the Site, installed five air sparge (AS) wells and three soil vapor extraction (VE) wells. A Site location map is presented on **Figure 1**.

Installation of Air Sparge and Vapor Extraction Wells

Between June 9th and June 13th 2014, ARCADIS advanced eight soil borings for the installation of five AS wells (AS-2, AS-3, AS-4, AS-5, AS-6) and three VE wells (VE-3, VE-4, and VE-5). The borings were drilled by a licensed drilling subcontractor, Cascade Drilling, LP (CDLP) with assistance from Dakota Concrete Cutting, Inc. Soil samples were collected from the borings of AS-2, AS-3, AS-4, AS-5, AS-6, and VE-4. The new well locations have not been surveyed, but approximate well locations are presented on **Figure 2**.

The boreholes were cleared to a depth of 6.5 feet below ground surface (bgs) using an air knife and vacuum truck to reduce the potential for damage to subsurface utilities. The AS borings were advanced using an 8-inch hollow-stem auger (HSA), with the wells constructed of 2-inch polyvinyl chloride (PVC) and completed to depths between 26.5 feet bgs to 29 feet bgs. Schedule 80 PVC was used for each AS well,

which were constructed with 1 foot sumps, 2 feet of 0.020-inch slotted screen and riser to an 8-inch flush mounted well box on grade with the surface. The VE borings were advanced using a 10-inch HSA, with wells constructed of 4-inch PVC and completed to depths between 16.5 feet bgs and 18 feet bgs. Schedule 40 PVC was used for each VE well and were constructed to a total depth of 15 feet bgs with 10 feet of 0.020-inch slotted screen and riser to the flush mounted 10-inch well box on grade with the surface. During drilling activities, soil was logged for lithological description by ARCADIS field personnel. Soil and groundwater waste generated during drilling activities were stored in 55 gallon drums and removed from the Site by Kleen Environmental Technologies Inc. Waste manifests are included as **Attachment A**. Well construction details, soil types and other pertinent data were recorded in the boring logs included as **Attachment B**.

Soil samples for chemical analysis were collected from AS well AS-2 at a depth of 20 feet bgs, from AS well AS-3 at depths of 10, 15, 20, and 25 feet bgs, from AS well AS-4 at a depth of 15 feet bgs, from AS well AS-5 at a depth of 25 feet, from AS well AS-6 from a depth of 25 feet (duplicate sample also collected from this depth), and from VE well VE-4 at a depth of 10 feet bgs. Soil samples were analyzed for the following constituents of concern (COCs):

- Total Petroleum Hydrocarbons (TPH) as gasoline range organics (GRO) by Ecology Method NWTPH-Gx;
- TPH as diesel range organics (DRO) and heavy oil range organics (HO) by Ecology Northwest Method NWTPH-Dx; and
- Benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX), by Environmental Protection Agency (EPA) Method 8260.

Additionally,

- Naphthalenes were analyzed by EPA Method 8260 from AS wells AS-2, AS-5, and AS-6;
- Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH) were analyzed by Ecology Northwest Method NWVPH/NWEPH from AS wells AS-6, AS-2, AS-3 (20 feet bgs), and VE well VE-4; and
- Polycyclic aromatic hydrocarbons (PAHs) including carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were analyzed by EPA Method 8270 at air sparge wells AS-2, AS-3 (10 feet bgs), AS-3 (15 feet bgs), AS-3 (20 feet bgs), AS-3 (25 feet bgs), and at vapor extraction well VE-4.

Soil samples were submitted to Eurofins Lancaster Laboratories (Eurofins) in Lancaster, Pennsylvania under standard chain-of-custody protocols. Analytical results for the soil samples indicate concentrations of the following COCs are present above the Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs):

- GRO was detected above the MTCA Method A CUL of 100 milligrams per kilogram (mg/kg) (30 mg/kg when benzene is present) at concentrations of 1,800 mg/kg in the sample collected from AS well AS-3 (20 feet bgs), 3,700 mg/kg in the sample collected from AS well AS-3 (25 feet bgs),130 mg/kg in the sample collected from AS well AS-6, 71 mg/kg in the duplicate sample collected from AS well AS-6, and 440 mg/kg in the sample collected from VE well VE-4.
- Benzene was detected above the MTCA Method A CUL of 0.03 mg/kg at concentrations of 0.085 mg/kg in the sample collected from AS well AS-3 (20 feet bgs), 0.63 mg/kg in the sample collected from AS well AS-3 (25 feet bgs), 0.62 mg/kg in the sample collected from AS-5, 0.34 mg/kg in the sample collected from AS well AS-6, and 0.20 mg/kg in the duplicate sample collected from AS well AS-6.
- Toluene was detected above the MTCA Method A CUL of 7 mg/kg at a concentration of 21 mg/kg in the sample collected from AS well AS-3 (25 feet bgs).
- Ethylbenzene was detected above the MTCA Method A CUL of 6 mg/kg at concentrations of 8.3 mg/kg in the sample collected from AS well AS-3 (20 feet bgs) and 19 mg/kg in the sample collected from AS well AS-3 (25 feet bgs).
- Total xylenes were detected above the MTCA Method A CUL of 8 mg/kg at concentrations of 33 mg/kg in the sample collected from AS well AS-3 (20 feet bgs) and 84 mg/kg in the sample collected from AS well AS-3 (25 feet bgs).
- cPAHs exceeded the MTCA Method A CUL toxic equivalency factor of 0.1 mg/kg at concentrations of 0.7451 mg/kg in the sample collected from AS well AS-3 (10 feet bgs) and 0.1846 mg/kg in the sample collected from VE well VE-4.

Soil analytical results are presented in **Table 1** and **Figure 2**. The samples were deposited in laboratory-provided, pre-cleaned sample containers, sealed, labeled, and immediately stored in a cooler with ice for transport to Eurofins under standard chain-of-custody protocol. The laboratory analytical soil reports and chain-of-custody documentation are included in **Attachment C**.

Annual Groundwater Monitoring Event

On May 13th and 14th, 2013, ARCADIS conducted the annual groundwater monitoring event at the site. Monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-9, MW-10, GMW-1 and vapor extraction well VE-1 were gauged using an oil/water interface probe. Non aqueous phase liquid (NAPL) was detected in monitoring well MW-4 and VE well VE-1. As a result, monitoring well MW-4 and VE-1 were not sampled. NAPL was measured at thicknesses of 2.50 feet in monitoring well MW-4 and 0.40 foot in VE well VE-1. Groundwater field data sheets are included as **Attachment D**.

The depth to groundwater during the first semi-annual sampling event ranged between 21.39 feet below top of casing (btoc) in monitoring well MW-9 to 25.80 feet btoc in monitoring well MW-4. Groundwater elevations during this sampling event ranged from 241.96 feet above mean sea level (msl) in monitoring well MW-9 to 243.98 feet above msl in monitoring well MW-4. The inferred direction of groundwater flow during this event was to the east-northeast.

Groundwater samples were collected from wells MW-1, MW-2, MW-3, MW-5, MW-6, MW-9, MW-10 and GMW-1. A duplicate sample was collected from MW-5. Groundwater samples were analyzed for the following COCs:

- TPH as GRO by Ecology Northwest Method NWTPH-Gx;
- TPH as DRO and HO by Ecology Northwest Method NWTPH-Dx;
- BTEX and methyl tertiary butyl ether (MTBE) by EPA Method 8260; and
- Total and dissolved lead by EPA Method 6010.

Groundwater samples were submitted to Eurofins in Lancaster, Pennsylvania under standard chain-of-custody protocols. Analytical results for the groundwater samples indicate concentrations of the following COCs are present above MTCA Method A CULs:

- GRO was detected above the MTCA Method A CUL of 1,000 micrograms per liter (µg/L) (800 µg/L when benzene is present) at concentrations of 3,100 µg/L in the sample collected from monitoring well MW-2, 1,100 µg/L in the sample collected from monitoring well MW-3, 4,400 µg/L in the sample collected from MW-5, and 2,500 µg/L in the duplicate sample collected from monitoring well MW-5.

- DRO was detected above the MTCA Method A CUL of 500 μg/L at concentrations of 1,800 µg/L in the sample collected from monitoring well MW-2, 710 µg/L in the sample collected from monitoring well MW-3, and 560 µg/L in the sample collected from monitoring well GMW-1.
- HO was detected above the MTCA Method A CUL of 500 μg/L at concentrations of 880 µg/L in the sample collected from monitoring well MW-2, and 700 µg/L in the sample collected from monitoring well MW-3.
- Benzene was detected above the MTCA Method A CUL of 5 µg/L at concentrations of 79 µg/L in the sample collected from monitoring well MW-2, 8.4 µg/L in the sample collected from monitoring well MW-3, 17 µg/L in the sample collected from monitoring well MW-5, and 22 µg/L in the duplicate sample collected from monitoring well MW-5.
- Total lead was detected above the MTCA Method A CUL of 15 µg/L at a concentration of 16.2 µg/L in the sample collected from monitoring well MW-5. However dissolved lead for this sample was not detected above the MTCA Method A CUL.

Remaining COCs detected above laboratory reporting limits did not exceed MTCA Method A CULs. Groundwater gauging data and select analytical results are summarized in **Table 2**. A historical groundwater flow direction rose diagram is included as **Figure 3.** Groundwater elevations and analytical results from the first semi-annual 2014 groundwater monitoring event are presented on **Figure 4**. The laboratory analytical soil report and chain-of-custody documentation are included in **Attachment E**.

Summary

During 2014, groundwater conditions remained generally consistent with previous years with NAPL being found in wells MW-4 and VE-3. Constituents that exceeded the MTCA Method A CUL remained generally consistent from previous years. Additional AS and VE wells were installed with the intent of system trenching, installation and startup in occurring in 2015.

The next groundwater monitoring event at the site is scheduled for the first half of 2015. AS/VE system operation monitoring will also be scheduled for the 2015 calendar year. Should you have any questions or if ARCADIS can be of further assistance, please contact Samuel Miles at (206) 726-4720.

Sincerely,

ARCADIS U.S., Inc.

Samuel Miles
Staff Scientist

Rebecca Andresen, L.G.
Associate Vice President

State of Washington
2588
Licensed Geologist
Rebecca K. Andresen

CC: Richard Wright; Jackson Food Stores

Attachments:

Table 1	Soil Selected Analytical Results
Table 2	Groundwater Gauging Data and Selected Analytical Results
Figure 1	Site Location Map
Figure 2	2014 Soil Analytical Results
Figure 3	Historical Groundwater Gradient Direction Rose Diagram
Figure 4	Groundwater Contour Map with Analytical Results May 13-14, 2014
Attachment A	Waste Manifests
Attachment B	Boring Logs
Attachment C	Soil Laboratory Reports and Chain-of-Custody Documentation
Attachment D	Groundwater Monitoring Field Data Sheets
Attachment E	Groundwater Laboratory Reports and Chain-of-Custody Documentation

Tables

Table 1
Soil Analytical Results
WA-11060

4580 Fauntleroy Way SW, Seattle, WA 98126

All analytical results are presented in milligrams per kilogram (mg/kg)

Well	Date	Sample Depth (ft bgs)	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total cPAHs	Total Naphthalenes
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CLs) in mg/kg			**100/30** [1]	**2,000**	**2,000**	**0.03**	**7**	**6**	**8**	**0.1** [2]	**5** [3]
AS-2	6/13/2014	20	16	<3.5	<12	0.0012 J	0.0027 J	0.031	0.0094	0.00058	0.053
AS-3	6/13/2014	10	2.9 J	7.3 J	39	--	--	--	--	**0.7451**	--
AS-3	6/13/2014	15	7.0	17	<11	<0.027	<0.054	<0.054	0.33	0.01836	--
AS-3	6/13/2014	20	**1,800**	8.1	<11	**0.085 J**	2.1	**8.3**	**33**	0.00055	--
AS-3	6/13/2014	25	**3,700**	5.6 J	<12	**0.63 J**	**21**	**19**	**84**	0.00862	--
AS-4	6/11/2014	15	<1.6	<3.6	<12	0.0073	<0.0011	0.0017 J	<0.0011	--	--
AS-5	6/11/2014	25	18	30	43	**0.62**	0.19 J	0.12 J	0.46	--	0.176
AS-6	6/11/2014	25	**130**	<3.8	<13	**0.34**	0.46	0.54	2.2	--	0.183
AS-6 (DUP-1)	6/11/2014	25	**71**	<3.8	<13	**0.20 J**	0.20 J	0.28	1.1	--	--
VE-4	6/13/2014	10	**440**	520	290	<0.026	0.061 J	0.14 J	0.98	**0.1846**	--

ft bgs = feet below ground surface

< = Not Detected: The given value is the method detection limit.

J = Estimated Value: The result is greater than or equal to the method detection limit and less than the limit of quantitation.

-- = Not Analyzed

DUP = Duplicate Sample

GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

DRO = Total Petroleum Hydrocarbons - Diesel Range Organics

HO = Total Petroleum Hydrocarbons - Heavy Oil Range Organics

cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons

GRO, DRO, HO methods by Ecology NW Methods; BTEX by 8260B; cPAH and Total Naphthalenes by EPA 8270C SIM

1 - 100/30 = GRO MTCA cleanup levels without benzene and the total of ethylbenzene, toluene, and xylene are less than 1% of the gasoline mixtures (100 mg/kg) and all other gasoline mixtures (30 mg/kg).

2 - MTCA Method A CL for benzo(a)pyrene. Total cPAHs value is the sum of all analyzed cPAHs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and ideno(1,2,3-cd)pyrene] normalized to benzo(a)pyrene toxicity based on the toxicity equivalency factors outlined in Table 708-2 of WAC 173-340-900.

3 - Total naphthlenes value is the sum of the naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene values.

BOLD = Constituent detected above Model Toxics Control Act Method A Cleanup Levels for soils

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
EW-1	5/9/2013	(NS)	268.20	24.49	0.17	243.85	--	--	--	--	--	--	--	--	--	--	--	--
EW-2	5/9/2013	(NS)	267.93	24.11	0.0	243.82	--	--	--	--	--	--	--	--	--	--	--	--
EW-3	5/9/2013	(NS)	268.50	24.90	0.31	243.85	--	--	--	--	--	--	--	--	--	--	--	--
GMW-1	5/10/2011	(NP)	--	22.08	0.0	--	**5,930**	**1,900**	<420	2.4	<1.0	69.7	94.8	<1.0	--	--	**28.4**	--
GMW-1	11/29/2011	(NP)	--	23.83	0.0	--	**6,080**	**610**	<380	<1.0	<1.0	86.9	113	--	--	--	<10.0	--
GMW-1	6/1/2012	(NM)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GMW-1	11/29/2012	(NM)	265.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GMW-1	5/9/2013	(NP)	265.63	22.58	0.0	243.05	**1,010**	<420	<420	<1.0	<1.0	4.4	4.6	<1.0	--	--	<10.0	<10.0
GMW-1	11/19/2013	(NP)	265.63	24.00	0.0	241.63	**1,400**	**2,500**	<73	<0.50	<0.70	6.6	6.8	<0.50	--	--	**16.7**	1.2
GMW-1	5/13/2014	(NS)	--	22.83	0.0	--	--	--	--	--	--	--	--	--	--	--	--	--
GMW-1	5/14/2014	(NP)	--	--	--	--	590	**560**	<66	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<4.7	<4.7
MW-1	5/11/1993		99.89	23.02	--	76.87	**3,300**	--	--	**82**	11	8	14	--	--	--	--	--
MW-1	3/4/1994		99.89	24.32	--	75.57	**830**	**580**	--	**6**	3	3	11	--	--	--	**38**	<3
MW-1	7/6/1994		99.89	24.60	--	75.29	**900**	<250	--	5	<0.5	2	10	--	--	--	--	--
MW-1	10/7/1994		99.89	24.97	--	74.92	**1,500**	--	--	**6**	<0.5	3	11	--	--	--	--	--
MW-1	12/28/1994		99.89	24.86	--	75.03	**1,400**	--	--	5	<0.5	2	7	--	--	--	--	--
MW-1	3/13/1995		99.89	24.16	--	75.73	**1,400**	--	--	**16**	<0.5	3	9	--	--	--	--	--
MW-1	6/30/1995		99.89	23.98	--	75.91	**1,400**	--	--	4	<0.5	3	7	--	--	--	--	--
MW-1	9/6/1995		99.89	24.30	--	75.59	**1,300**	--	--	5	<0.5	3	6	--	--	--	--	--
MW-1	12/8/1995		99.89	24.41	--	75.48	**1,300**	--	--	**7**	2	2	7	--	--	--	--	--
MW-1	3/11/1996		99.89	23.11	--	76.78	**900**	--	--	3	<0.5	<0.5	1	--	--	--	--	--
MW-1	6/18/1996		99.89	22.80	--	77.09	400	--	--	1	1	<0.5	2	--	--	--	--	--
MW-1	9/9/1996		99.89	23.11	--	76.78	600	--	--	2	<0.5	1	1	13	--	--	--	--
MW-1	12/11/1996		99.89	23.07	--	76.82	710	--	--	4	2	2	4	<10	--	--	--	--
MW-1	3/13/1997		99.89	22.12	--	77.77	100	--	--	<0.5	<0.5	<0.5	<1.0	<5	--	--	--	--
MW-1	6/5/1997		99.89	21.75	--	78.14	250	--	--	2	2	<0.5	<1.5	5	--	--	--	--
MW-1	9/5/1997		99.89	22.03	--	77.86	300	--	--	**8**	4	2	6	8	--	--	--	--
MW-1	4/2/1998		99.89	21.27	--	78.62	210	--	--	1	3	<0.5	<1.5	<5	--	--	--	--
MW-1	6/8/1998		99.89	21.53	--	78.36	300	--	--	<0.5	3	1	4	6	--	--	--	--
MW-1	12/9/1998		99.89	22.22	--	77.67	<500	--	--	<0.5	<5.0	<5.0	<5.0	<5.0	--	--	--	--
MW-1	6/26/1999		99.89	21.08	--	78.81	<100	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	--
MW-1	9/28/1999		99.89	21.88	--	78.01	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	1/19/2000		99.89	21.46	--	78.43	<50	--	--	<0.5	4	1	3	<0.5	--	--	--	--
MW-1	3/24/2000		99.89	21.40	--	78.49	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	7/2/2000		99.89	21.92	--	77.97	120	--	--	1	<0.5	1	2	2	--	--	--	--
MW-1	9/14/2000		99.89	22.54	--	77.35	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	12/14/2000		99.89	22.81	--	77.08	**1,700**	--	--	**<10**	19	<10	<30	**<40**	--	--	--	--
MW-1	9/22/2001		99.89	23.55	--	76.34	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	12/9/2001		99.89	23.63	--	76.26	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	3/20/2002		99.89	22.88	--	77.01	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	6/11/2002		99.89	23.02	--	76.87	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	12/21/2002	(NS)	99.89	24.54	--	75.35	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	3/19/2003	(NS)	99.89	24.50	--	75.39	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	6/18/2003	(NS)	99.89	24.36	--	75.53	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	9/23/2003	(NS)	99.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	10/21/2003	(P)	99.89	25.04	--	74.85	**3,270**	--	--	**32.5**	4.61	17.3	19.2	<1.00	--	--	--	--
MW-1	6/29/2004	(NS)	99.89	24.22	--	75.67	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	11/15/2004	(NS)	99.89	25.11	--	74.78	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	4/14/2005	(NS)	99.89	25.10	--	74.79	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
MW-1	12/18/2005	(NP)	99.89	25.46	--	74.43	**2,960**	--	--	**10.8**	2.04	1.23	2.76	<1.00	--	--	--	--
MW-1	6/11/2006	(NP)	99.89	24.54	--	75.35	**1,840**	--	--	**11.4**	1.12	1.6	2.34	19.8	--	--	--	--
MW-1	11/5/2006	(NP)	99.89	25.59	--	74.30	**3,880**	--	--	**73.2**	6.12	2.04	<6.00	--	--	--	--	--
MW-1	9/25/2007	(NP)	99.89	25.08	--	74.81	**1,640**	--	--	**27.8**	1.67	0.86	<3.00	--	--	--	--	--
MW-1	12/31/2007	(NP)	99.89	25.23	--	74.66	**1,970**	--	--	**22.7**	1.34	1.03	<3.00	--	--	--	--	--
MW-1	5/29/2008	(NP)	99.89	25.01	--	74.88	**2,370**	--	--	3.58	0.58	<0.500	<3.00	--	--	--	--	--
MW-1	10/28/2008	(NP)	99.89	25.80	--	74.09	**1,450**	--	--	2.8	1.07	<0.500	<3.00	--	--	--	--	--
MW-1	6/22/2009	(NP)	99.89	26.11	--	73.78	**2,200**	--	--	**30**	5.7	24	30.5	--	--	--	4.9	<2.00
MW-1	12/15/2009	(NP)	99.89	26.31	--	73.58	**1,500**	--	--	**11**	2	4.8	3.6	--	--	--	3.8	<2.00
MW-1	3/24/2010	(NS)	267.43	21.03	0.0	246.40	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	5/24/2010	(NP)	99.89	25.20	--	74.69	**940**	--	--	**18**	<2.5	<2.5	6.4	--	--	--	--	--
MW-1	5/24/2010	(Dup)(NP)	99.89	25.20	--	74.69	**940**	--	--	**22**	<2.5	<2.5	6.8	--	--	--	--	--
MW-1	10/12/2010	(NP)	267.43	25.09	0.0	242.34	**849**	--	--	2.8	<1.0	1.2	<3.0	5.2	--	--	<10.0	--
MW-1	5/10/2011	(NP)	267.43	23.60	0.0	243.83	642	**840**	<420	**17.8**	6.6	1.8	10.9	2.5	--	--	<10.0	--
MW-1	11/29/2011	(NP)	267.43	24.84	0.0	242.59	**815**	<75	<380	**5.5**	<1.0	<1.0	<3.0	--	--	--	10.3	--
MW-1	6/1/2012	(NP)	267.43	23.67	0.0	243.76	544	362	<396	3.6	<1.0	<1.0	3.0	7.4	--	--	<10.0	<10.0
MW-1	11/29/2012	(NP)	267.43	24.00	0.0	243.43	**1,320**	<430	<430	1.2	<1.0	<1.0	<3.0	<1.0	--	--	11.3	<3.0
MW-1	5/9/2013	(NP)	267.43	23.79	0.0	243.64	557	**620**	<430	**6.3**	<1.0	<1.0	4.1	1.6	--	--	<10.0	<10.0
MW-1	11/19/2013	(NP)	267.43	25.30	0.0	242.13	470	400	320	1.9(J)	<0.70	<0.80	1.7(J)	1.5(J)	--	--	4.8	0.15(J)
MW-1	5/13/2014	(NP)	267.43	24.12	0.0	243.31	490	250	110(J)	1.4	<0.50	<0.50	0.57(J)	0.67(J)	--	--	6.9(J)	<4.7
MW-2	5/11/1993		99.05	22.98	--	76.07	**17,000**	--	--	**2,500**	48	100	240	--	--	--	--	--
MW-2	3/4/1994		99.05	24.30	--	74.75	**4,300**	**1,300**	--	**1,500**	20	130	180	--	--	--	5	<3
MW-2	7/6/1994		99.05	24.54	--	74.51	**4,400**	390	--	**1,100**	16	53	97	--	--	--	--	--
MW-2	10/7/1994		99.05	24.94	--	74.11	**4,400**	--	--	**1,100**	18	57	82	--	--	--	--	--
MW-2	12/28/1994		99.05	24.60	--	74.45	**2,100**	--	--	**250**	5	13	14	--	--	--	--	--
MW-2	3/13/1995		99.05	23.84	--	75.21	**2,700**	--	--	**200**	12	29	50	--	--	--	--	--
MW-2	6/30/1995		99.05	23.72	--	75.33	**3,400**	--	--	**400**	8	50	39	--	--	--	--	--
MW-2	9/6/1995		99.05	23.97	--	75.08	**3,400**	--	--	**350**	8	50	35	--	--	--	--	--
MW-2	12/8/1995		99.05	23.97	--	75.08	**3,100**	--	--	**610**	5	29	36	--	--	--	--	--
MW-2	3/11/1996		99.05	22.66	--	76.39	**5,400**	--	--	**280**	12	100	120	--	--	--	--	--
MW-2	6/18/1996		99.05	22.18	--	76.87	**4,500**	--	--	**280**	12	130	56	--	--	--	--	--
MW-2	9/9/1996		99.05	22.72	--	76.33	**4,100**	--	--	**790**	5	78	35	<1.0	--	--	--	--
MW-2	12/11/1996		99.05	22.67	--	76.38	**3,700**	--	--	**460**	13	65	41	**43**	--	--	--	--
MW-2	3/13/1997		99.05	21.91	--	77.14	**3,200**	--	--	**140**	12	130	48	**<50**	--	--	--	--
MW-2	6/5/1997		99.05	21.06	--	77.99	**3,400**	--	--	**160**	22	180	79	**<100**	--	--	--	--
MW-2	9/5/1997		99.05	21.74	--	77.31	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	4/2/1998		99.05	20.71	--	78.34	**4,700**	--	--	**170**	51	35	210	**<50**	--	--	--	--
MW-2	6/8/1998		99.05	21.25	--	77.80	**3,800**	--	--	**420**	26	150	75	**140**	--	--	--	--
MW-2	9/17/1998		99.05	22.10	--	76.95	**2,900**	--	--	**720**	15	79	44	<5.0	--	--	--	--
MW-2	12/9/1998		99.05	21.99	--	77.06	**4,500**	--	--	**520**	8	100	62	<5.0	--	--	--	--
MW-2	3/17/1999		99.05	19.67	--	79.38	**5,000**	--	--	**19**	27	300	230	<5.0	--	--	--	--
MW-2	6/26/1999		99.05	21.26	--	77.79	**3,400**	--	--	**400**	29	160	130	13	--	--	--	--
MW-2	9/28/1999		99.05	21.75	--	77.30	**7,300**	--	--	**690**	20	23	110	**87**	--	--	--	--
MW-2	1/19/2000		99.05	21.12	--	77.93	**8,700**	--	--	**920**	20	260	74	<0.5	--	--	--	--
MW-2	3/24/2000		99.05	20.74	--	78.31	**10,000**	--	--	**310**	79	240	97	<5	--	--	--	--
MW-2	7/2/2000		99.05	21.51	--	77.54	**8,200**	--	--	**520**	35	190	85	**49**	--	--	--	--
MW-2	9/14/2000		99.05	22.31	--	76.74	**14,000**	--	--	**1,100**	100	110	100	<5	--	--	--	--
MW-2	12/14/2000		99.05	22.97	--	76.08	**15,000**	--	--	**740**	<10	68	<30	**<40**	--	--	--	--
MW-2	9/22/2001		99.05	23.59	--	75.46	**12,000**	--	--	**180**	9	240	110	20	--	--	--	--
MW-2	12/9/2001		99.05	23.27	--	75.78	**14,000**	--	--	**310**	9.5	100	96	<4.0	--	--	--	--
MW-2	3/20/2002		99.05	22.41	--	76.64	**15,000**	--	--	**250**	<5.0	220	98	**280**	--	--	--	--
MW-2	6/11/2002		99.05	22.61	--	76.44	**13,000**	--	--	**290**	<10	160	57	**<40**	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
MW-2	12/21/2002	(P)	99.05	24.30	--	74.75	**5,970**	--	--	**111**	13.4	211	70.3	**148**	--	--	--	--
MW-2	3/19/2003	(P)	266.69	23.90	0.0	242.79	**5,270**	--	--	**79.9**	8.71	156	55	**<25.0**	--	--	--	--
MW-2	6/18/2003	(P)	99.05	23.87	--	75.18	**6,770**	--	--	**36.7**	14.7	245	119	**143**	--	--	--	--
MW-2	9/23/2003	(P)	266.69	24.33	0.0	242.36	**6,490**	--	--	**40.5**	15.8	179	103	<20.0	--	--	--	--
MW-2	10/21/2003	(P)	99.05	24.38	--	74.67	**4,600**	--	--	**31.1**	9.38	86	61	<1.00	--	--	--	--
MW-2	6/29/2004	(NP)	99.05	23.74	--	75.31	**5,550**	--	--	**17.8**	11.2	228	76.5	**95.2**	--	--	--	--
MW-2	11/15/2004	(NP)	99.05	24.70	--	74.35	**5,670**	--	--	**12.3**	6.11	135	63.3	<2.00	--	--	--	--
MW-2	4/14/2005	(NP)	99.05	24.69	--	74.36	**4,680**	--	--	**130**	2.8	41.8	26.6	<2.00	--	--	--	--
MW-2	12/18/2005	(NP)	99.05	25.15	--	73.90	**5,700**	--	--	**122**	3.5	43.9	27.8	<5.00	--	--	--	--
MW-2	6/11/2006	(NP)	99.05	24.01	--	75.04	**5,450**	--	--	4.48	5.8	118	56.7	<2.00	--	--	--	--
MW-2	11/5/2006	(NP)	99.05	25.40	--	73.65	**7,490**	--	--	**263**	<5.00	46.2	<30.0	--	--	--	--	--
MW-2	9/25/2007	(NP)	99.05	24.72	--	74.33	**7,530**	--	--	**715**	9.74	50.8	64	--	--	--	--	--
MW-2	12/31/2007	(NP)	99.05	24.67	--	74.38	**6,000**	--	--	**477**	10.6	69.3	76.3	--	--	--	--	--
MW-2	5/29/2008	(NP)	99.05	24.73	--	74.32	**9,600**	--	--	**648**	11.1	55.9	48.4	--	--	--	--	--
MW-2	10/28/2008	(NP)	99.05	25.74	--	73.31	**10,300**	--	--	**1,430**	16	194	145	--	--	--	--	--
MW-2	6/22/2009	(NP)	99.05	25.91	--	73.14	**4,800**	--	--	**1,200**	40	100	130	--	--	--	<2.00	<2.00
MW-2	12/15/2009	(NP)	99.05	25.87	--	73.18	**4,300**	--	--	**1,600**	8.2	66	82	--	--	--	<2.00	<2.00
MW-2	3/24/2010	(NS)	266.69	21.11	0.0	245.58	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	5/24/2010	(NP)	99.05	24.64	--	74.41	**4,200**	--	--	**320**	7.7	69	84	--	--	--	--	--
MW-2	10/12/2010	(NP)	266.69	25.03	0.0	241.66	**3,590**	--	--	**1,890**	14.8	54.8	39.7	15.5	--	--	<10.0	--
MW-2	5/10/2011	(NP)	266.69	23.23	0.0	243.46	**5,520**	**1,000**	**2,000**	**281**	4.2	69.9	49.9	7.3	--	--	<10.0	--
MW-2	5/10/2011	(Dup)(NP)	266.69	23.23	0.0	243.46	**5,000**	**850**	**1,600**	**156**	3.9	76.3	53.2	5.6	--	--	<10.0	--
MW-2	11/29/2011	(NP)	266.69	24.82	0.0	241.87	**5,640**	98	<380	**549**	7.0	82.6	61.6	--	--	--	<10.0	--
MW-2	6/1/2012	(NP)	266.69	23.60	0.0	243.09	**2,940**	**2,240**	**3,080**	**107**	12.7	64.2	46.1	5.0	--	--	10.0	<10.0
MW-2	11/29/2012	(NP)	266.69	23.86	0.0	242.83	**10,400**	**2,100**	**760**	**399**	10.2	187	154	14.7	--	--	7.7	3.2
MW-2	5/9/2013	(NP)	266.69	23.41	0.0	243.28	**3,660**	**1,700**	<400	**42.9**	6.2	115	35.4	<5.0	--	--	12.3	<10.0
MW-2	5/9/2013	(Dup)(NP)	266.69	23.41	0.0	243.28	**4,210**	**2,700**	420	**63.4**	8.5	124	47.7	<5.0	--	--	12.4	<10.0
MW-2	11/19/2013	(NP)	266.69	24.40	0.0	242.99	**1,400**	280	100(J)	**7.3**	4.4(J)	17	40	6.3	--	--	9.8	3.2
MW-2	11/19/2013	(Dup)(NP)	266.69	24.40	0.0	242.99	**1,700**	--	--	**8.8**	6.4	17	46	6.4	--	--	--	--
MW-2	5/13/2014	(NP)	266.69	23.74	0.0	242.95	**3,100**	**1,800**	**880**	**79**	3.3(J)	58	20	6.0	--	--	6.6(J)	<4.7
MW-3	6/7/1993		98.53	22.28	--	76.25	**2,200**	--	--	**140**	7	13	14	--	--	--	--	--
MW-3	3/4/1994		98.53	23.62	--	74.91	**1,200**	**590**	--	**99**	2	11	10	--	--	--	4	<3
MW-3	7/6/1994		98.53	23.84	--	74.69	**1,500**	270	--	**44**	6	26	27	--	--	--	--	--
MW-3	10/7/1994		98.53	24.21	--	74.32	**1,500**	--	--	**63**	4	16	13	--	--	--	--	--
MW-3	12/28/1994		98.53	23.91	--	74.62	**1,800**	--	--	**77**	3	13	9	--	--	--	--	--
MW-3	3/13/1995		98.53	23.12	--	75.41	**1,700**	--	--	**87**	4	18	10	--	--	--	--	--
MW-3	6/30/1995		98.53	23.87	--	74.66	**1,800**	--	--	**90**	3	52	13	--	--	--	--	--
MW-3	9/6/1995		98.53	23.14	--	75.39	**1,700**	--	--	**96**	3	41	14	--	--	--	--	--
MW-3	12/8/1995		98.53	23.20	--	75.33	**1,800**	--	--	**73**	4	23	15	--	--	--	--	--
MW-3	3/11/1996		98.53	21.63	--	76.90	**2,800**	--	--	**120**	11	170	36	--	--	--	--	--
MW-3	6/18/1996		98.53	21.20	--	77.33	**3,500**	--	--	**150**	18	320	59	--	--	--	--	--
MW-3	9/9/1996		98.53	21.67	--	76.86	**3,500**	--	--	**62**	16	220	96	15	--	--	--	--
MW-3	12/11/1996		98.53	21.87	--	76.66	**2,100**	--	--	**96**	9	<0.5	34	<10	--	--	--	--
MW-3	3/13/1997		98.53	20.67	--	77.86	**3,100**	--	--	**97**	13	250	65	**<50**	--	--	--	--
MW-3	6/5/1997		98.53	19.83	--	78.70	**3,900**	--	--	**46**	19	250	130	**<100**	--	--	--	--
MW-3	9/5/1997		98.53	20.72	--	77.81	**4,400**	--	--	**98**	29	270	140	<5	--	--	--	--
MW-3	4/2/1998		98.53	19.63	--	78.90	**3,700**	--	--	**80**	25	320	150	**<50**	--	--	--	--
MW-3	6/8/1998		98.53	20.26	--	78.27	**3,500**	--	--	**60**	22	240	96	**<50**	--	--	--	--
MW-3	9/17/1998		98.53	21.21	--	77.32	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	12/9/1998		98.53	21.06	--	77.47	**3,200**	--	--	**63**	9	170	59	<5.0	--	--	--	--
MW-3	3/17/1999		98.53	18.72	--	79.81	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	6/26/1999		98.53	19.92	--	78.61	**3,100**	--	--	**72**	16	270	52	**56**	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
MW-3	9/28/1999		98.53	20.79	--	77.74	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	1/19/2000		98.53	20.19	--	78.34	**5,700**	--	--	**72**	29	430	110	<0.5	--	--	--	--
MW-3	3/24/2000		98.53	19.64	--	78.89	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	7/2/2000		98.53	20.53	--	78.00	**3,300**	--	--	**35**	18	230	64	7	--	--	--	--
MW-3	9/14/2000		98.53	21.34	--	77.19	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	12/14/2000		98.53	21.90	--	76.63	**5,500**	--	--	**40**	<10	210	<30	**<40**	--	--	--	--
MW-3	9/22/2001		98.53	22.82	--	75.71	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	12/9/2001		98.53	22.50	--	76.03	**4,200**	--	--	**42**	4.1	77	22	<4.0	--	--	--	--
MW-3	3/20/2002		98.53	21.55	--	76.98	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	6/11/2002		98.53	21.69	--	76.84	**8,400**	--	--	**77**	<5.0	320	54	<20	--	--	--	--
MW-3	12/21/2002		98.53	24.37	--	74.16	**3,440**	--	--	**37.7**	3.31	68.6	18.3	**39.3**	--	--	--	--
MW-3	3/19/2003	(NS)	98.53	23.17	--	75.36	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	6/18/2003		98.53	22.82	--	75.71	**4,020**	--	--	**39.1**	4.22	113	30.3	**62.6**	--	--	--	--
MW-3	9/23/2003	(NS)	98.53	23.55	--	74.98	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	10/21/2003		98.53	23.52	--	75.01	**3,190**	--	--	**19.8**	2.92	31.2	16.3	<1.00	--	--	--	--
MW-3	6/29/2004	(NS)	98.53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	11/15/2004	(NP)	98.53	23.95	--	74.58	**3,170**	--	--	**15.8**	2.36	20.9	11.1	2.36	--	--	--	--
MW-3	4/14/2005	(NP)	98.53	23.90	--	74.63	**3,340**	--	--	**17.1**	5.21	14.3	11.2	<2.00	--	--	--	--
MW-3	12/18/2005	(NP)	98.53	24.42	--	74.11	**4,150**	--	--	**15.1**	2.92	20.7	15.1	<1.00	--	--	--	--
MW-3	6/11/2006	(NP)	98.53	23.48	--	75.05	**4,000**	--	--	**20.9**	3.6	30	21.3	1.11	--	--	--	--
MW-3	11/5/2006	(NP)	98.53	24.59	--	73.94	**4,970**	--	--	**16.8**	2.85	19	16.6	--	--	--	--	--
MW-3	9/25/2007	(NP)	98.53	23.84	--	74.69	**4,530**	--	--	**18.2**	2.34	17.1	13.8	--	--	--	--	--
MW-3	12/31/2007	(NP)	98.53	23.83	--	74.70	**4,490**	--	--	**16.5**	2.38	32.7	16.1	--	--	--	--	--
MW-3	5/29/2008	(NP)	98.53	23.90	--	74.63	**5,350**	--	--	**16.5**	1.83	14.4	15	--	--	--	--	--
MW-3	10/28/2008	(NP)	98.53	24.97	--	73.56	**3,250**	--	--	**14.4**	1.86	13.8	10.3	--	--	--	--	--
MW-3	6/22/2009	(NP)	98.53	25.29	--	73.24	**2,000**	--	--	**15**	1.7	35	7.3	--	--	--	<2.00	<2.00
MW-3	12/15/2009	(NP)	98.53	25.14	--	73.39	**2,100**	--	--	**13**	1.5	28	7.3	--	--	--	7.7	<2.00
MW-3	3/24/2010	(NS)	266.00	21.21	0.0	244.79	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	5/24/2010	(NP)	98.53	24.10	--	74.43	**2,300**	--	--	**29**	6.2	28	19	--	--	--	--	--
MW-3	10/12/2010	(NP)	266.00	24.40	0.0	241.60	**2,380**	--	--	**31.1**	<1.0	16.6	4.7	<1.0	--	--	<10.0	--
MW-3	5/10/2011	(NP)	266.00	22.55	0.0	243.45	**3,280**	**820**	**840**	**33.6**	1.2	57.5	7.9	2.4	--	--	<10.0	--
MW-3	11/29/2011	(NP)	266.00	24.19	0.0	241.81	**3,130**	<76	<380	**30.4**	<1.0	21.0	6.9	--	--	--	<10.0	--
MW-3	6/1/2012	(NP)	266.00	22.94	0.0	243.06	**2,360**	**512**	446	**29.0**	<1.0	35.9	7.6	2.6	--	--	<10.0	<10.0
MW-3	11/29/2012	(NP)	266.00	22.90	0.0	243.10	**2,320**	**670**	500	3.2	1.9	40.7	10.6	1.8	--	--	4.1	<3.0
MW-3	5/9/2013	(NP)	266.00	22.72	0.0	243.28	**2,850**	**610**	<420	**32.8**	4.2	98.3	13.9	2.7	--	--	<10.0	<10.0
MW-3	11/19/2013	(NP)	266.00	24.30	0.0	241.70	380	**620**	340	3.5(J)	<0.70	3.4(J)	1.3(J)	0.68(J)	--	--	3.2	0.47(J)
MW-3	5/13/2014	(NP)	266.00	22.95	0.0	243.05	**1,100**	**710**	**700**	**8.4**	0.94(J)	17	3.7	1.1	--	--	<4.7	<4.7
MW-4	5/11/1993		100.26	23.03	--	77.23	**31,000**	--	--	**8,700**	**4,000**	57	**3,200**	--	--	--	--	--
MW-4	3/4/1994		100.26	26.83	4.00	76.63	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	7/6/1994		100.26	25.63	1.43	75.77	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	10/7/1994		100.26	26.07	1.63	75.49	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/28/1994		100.26	25.85	1.43	75.55	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/13/1995		100.26	25.59	1.88	76.17	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/30/1995		100.26	24.64	1.11	76.51	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/6/1995		100.26	24.78	1.05	76.32	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/8/1995		100.26	24.94	1.05	76.16	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/11/1996		100.26	24.68	2.38	77.48	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/18/1996		100.26	24.04	2.11	77.91	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/9/1996		100.26	24.08	1.85	77.66	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/11/1996		100.26	23.07	0.38	77.49	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/17/1999		100.26	--	--	--	**100,000**	--	--	**12,000**	**17,000**	**1,800**	**10,000**	**<50**	--	--	--	--
MW-4	9/28/1999		100.26	--	--	--	**97,000**	--	--	**27,000**	**65,000**	**18,000**	**100,000**	**<1,000**	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
MW-4	1/19/2000		100.26	--	--	--	**100,000**	--	--	**22,000**	**18,000**	**2,400**	**15,000**	<5	--	--	--	--
MW-4	3/24/2000		100.26	--	--	--	**100,000**	--	--	**13,000**	**18,000**	**2,200**	**13,000**	<5	--	--	--	--
MW-4	7/2/2000		100.26	--	--	--	**92,000**	--	--	**13,000**	**17,000**	**1,800**	**10,000**	**220**	--	--	--	--
MW-4	9/14/2000		100.26	--	--	--	**160,000**	--	--	**22,000**	**27,000**	**6,900**	**23,000**	<5	--	--	--	--
MW-4	9/14/2000	(Dup)	100.26	--	--	--	**160,000**	--	--	**16,000**	**22,000**	<500	**7,800**	**<2,000**	--	--	--	--
MW-4	9/22/2001		100.26	26.60	3.27	76.28	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/9/2001		100.26	25.50	2.37	76.66	**110,000**	--	--	**12,000**	**10,000**	**1,900**	**8,800**	**<40**	--	--	--	--
MW-4	3/20/2002		100.26	26.50	3.73	76.74	**100,000**	--	--	**13,000**	**19,000**	**2,500**	**13,000**	**360**	--	--	--	--
MW-4	6/11/2002		100.26	24.25	1.10	76.89	**95,000**	--	--	**13,000**	**17,000**	**2,300**	**12,000**	**<400**	--	--	--	--
MW-4	12/21/2002	(NS)	100.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	3/19/2003	(NS)	100.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/18/2003	(NS)	100.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	9/23/2003		100.26	22.31	0.07	78.01	**75,900**	--	--	**7,140**	**8,980**	**1,270**	**8,820**	**<50.0**	--	--	--	--
MW-4	10/21/2003		100.26	21.79	--	78.47	**44,700**	--	--	**3,190**	**6,370**	**779**	**6,160**	**<500**	--	--	--	--
MW-4	6/29/2004	(NP)	267.78	22.88	0.0	244.90	**378,000**	--	--	**11,200**	**16,300**	**3,550**	**22,600**	**2,500**	--	--	--	--
MW-4	11/15/2004	(NS)	100.26	23.07	1.45	78.35	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	4/14/2005	(NS)	100.26	23.82	1.89	77.95	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/18/2005	(NP)	100.26	23.43	0.08	76.89	**214,000**	--	--	**9,430**	**12,800**	**2,000**	**13,500**	**<100**	--	--	--	--
MW-4	6/11/2006	(NP)	100.26	21.87	0.01	78.40	**117,000**	--	--	**13,000**	**18,200**	**2,300**	**14,000**	**<1,000**	--	--	--	--
MW-4	11/5/2006	(NP)	100.26	22.92	0.01	77.35	**120,000**	--	--	**6,950**	**10,500**	**2,070**	**13,500**	--	--	--	--	--
MW-4	9/25/2007	(NS)	100.26	22.15	0.02	78.13	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/31/2007	(NS)	100.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/29/2008	(NM)	267.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	10/28/2008	(DRY)	100.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/22/2009	(NS)	100.26	24.21	0.04	76.08	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	12/15/2009	(NS)	100.26	24.04	0.28	76.44	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/24/2010	(NM)	267.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/10/2011	(NM)	267.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	11/29/2011	(NM)	267.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	6/1/2012	(NM)	267.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	11/29/2012	(NS)	267.78	24.00	0.10	243.86	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/9/2013	(NS)	267.78	26.48	3.83	244.36	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	11/19/2013	(NS)	267.78	26.61	1.81	242.62	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/13/2014	(NS)	267.78	25.80	2.50	243.98	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	5/11/1993		100.88	22.97	--	77.91	**1,800**	--	--	**130**	25	23	22	--	--	--	--	--
MW-5	3/4/1994		100.88	24.35	--	76.53	710	420	--	**26**	6	11	8	--	--	--	**27**	<3
MW-5	7/6/1994		100.88	24.72	--	76.16	400	<250	--	**11**	3	1	4	--	--	--	--	--
MW-5	10/7/1994		100.88	25.02	--	75.86	510	--	--	**13**	4	2	4	--	--	--	--	--
MW-5	12/28/1994		100.88	24.98	--	75.90	**1,300**	--	--	**46**	13	20	22	--	--	--	--	--
MW-5	3/13/1995		100.88	24.41	--	76.47	**2,800**	--	--	**34**	8	40	28	--	--	--	--	--
MW-5	6/30/1995		100.88	24.06	--	76.82	**1,100**	--	--	**50**	11	12	15	--	--	--	--	--
MW-5	9/6/1995		100.88	24.27	--	76.61	**1,100**	--	--	**42**	14	30	18	--	--	--	--	--
MW-5	12/8/1995		100.88	24.49	--	76.39	**1,700**	--	--	**32**	7	42	62	--	--	--	--	--
MW-5	3/11/1996		100.88	23.33	--	77.55	**8,100**	--	--	**85**	9	210	140	--	--	--	--	--
MW-5	6/18/1996		100.88	22.91	--	77.97	**2,700**	--	--	**100**	17	88	25	--	--	--	--	--
MW-5	9/9/1996		100.88	23.07	--	77.81	**2,200**	--	--	**180**	29	100	27	<1.0	--	--	--	--
MW-5	12/11/1996		100.88	23.13	--	77.75	**4,900**	--	--	**110**	18	96	250	12	--	--	--	--
MW-5	3/13/1997		100.88	22.28	--	78.60	**5,500**	--	--	**190**	35	190	73	**<50**	--	--	--	--
MW-5	6/5/1997		100.88	21.78	--	79.10	**4,100**	--	--	**290**	42	200	37	**<100**	--	--	--	--
MW-5	9/5/1997		100.88	21.92	--	78.96	**3,100**	--	--	**420**	83	190	730	**<50**	--	--	--	--
MW-5	4/2/1998		100.88	21.35	--	79.53	**5,400**	--	--	**470**	89	340	83	**<50**	--	--	--	--
MW-5	6/8/1998		100.88	21.48	--	79.40	**4,200**	--	--	**360**	110	220	66	**71**	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
MW-5	9/17/1998		100.88	22.12	--	78.76	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	12/9/1998		100.88	22.33	--	78.55	**4,900**	--	--	**170**	41	120	120	<1.0	--	--	--	--
MW-5	3/17/1999		100.88	20.93	--	79.95	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	6/26/1999		100.88	21.02	--	79.86	**3,300**	--	--	**180**	82	210	24	8	--	--	--	--
MW-5	9/28/1999		100.88	21.76	--	79.12	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	1/19/2000		100.88	21.65	--	79.23	**6,500**	--	--	**480**	350	370	87	<0.5	--	--	--	--
MW-5	3/24/2000		100.88	21.48	--	79.40	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	7/2/2000		100.88	22.01	--	78.87	**6,100**	--	--	**390**	110	290	54	20	--	--	--	--
MW-5	9/14/2000		100.88	22.59	--	78.29	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	12/14/2000		100.88	22.95	--	77.93	**4,000**	--	--	**26**	<10	<10	<30	**<40**	--	--	--	--
MW-5	9/22/2001		100.88	23.86	--	77.02	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	12/9/2001		100.88	23.90	--	76.98	**12,000**	--	--	**51**	<10	120	140	<10	--	--	--	--
MW-5	3/20/2002		100.88	23.13	--	77.75	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	6/11/2002		100.88	23.09	--	77.79	**5,700**	--	--	**94**	21	110	24	<20	--	--	--	--
MW-5	12/21/2002		100.88	24.65	--	76.23	**1,300**	--	--	**6.32**	2.95	6.59	11.1	5.88	--	--	--	--
MW-5	3/19/2003		100.88	24.68	--	76.20	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	6/18/2003		100.88	24.37	--	76.51	**1,950**	--	--	**7.18**	1.95	12	24.7	6	--	--	--	--
MW-5	9/23/2003		100.88	24.88	--	76.00	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	10/21/2003		100.88	24.99	--	75.89	322	--	--	1.18	2.19	0.732	3.38	<1.00	--	--	--	--
MW-5	6/29/2004	(NP)	100.88	24.22	--	76.66	**1,180**	--	--	**5.4**	3.24	4.79	14.1	6.95	--	--	--	--
MW-5	11/15/2004	(NP)	100.88	24.97	--	75.91	399	--	--	0.74	<0.500	<0.500	<1.00	<2.00	--	--	--	--
MW-5	4/14/2005	(NP)	100.88	25.08	--	75.80	**2,900**	--	--	**14.3**	13.4	33.9	40	<2.00	--	--	--	--
MW-5	12/18/2005	(NP)	100.88	25.47	--	75.41	661	--	--	2.49	2.43	3.58	5.11	<1.00	--	--	--	--
MW-5	6/11/2006	(NP)	100.88	24.43	--	76.45	**2,830**	--	--	**6.08**	1.05	2.78	3.1	<1.00	--	--	--	--
MW-5	11/5/2006	(NP)	100.88	25.55	--	75.33	723	--	--	1.41	0.78	1.29	<3.00	--	--	--	--	--
MW-5	9/25/2007	(NP)	100.88	24.95	--	75.93	712	--	--	1.86	0.53	0.77	<3.00	--	--	--	--	--
MW-5	12/31/2007	(NP)	100.88	25.16	--	75.72	**7,190**	--	--	**9.4**	11.3	38.1	75.7	--	--	--	--	--
MW-5	5/29/2008	(NP)	100.88	25.01	--	75.87	**2,740**	--	--	**7.47**	9.12	15.7	23.7	--	--	--	--	--
MW-5	10/28/2008	(NP)	100.88	25.89	--	74.99	516	--	--	2.01	1.46	<0.500	3.48	--	--	--	--	--
MW-5	6/22/2009	(NP)	100.88	26.95	--	73.93	**4,800**	--	--	**36**	24	87	49.9	--	--	--	**23**	--
MW-5	12/15/2009	(NP)	100.88	26.57	--	74.31	**2,300**	--	--	**24**	19	29	23	--	--	--	12	11
MW-5	5/24/2010	(NP)	100.88	25.55	--	75.33	**4,200**	--	--	**59**	8.4	96	41	--	--	--	--	--
MW-5	10/12/2010	(NP)	268.46	25.74	0.0	242.72	**2,320**	--	--	**31.4**	2.6	12.7	4.8	<1.0	--	--	<10.0	--
MW-5	10/12/2010	(Dup)(NP)	268.46	25.74	0.0	242.72	**2,260**	--	--	**31.6**	2.6	12.6	4.8	<1.0	--	--	--	--
MW-5	5/10/2011	(NP)	268.46	24.61	0.0	243.85	**4,710**	470	<400	**12.4**	4.1	39.3	25.5	<1.0	--	--	<10.0	--
MW-5	11/29/2011	(NP)	268.46	25.55	0.0	242.91	**2,210**	95	<380	**12.3**	2.2	6.4	3.1	--	--	--	10.5	--
MW-5	6/1/2012	(NP)	268.46	24.60	0.0	243.86	**1,620**	**1,040**	<392	**13.3**	3.0	9.6	10.7	<1.0	--	--	<10.0	<10.0
MW-5	6/1/2012	(Dup)(NP)	268.46	24.60	0.0	243.86	**1,520**	**1,030**	<388	**12.8**	2.8	8.8	10	<1.0	--	--	<10.0	<10.0
MW-5	11/29/2012	(NP)	268.46	25.31	0.0	243.15	**4,160**	**1,100**	<440	**18.0**	8.0	61.7	28.2	<1.0	--	--	**42.5**	<3.0
MW-5	5/9/2013	(NP)	268.46	24.52	0.0	243.94	**3,470**	<400	<400	**19.0**	6.7	48.3	18.5	<1.0	--	--	<10.0	<10.0
MW-5	11/19/2013	(NP)	268.46	26.35	0.0	242.11	**1,800**	240	**660**	**24**	5.7	17	6.3	<0.50	--	--	6.7	1.3
MW-5	5/13/2014	(NP)	268.46	25.18	0.0	243.28	**4,400**	440	370	**17**	7.5	69	23	<0.50	--	--	**16.2**	9.2(J)
MW-5	5/13/2014	(Dup)(NP)	268.46	25.18	0.0	243.28	**2,500**	--	--	**22**	2.5(J)	47	18	2.6(J)	--	--	--	--
MW-6	9/5/1997		98.62	21.20	--	77.42	930	--	--	<0.5	19	6	15	**32**	--	--	--	--
MW-6	4/2/1998		98.62	19.70	--	78.92	600	--	--	<0.5	10	3	11	6	--	--	--	--
MW-6	6/8/1998		98.62	20.58	--	78.04	430	--	--	<0.5	6	2	5	10	--	--	--	--
MW-6	9/17/1998		98.62	21.87	--	76.75	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	12/9/1998		98.62	21.20	--	77.42	260	--	--	<1.0	<1.0	1	3	2	--	--	--	--
MW-6	3/17/1999		98.62	18.49	--	80.13	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	6/26/1999		98.62	18.49	--	80.13	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	9/28/1999		98.62	21.40	--	77.22	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	1/19/2000		98.62	20.39	--	78.23	330	--	--	<0.5	<0.5	6	10	7	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
MW-6	3/24/2000		98.62	19.63	--	78.99	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	9/14/2000		98.62	21.92	--	76.70	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	12/14/2000		98.62	22.51	--	76.11	1,000	--	--	**<10**	<10	<10	<30	**<40**	--	--	--	--
MW-6	9/22/2001		98.62	23.31	--	75.31	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	12/9/2001		98.62	22.24	--	76.38	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	3/20/2002		98.62	21.44	--	77.18	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	6/11/2002		98.62	21.90	--	76.72	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	12/21/2002	(NS)	98.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	3/19/2003	(NS)	98.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	6/18/2003	(NS)	98.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	9/23/2003	(NS)	98.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	10/21/2003	(P)	98.62	22.69	--	75.93	254	--	--	**10**	3.66	0.898	5.03	<1.00	--	--	--	--
MW-6	6/29/2004	(NP)	98.62	22.88	--	75.74	540	--	--	**6.8**	1.73	<0.500	5.65	6.35	--	--	--	--
MW-6	11/15/2004	(NP)	98.62	24.12	--	74.50	370	--	--	**43.5**	14.5	0.58	10.4	<2.00	--	--	--	--
MW-6	4/14/2005	(NP)	98.62	23.75	--	74.87	443	--	--	**6.39**	0.95	<0.500	3.75	<2.00	--	--	--	--
MW-6	12/18/2005	(NP)	98.62	24.79	--	73.83	694	--	--	<0.500	<0.500	<0.500	3.01	<1.00	--	--	--	--
MW-6	6/11/2006	(NP)	98.62	23.09	--	75.53	601	--	--	<0.500	<0.500	<0.500	<3.00	<1.00	--	--	--	--
MW-6	11/5/2006	(NP)	98.62	25.80	--	72.82	444	--	--	<0.500	<0.500	<0.500	<3.00	--	--	--	--	--
MW-6	9/25/2007	(NP)	98.62	24.13	--	74.49	321	--	--	<0.500	<0.500	<0.500	<3.00	--	--	--	--	--
MW-6	12/31/2007	(NP)	98.62	23.59	--	75.03	168	--	--	<0.500	<0.500	<0.500	<3.00	--	--	--	--	--
MW-6	5/29/2008	(NP)	98.62	24.21	--	74.41	**1,620**	--	--	<0.500	<0.500	<0.500	<3.00	--	--	--	--	--
MW-6	10/28/2008	(NP)	98.62	25.47	--	73.15	481	--	--	<0.500	<0.500	<0.500	<3.00	--	--	--	--	--
MW-6	6/22/2009	(NP)	98.62	25.32	--	73.30	<50.0	--	--	<1.00	<1.00	<1.00	<3.00	--	--	--	<2.00	<2.00
MW-6	12/15/2009	(NP)	98.62	23.33	--	75.29	190	--	--	<1.00	<1.00	<1.00	<2.00	--	--	--	<2.00	<2.00
MW-6	3/24/2010	(NS)	266.06	22.12	0.0	243.94	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	5/24/2010	(NP)	98.62	22.90	--	75.72	280	--	--	**8.1**	<2.5	<2.5	<5.0	--	--	--	--	--
MW-6	10/12/2010	(NP)	266.06	23.06	0.0	243.00	<50.0	--	--	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	--
MW-6	5/10/2011	(NP)	266.06	22.01	0.0	244.05	96.0	180	<390	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	--
MW-6	11/29/2011	(NP)	266.06	23.42	0.0	242.64	<50.0	<78	<390	<1.0	<1.0	<1.0	<3.0	--	--	--	<10.0	--
MW-6	11/29/2011	(Dup)(NP)	266.06	23.42	0.0	242.64	<50.0	<77	<380	<1.0	<1.0	<1.0	<3.0	--	--	--	<10.0	--
MW-6	6/1/2012	(NP)	266.06	22.75	0.0	243.31	124	<76.9	<385	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	<10.0
MW-6	11/29/2012	(NM)	266.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	5/9/2013	(NP)	266.06	22.82	0.0	243.24	216	<400	<400	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	<10.0
MW-6	11/19/2013	(NP)	266.06	24.00	0.0	242.06	130(J)	31(J)	<71	<0.50	<0.70	<0.80	<0.80	<0.50	--	--	0.97(J)	0.12(J)
MW-6	5/13/2014	(NP)	266.06	22.76	0.0	243.30	120(J)	80(J)	180(J)	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<4.7	<4.7
MW-7	4/2/1998		97.32	18.79	--	78.53	**13,100**	--	--	<5	35	480	**1,100**	**<50**	--	--	--	--
MW-7	6/8/1998		97.32	19.60	--	77.72	**12,000**	--	--	<5.0	40	420	810	**63**	--	--	--	--
MW-7	9/17/1998		97.32	20.82	--	76.50	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	12/9/1998		97.32	20.21	--	77.11	**9,600**	--	--	<5.0	26	360	610	11	--	--	--	--
MW-7	3/17/1999		97.32	17.61	--	79.71	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	6/26/1999		97.32	19.29	--	78.03	**8,300**	--	--	**11**	24	410	600	<5.0	--	--	--	--
MW-7	12/14/2000		97.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	12/9/2001		97.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	3/20/2002		97.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	6/11/2002		97.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	6/18/2003	(ABANDONED)	97.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	3/24/2010		97.32	20.65	--	76.67	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	4/2/1998		98.49	19.99	--	78.50	<100	--	--	<0.5	1	<0.5	<1.5	<5	--	--	--	--
MW-8	6/8/1998		98.49	20.39	--	78.10	<100	--	--	<0.5	1	2	<1.5	<5.0	--	--	--	--
MW-8	9/17/1998		98.49	21.21	--	77.28	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	12/9/1998		98.49	21.03	--	77.46	<500	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
MW-8	3/17/1999		98.49	19.03	--	79.46	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	6/26/1999		98.49	20.02	--	78.47	<500	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	--	--
MW-8	12/14/2000		98.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	12/9/2001		98.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	3/20/2002		98.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	6/11/2002		98.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	6/18/2003	(ABANDONED)	98.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	3/24/2010		98.49	19.78	--	78.71	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	10/12/2010	(NP)	263.35	23.89	0.0	239.46	<50.0	--	--	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	--
MW-9	5/10/2011	(NP)	263.35	20.70	0.0	242.65	<50.0	160	<420	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	--
MW-9	11/29/2011	(NP)	263.35	22.64	0.0	240.71	<50.0	<76	<380	<1.0	<1.0	<1.0	<3.0	--	--	--	<10.0	--
MW-9	6/1/2012	(NM)	263.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	11/29/2012	(NM)	263.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-9	5/9/2013	(NP)	263.35	21.09	0.0	240.55	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	<10.0
MW-9	11/19/2013	(NP)	263.35	22.80	0.0	--	<50	49(J)	<75	<0.50	<0.70	<0.80	<0.80	<0.50	--	--	1.0	0.090(J)
MW-9	5/13/2014	(NP)	263.35	21.39	0.0	241.96	<50	<29	<67	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<4.7	<4.7
MW-10	6/1/2012	(NP)	268.30	24.20	0.0	244.10	<50.0	<76.9	<385	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	<10.0
MW-10	11/29/2012	(NP)	268.30	25.00	0.0	243.30	<100	<420	<420	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	**20.4**	<3.0
MW-10	11/29/2012	(Dup)(NP)	268.30	25.00	0.0	243.30	146	<470	<470	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	**22.6**	<3.0
MW-10	5/9/2013	(NP)	268.30	24.25	0.0	244.05	<100	<400	<400	<1.0	<1.0	<1.0	<3.0	<1.0	--	--	<10.0	<10.0
MW-10	11/19/2013	(NP)	268.30	25.80	0.0	242.50	66(J)	<34	<78	<0.50	<0.70	<0.80	<0.80	<0.50	--	--	12.8	<0.085
MW-10	5/13/2014	(NP)	268.30	24.78	0.0	243.52	<50	<28	<66	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<4.7	<4.7
VE-1	4/2/1998		--	--	--	--	**60,500**	--	--	**3,900**	**2,300**	**820**	**4,500**	**<2,500**	--	--	--	--
VE-1	9/17/1998		--	--	--	--	**240,000**	--	--	**2,700**	**2,000**	**1,400**	**7,700**	**<100**	--	--	--	--
VE-1	12/9/1998		--	--	--	--	**73,000**	--	--	**2,200**	**1,400**	**770**	**3,700**	**<25**	--	--	--	--
VE-1	3/17/1999		--	--	--	--	**42,000**	--	--	**4,000**	**2,400**	**790**	**4,100**	**<25**	--	--	--	--
VE-1	6/26/1999		--	--	--	--	**42,000**	--	--	**3,800**	**2,600**	670	**3,500**	**<100**	--	--	--	--
VE-1	9/28/1999		--	--	--	--	**25,000**	--	--	**3,400**	**2,000**	630	**3,000**	**<25**	--	--	--	--
VE-1	3/24/2000		--	--	--	--	**31,000**	--	--	**3,200**	610	27	**3,600**	<5	--	--	--	--
VE-1	7/2/2000		--	--	--	--	**27,000**	--	--	**3,200**	**1,900**	620	**3,000**	**130**	--	--	--	--
VE-1	9/14/2000		--	--	--	--	**29,000**	--	--	**3,200**	**2,200**	**920**	**3,000**	<5	--	--	--	--
VE-1	12/14/2000		--	23.02	--	--	**28,000**	--	--	**2,400**	**1,300**	580	**2,600**	**<40**	--	--	--	--
VE-1	9/22/2001		--	24.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	12/9/2001		--	23.90	0.07	--	**24,000**	--	--	**1,300**	880	510	**2,400**	**<40**	--	--	--	--
VE-1	3/20/2002		--	23.30	0.05	--	**52,000**	--	--	**1,800**	**1,300**	560	**2,400**	**280**	--	--	--	--
VE-1	6/11/2002		--	23.25	0.11	--	**26,000**	--	--	**2,800**	**1,600**	650	**2,900**	**<80**	--	--	--	--
VE-1	12/21/2002	(P)	268.17	24.89	0.0	243.28	**25,900**	--	--	**1,630**	**1,150**	**741**	**3,660**	**<200**	--	--	--	--
VE-1	3/19/2003	(P)	268.17	24.71	0.0	243.46	**27,100**	--	--	**1,590**	**1,450**	**743**	**3,640**	**<250**	--	--	--	--
VE-1	6/18/2003	(P)	--	24.50	0.05	--	**37,000**	--	--	**2,190**	**1,710**	**929**	**5,230**	**79.8**	--	--	--	--
VE-1	9/23/2003	(P)	--	25.01	0.03	--	**28,300**	--	--	**1,620**	**1,270**	**704**	**3,500**	<20.0	--	--	--	--
VE-1	10/22/2003	(P)	--	24.98	0.17	--	**36,700**	--	--	**3,360**	**1,850**	**847**	**4,130**	**<50.0**	--	--	--	--
VE-1	6/29/2004	(NP)	268.17	25.12	0.0	243.05	**192,000**	--	--	**8,070**	**7,030**	**2,230**	**10,400**	**820**	--	--	--	--
VE-1	11/15/2004	(NP)	--	25.40	0.61	--	**99,900**	--	--	**5,680**	**6,280**	**3,430**	**17,600**	**<100**	--	--	--	--
VE-1	4/14/2005	(NP)	--	26.15	1.31	--	**39,600**	--	--	**3,120**	**3,300**	**1,210**	**5,560**	**<40.0**	--	--	--	--
VE-1	12/18/2005	(NP)	--	26.00	0.35	--	**142,000**	--	--	**6,140**	**5,850**	**1,400**	**6,750**	**<100**	--	--	--	--
VE-1	6/11/2006	(NP)	--	26.53	--	--	**68,300**	--	--	**7,200**	**8,100**	**3,900**	**25,100**	**<500**	--	--	--	--
VE-1	11/5/2006	(NP)	--	26.33	0.45	--	**60,500**	--	--	**3,780**	**4,320**	**1,190**	**6,390**	--	--	--	--	--
VE-1	9/25/2007	(NS)	--	25.02	0.14	--	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	12/31/2007	(NS)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	5/29/2008	(NS)	--	25.63	0.84	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Groundwater Gauging Data and Select Analytical Results
WA-11060

4580 Fauntleroy Way Sw, Seattle, WA 98126

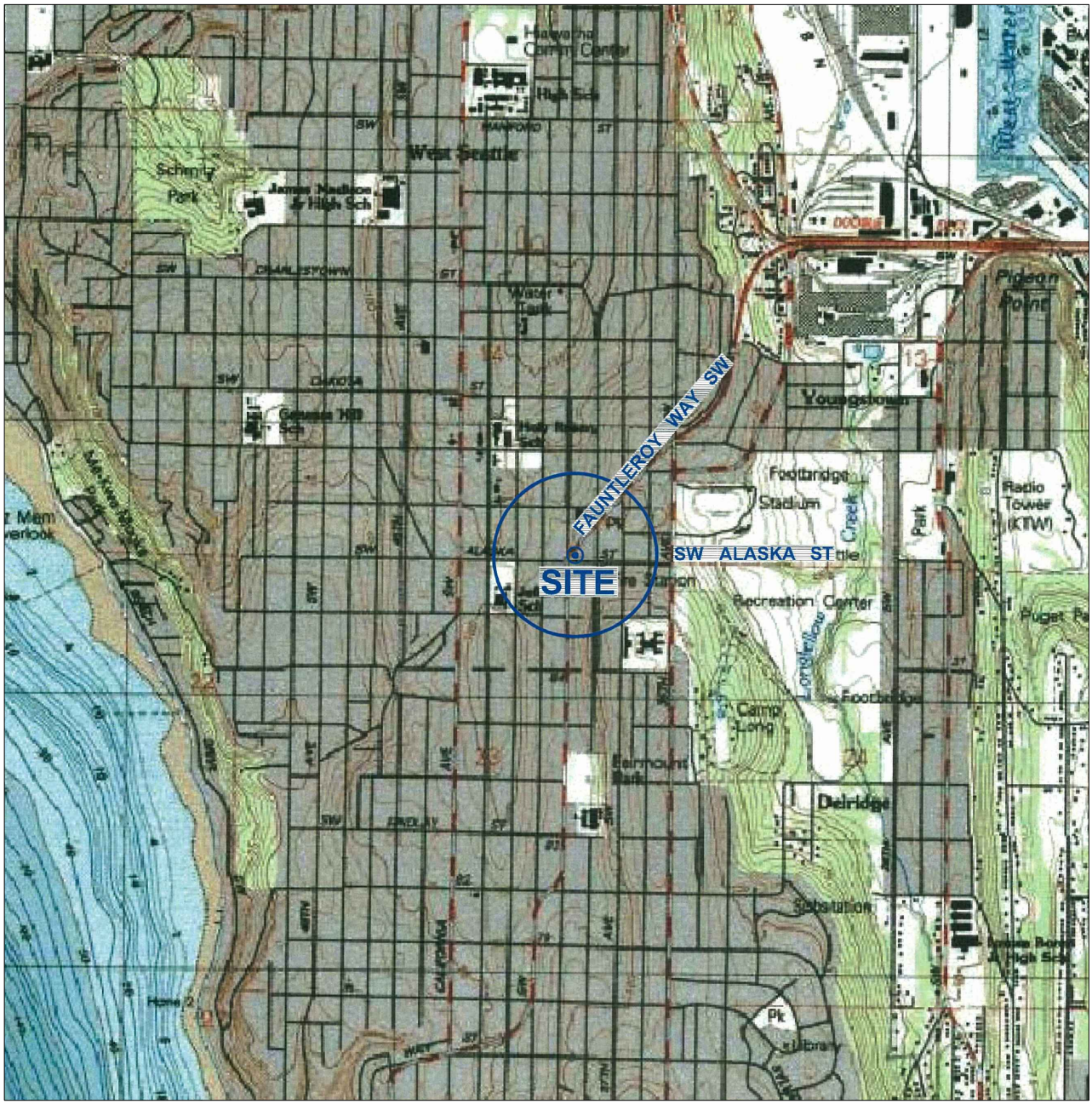
All analytical results are presented in micrograms per liter (µg/L)

Well	Date	Notes	TOC	DTW	NAPL	GWE	GRO	DRO	HO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Total Lead	Dissolved Lead
Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) in µg/L							**800/1,000**	**500**	**500**	**5**	**1,000**	**700**	**1,000**	**20**	**0.01**	**5**	**15**	**15**
VE-1	10/28/2008	(NS)	--	26.07	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	6/22/2009	(DRY, NE)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	12/15/2009	(NS)	--	26.56	0.06	--	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	5/24/2010	(NS)	268.17	26.70	0.0	241.47	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	5/10/2011	(NM)	268.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	11/29/2012	(NS)	268.17	24.05	0.10	244.20	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	5/9/2013	(NS)	268.17	24.23	0.0	243.94	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	11/19/2013	(NS)	268.17	26.35	0.55	242.26	--	--	--	--	--	--	--	--	--	--	--	--
VE-1	5/13/2014	(NS)	268.17	25.20	0.40	243.29	--	--	--	--	--	--	--	--	--	--	--	--

msl = Mean sea level
TOC = Top of casing
GWE = Groundwater elevation above msl
DTW = Depth to water below TOC
ABD = Well abandoned
All analytical results are in micrograms per liter (µg/L)
TOC/DTW/NAPL/GWE measurements are in feet (ft)
< = Not detected at or above the laboratory reporting limit and/or method detection limi
-- = Not analyzed/not applicable
NA = Not analyzed
NM = Not measured
NE = Top of casing not established
DUP = Duplicate sample
NS = Not Sampled
NAPL = Non-Aqueous Phase Liquid Thickness
GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics
DRO = Total Petroleum Hydrocarbons - Diesel Range Organics
HO = Total Petroleum Hydrocarbons- Heavy Oil Range Organics
EDB = Ethylene Dibromide
EDC = 1,2-Dichloroethane
MTBE = Methyl Tertiary Butyl Ether
BTEX = Benzene, Toluene, Ethylbenzene and Total Xylenes
P = Purge sampling
LFP = Low flow purge sampling
NP = No purge sampling
GRO, DRO, HO methods by Ecology NW Methods; BTEX, MTBE and EDB by 8260B, lead by EPA 6000/7000 Series, EDC by EPA 8011
Historic analysis by former consultant of BTEX, MTBE and EDB by EPA 8021B and confirmed with EPA 8260B if necessary
Groundwater Elevation - If NAPL is present, the elevation is corrected according to the following formula, (TOC elevation - depth to water) + (0.8 X NAPL Thickness)
800/1,000 = GRO MTCA cleanup levels with benzene present (800) and without (1,000)
Data collected prior to 2010 have been provided by previous consultants and are included as historical reference only
Site resurveyed in 2010. TOC elevation in reference to vertical datum N.A.V.D. 88 and horizontal datum NAD 83/98
J = estimated value – The result is greater than or equal to the Method Detection Limit (MDL) and less than the Limit of Quantitation (LOQ)

BOLD constituent detected above MTCA Cleanup Levels

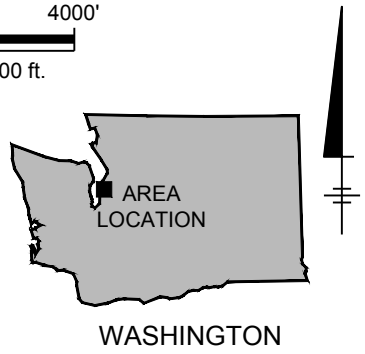
Figures



REFERENCE: BASE MAP USGS 7.5X15. MIN. TOPO. QUAD.,SEATTLE SOUTH, WA, 1983.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.



BP WEST COAST PRODUCTS LLC
FORMER BP STATION NO. 11060
4580 FAUNTLEROY WAY, SEATTLE, WASHINGTON
ANNUAL SITE STATUS REPORT 2014

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS LD:--- PIC:--- PM: S. DAVIS TM: T. POTTER LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Emeryville\ACT\GP09BPNA\WA48N0000\AnnualSiteStatus2014\DWG\GP09BPNAWA48 N01.dwg LAYOUT: 1 SAVED: 7/13/2015 5:09 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/13/2015 5:10 PM BY: REYES, ALEC
XREFS: IMAGES: PROJECTNAME: ---
SERVER-10069873571 4.jpg

AS-3				
Date	6/13/2014	6/13/2014	6/13/2014	6/13/2014
Depth	10	15	20	25
GRO	2.9 J	7.0	**1,800**	**3,700**
DRO	7.3 J	17	8.1	5.6 J
HO	39	<11	<11	<12
B	--	<0.027	**0.085 J**	**0.63 J**
T	--	<0.054	2.1	**21**
E	--	<0.054	**8.3**	**19**
X	--	0.33	**33**	**84**
cPAH	**0.7451**	0.01836	0.00055	0.00862

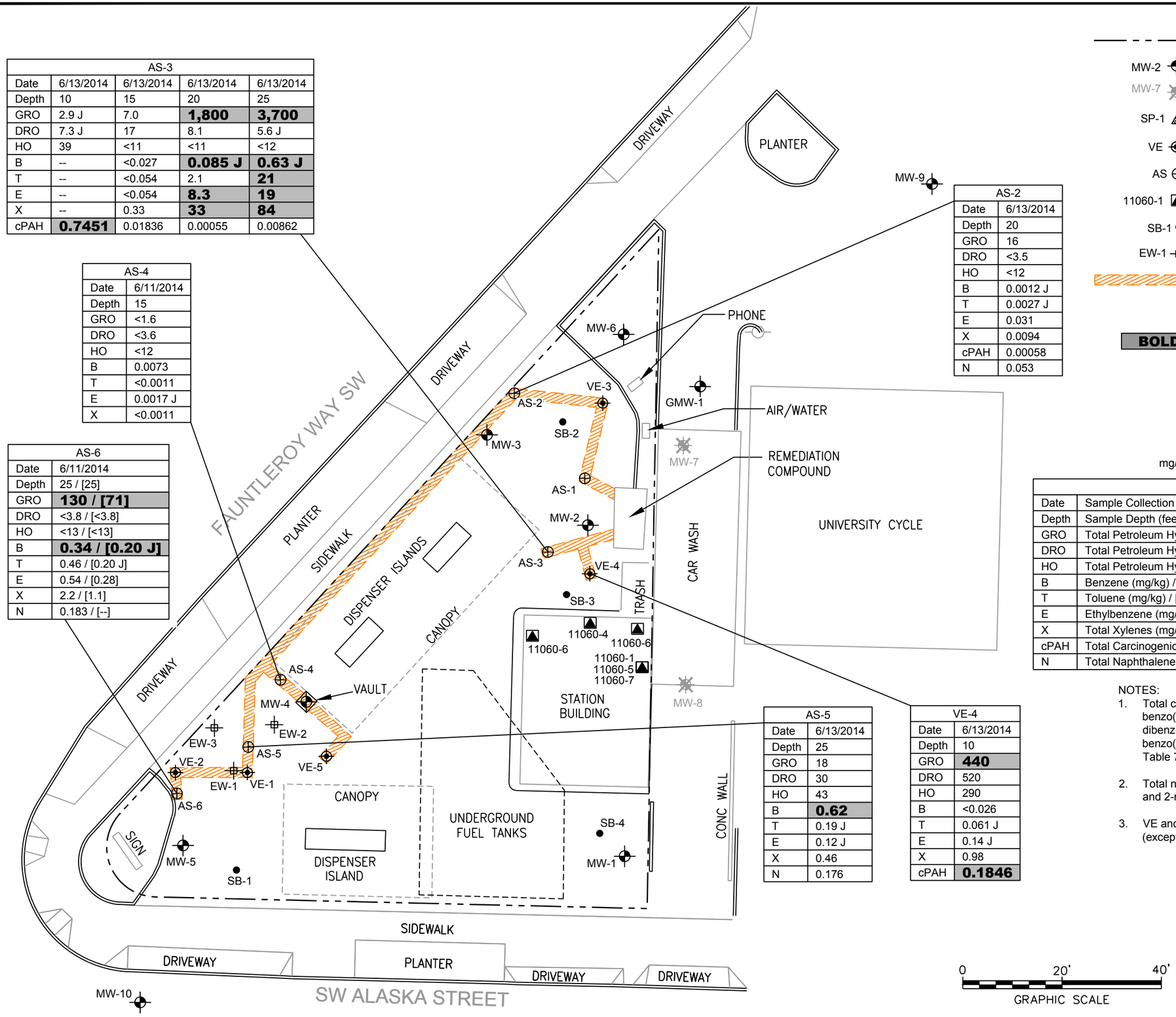
AS-4	
Date	6/11/2014
Depth	15
GRO	<1.6
DRO	<3.6
HO	<12
B	0.0073
T	<0.0011
E	0.0017 J
X	<0.0011

AS-6	
Date	6/11/2014
Depth	25 / [25]
GRO	**130 / [71]**
DRO	<3.8 / [<3.8]
HO	<13 / [<13]
B	**0.34 / [0.20 J]**
T	0.46 / [0.20 J]
E	0.54 / [0.28]
X	2.2 / [1.1]
N	0.183 / [--]

AS-2	
Date	6/13/2014
Depth	20
GRO	16
DRO	<3.5
HO	<12
B	0.0012 J
T	0.0027 J
E	0.031
X	0.0094
cPAH	0.00058
N	0.053

AS-5	
Date	6/13/2014
Depth	25
GRO	18
DRO	30
HO	43
B	**0.62**
T	0.19 J
E	0.12 J
X	0.46
N	0.176

VE-4	
Date	6/13/2014
Depth	10
GRO	**440**
DRO	520
HO	290
B	<0.026
T	0.061 J
E	0.14 J
X	0.98
cPAH	**0.1846**



LEGEND

- APPROXIMATE PROPERTY LINE
- MW-2 — MONITORING WELL LOCATION
- MW-7 — ABANDONED MONITORING WELL LOCATION
- SP-1 — AIR SPARGING WELL LOCATION
- VE — VAPOR EXTRACTION WELL LOCATION (APPROXIMATE)
- AS — AIR SPARGE WELL LOCATION (APPROXIMATE)
- 11060-1 — PASSIVE VAPOR MONITORING LOCATION
- SB-1 — SOIL BORING
- EW-1 — EXTRACTION WELL
- PROPOSED TRENCH LOCATION
- < — NOT DETECTED - VALUE SHOWN IS THE METHOD DETECTION LIMIT
- **BOLD** — ANALYTE DETECTED AT A CONCENTRATION ABOVE MODEL TOXICS CONTROL ACT METHOD A CLEANUP LEVEL FOR SOILS
- J — ESTIMATED VALUE - THE CONCENTRATION IS GREATER THAN OR EQUAL TO THE METHOD DETECTION LIMIT AND LESS THAN THE LIMIT OF QUANTITATION
- -- — NOT ANALYZED
- mg/kg — MILLIGRAMS PER KILOGRAM

LOCATION ID	
Date	Sample Collection Date
Depth	Sample Depth (feet below grou surface)
GRO	Total Petroleum Hydrocarbons - Gasoline Range Organics (mg/kg) / [Duplicate (mg/kg)]
DRO	Total Petroleum Hydrocarbons - Diesel Range Organics (mg/kg) / [Duplicate (mg/kg)]
HO	Total Petroleum Hydrocarbons - Heavy Oil Range Organics (mg/kg) / [Duplicate (mg/kg)]
B	Benzene (mg/kg) / [Duplicate (mg/kg)]
T	Toluene (mg/kg) / [Duplicate (mg/kg)]
E	Ethylbenzene (mg/kg) / [Duplicate (mg/kg)]
X	Total Xylenes (mg/kg) / [Duplicate (mg/kg)]
cPAH	Total Carcinogenic Polycyclic Aromatic Hydrocarbons (mg/kg) / [Duplicate (mg/kg)]
N	Total Naphthalenes (mg/kg) / [Duplicate (mg/kg)]

NOTES:

1. Total cPAH value is the sum of all analyzed cPAHs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and ideno(1,2,3-cd)pyrene] normalized to benzo(a)pyrene toxicity based on the toxicity equivalency factors outlined in Table 708-2 of WAC 173-340-900.
2. Total naphthlenes value is the sum of the naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene values.
3. VE and SVE well locations have not been surveyed and are approximate (except for VE-1).

0 20' 40'

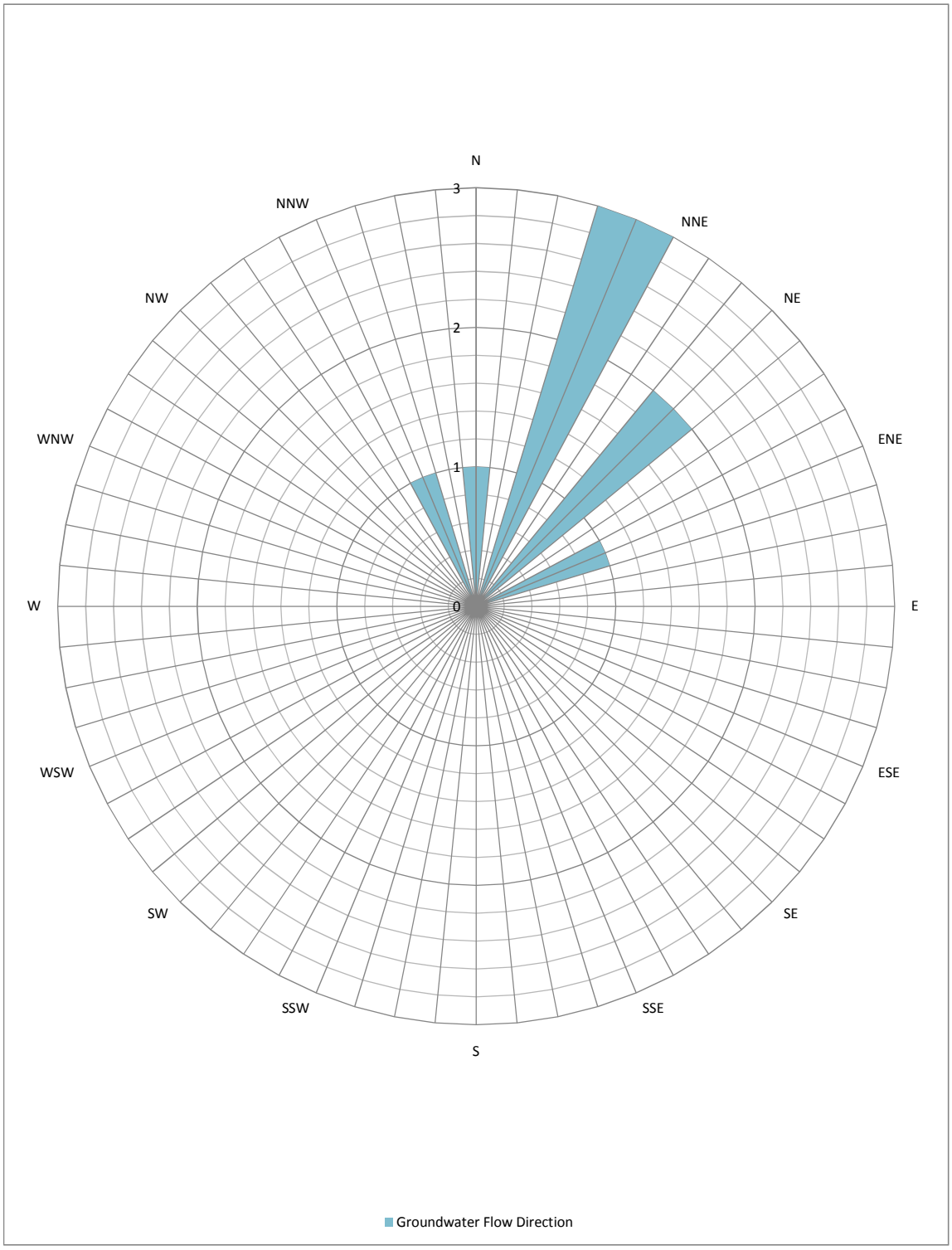
GRAPHIC SCALE

BP WEST COAST PRODUCTS LLC
FORMER BP STATION NO. 11060
4580 FAUNTLEROY WAY, SEATTLE, WASHINGTON
ANNUAL SITE STATUS REPORT 2014

2014 SOIL ANALYTICAL DATA

ARCADIS

FIGURE 2



Legend
N=North
NNE= North Northeast
NE= Northeast
ENE= East Northeast
E= East
ESE= East Southeast
SE=Southeast
SSE= South Southeast
S= South
SW= Southwest
SSW= South Southwest
WSW= West South West
W= West
WNW= West Northwest
NW=Northwest
NNW= North Northwest
8 = Number of Events Observed

Note
Rose diagram based on gradient directions from groundwater monitoring events conducted by ARCADIS since top of casing survey in March 2010.

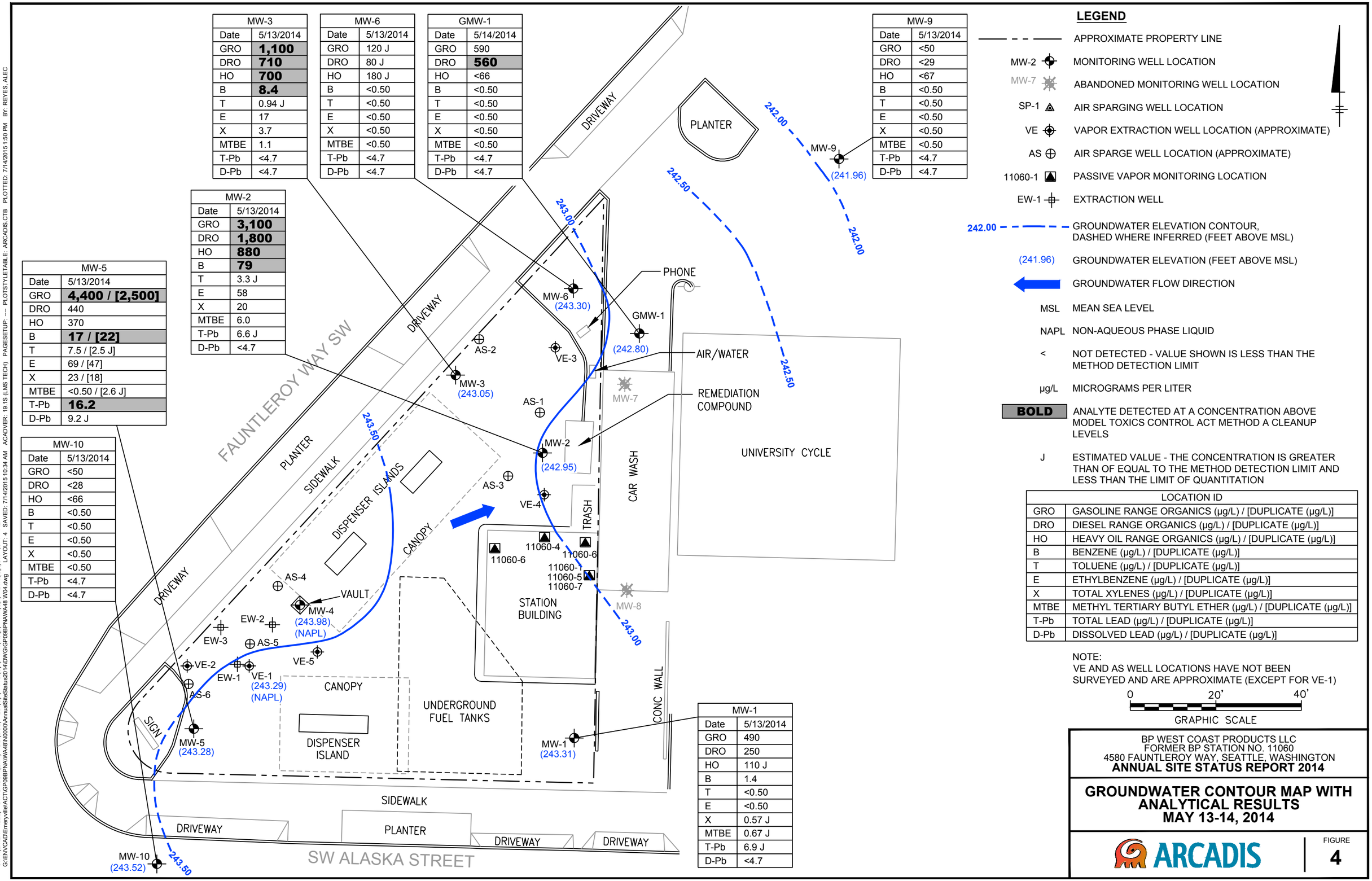
FORMER ARCO FACILITY NO. 11060
4580 FAUNTLEROY WAY
SEATTLE, WASHINGTON

ANNUAL GROUNDWATER MONITORING REPORT 2014

HISTORICAL GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

ARCADIS
Infrastructure · Water · Environment · Buildings

FIGURE
3



ARCADIS

Attachment A

Waste Manifests

16912

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: Exempt
2. Page 1 of: 1
3. Emergency Response Phone: 206 [illegible] 8010
4. **Waste Tracking Number**: 9776

5. Generator's Name and Mailing Address
BP West Coast Products Site - WA 11060
P.O. Box 80749
Rancho Santa Margarita, CA 92688
Generator's Phone: [illegible]

Generator's Site Address (if different than mailing address)
4580 Fauntleroy Way SW
Seattle, WA 98126

6. Transporter 1 Company Name: [illegible] Environmental Technologies, Inc
U.S. EPA ID Number: [illegible]

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Marine Vacuum Services
1516 South Graham St.
Seattle, WA 98108
Facility's Phone: 206 [illegible]
U.S. EPA ID Number: [illegible]

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Material Not Regulated by DOT (Petroleum Impacted Water)	3	DM	150	G
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information
3 ea x 55 gal 1A2 steel drum, Petroleum Impacted Water for treatment and Discharge to POTW

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year 14

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name | Signature | Month 1 | Day 13 | Year 14
Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name | Signature | Month | Day | Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09)

GENERATOR'S/SHIPPER'S INITIAL COPY

16912

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: Exempt
2. Page 1 of: 1
3. Emergency Response Phone: 206-285-8010
4. Waste Tracking Number:

GENERATOR

5. Generator's Name and Mailing Address
BP West Coast Products Site - WA-11060
P.O. Box 80249
Rancho Santa Margarita, CA 92688
Generator's Phone: 949 460-5200

Generator's Site Address (if different than mailing address)
4580 Fauntleroy Way SW
Seattle, WA 98126

6. Transporter 1 Company Name: Kleen Environmental Technologies, Inc.
U.S. EPA ID Number: WAH000004457

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Marine Vacuum Services
1516 South Graham St.
Seattle, WA 98108
Facility's Phone: 206-762-0242
U.S. EPA ID Number: WAD980974521

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material Not Regulated by DOT (Petroleum Impacted Water)		DM		G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
____ea x 55 gal 1A2 steel drum, Petroleum Impacted Water for treatment and Discharge to POTW

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Generator's/Offeror's Printed/Typed Name: Scott Zorn for BP West Coast Products LLC
Signature: S-A
Month: 10 Day: 11 Year: 14

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Signature: Month Day Year
Transporter 2 Printed/Typed Name: Signature: Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Signature: Month Day Year

169-BLC-O 6 10498 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

1692

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
Exempt	1	206-285-8010	1772

GENERATOR

5. Generator's Name and Mailing Address

BP West Coast Products LLC WA 11050
P.O. Box 80249
Rancho Santa Margarita, CA 92688
Generator's Phone: 949 460 5200

Generator's Site Address (if different than mailing address)

4580 Lander Bay Way SW
Seattle, WA 98126

6. Transporter 1 Company Name: Kleen Environmental Technologies, Inc.
U.S. EPA ID Number: WAT000004457

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address

Cemex
6400 Glenwood Ave
Everett, WA 98203
Facility's Phone: 425 210-4879
U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material Not Regulated by DOT (Petroleum Impacted Soil)	6	DM	4	T	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

6 ea x 55 gal DM steel drums, Petroleum Impacted Soil for Thermal Desorption

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name | Signature | Month 03 | Day 13 | Year 14

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year 14

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature | Month | Day | Year

169-BLC-O 6 10498 (Rev. 9/09)

GENERATOR'S/SHIPPER'S INITIAL COPY

16912

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
~~Exempt~~	1	206-285-8010	

GENERATOR

5. Generator's Name and Mailing Address

BP West Coast Products Site - WA-11060
P.O. Box 80249
Rancho Santa Margarita, CA 92688

Generator's Phone: ~~949 460-5200~~

Generator's Site Address (if different than mailing address)

4580 Fauntleroy Way SW
Seattle, WA 98126

6. Transporter 1 Company Name ~~Kleen Environmental Technologies, Inc.~~ U.S. EPA ID Number

7. Transporter 2 Company Name U.S. EPA ID Number ~~WAH000004457~~

8. Designated Facility Name and Site Address U.S. EPA ID Number

Cemex
6300 Glenwood Ave
Everett, WA 98023

Facility's Phone: ~~425-210-8429~~

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	None
1.	Material Not Regulated by DOT (Petroleum Impacted Soil)		DM		P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

_____ ea x 55 gal 1A2 steel drums, Petroleum Impacted Soil For Thermal Desorption

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Zorn for BP West Coast Products LLC | Signature | Month 6 | Day 11 | Year 14

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature | Month | Day | Year

169-BLC-O 6 10498 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

ARCADIS

Attachment B

Boring Logs

Date Start/Finish: 6/9/2014 - 6/13/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 29 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-2**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0									Concrete	Concrete
										Boring cleared to a depth of 6.5 feet bgs with air-knife and vacuum truck	2" Well Cap
											2/12 Silica Sand
5	-5	1	HA	0.5			0.6	CL		CLAY with gravel (CL): low plasticity clay with coarse subangular gravel, brown, very dense, dry to damp, some oxidation present	
10	-10	2	SS	0.5	20 50/6"	>50	44.6	CL		CLAY with gravel (CL): medium plasticity clay with coarse rounded gravel, blue-grey, very dense, damp, slight HCLO	Neat Cement
											2" Schedule 80 PVC Riser
15	-15	3	SS	1.5	12 15 16	31	610.4	ML		Clayey SILT (ML): nonplastic silt with trace clay, blue-grey, medium density, damp to moist, HCLO	
											First Encountered Groundwater

ARCADIS
Infrastructure, environment, buildings

Remarks:
bgs = below ground surface
HA = Hand Auger
NE = Not Established
PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project: GP09BPNAWA48 Template:
Data File:
Date: 8/21/2014 RB

Date Start/Finish: 6/9/2014 - 6/13/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 29 feet bgs
Surface Elevation: NE

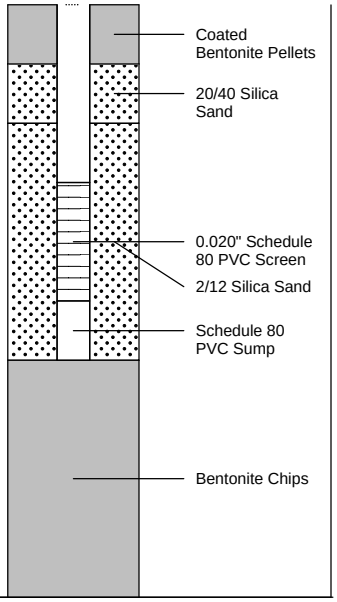
Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-2**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
20	-20	4	SS	1.0	20 18 20	38	851.7	SW-SM		Silty SAND (SW-SM): well sorted fine to medium sand with little low plasticity silt, grey, dense, wet, HCLO	
		5	SS	1.0	20 35 30	65	258.3	SW-SM		Silty SAND (SW-SM): moderately well sorted fine to medium sand with little low to medium plasticity silt, grey-brown, dense, wet, HCLO	
25	-25	6	SS	1.0	45 50/6"	>50	12.3	SM		Silty SAND (SM): moderately well sorted fine to medium sand with low to medium plasticity silt, brown, very dense, wet	
		7	SS	1.0	30 50/5"	>50	18.3	SM		Silty SAND (SM): moderately well sorted medium sand with medium plasticity silt, brown, very dense, wet	



ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface
HA = Hand Auger
NE = Not Established
PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Date Start/Finish: 6/9/2014 - 6/13/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 26.5 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-3**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Concrete	Concrete
											Boring cleared to a depth of 6.5 feet bgs with air-knife and vacuum truck	2" Well Cap
												2/12 Silica Sand
5	-5	1	HA	0.5			0.1		CL		CLAY (CL): low to medium plasticity clay with silt and trace fine sand, brown, dense, damp	
10	-10	2	SS	1.0	7 10 10	20	0.8		CL		CLAY (CL): low plasticity clay, trace medium sand, dark grey, medium density, moist, woody debris present	Neat Cement 2" Schedule 80 PVC Riser
15	-15	3	SS	0.4	50/6"	>50	42.6		CL		CLAY (CL): low plasticity clay, brown, very dense, moist, slight HCLO	Coated Bentonite Pellets 20/40 Silica Sand

ARCADIS
Infrastructure · Water · Environment · Buildings

Remarks:
bgs = below ground surface
HA = Hand Auger
NE = Not Established
PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/13/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 26.5 feet bgs
Surface Elevation: NE

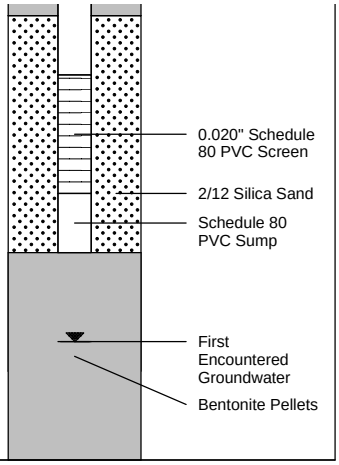
Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-3**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
20	-20	4	SS	1.2	27 31 40	71	867.7		SW		SAND (SW): well sorted medium sand with trace silt, brown-grey, dense, moist, strong HCLO	
		5	SS	1.5	21 30 34	64	1,838		ML		Sandy SILT (ML): low plasticity silt with medium sand, grey, dense, damp, HCLO	
25	-25	6	SS	1.0	1 1 1	2	349.7		ML		Sandy SILT (ML): low plasticity silt with medium sand, grey, soft, wet, HCLO with visible product encountered at 26 ft bgs	



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Remarks:
bgs = below ground surface
HA = Hand Auger
NE = Not Established
PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/10/2014 - 6/11/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 29 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-4**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Concrete	Concrete
											Boring cleared to a depth of 6.5 feet bgs with air-knife and vacuum truck	2" Well Cap
												2/12 Silica Sand
5	-5	1	HA	0.5			10.3		SP-SM		Silty SAND with gravel (SP-SM): poorly sorted fine to medium sand with nonplastic silt and medium rounded gravel, greyISH-brown, very dense, dry to damp	
10	-10	2	SS	1.0	8 9 9	18	59.7		ML		Sandy clayey SILT (ML): nonplastic silt with poorly sorted medium sand and clay, blue-grey, medium density, dry to damp, slight HCLO	Neat Cement
												2" Schedule 80 PVC Riser
15	-15	3	SS	1.5	14 11 14	25	54.4		CL		CLAY (CL): low to medium plasticity clay with silt, orange-brown, medium density, damp, slight HCLO	

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ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/10/2014 - 6/11/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 29 feet bgs
Surface Elevation: NE

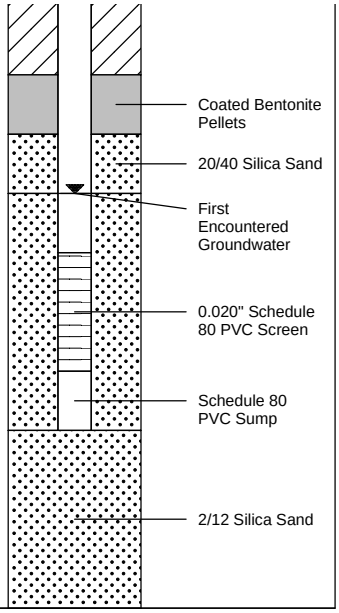
Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-4**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description
20	-20	4	SS	1.0	50/6"	>50	1,468		SW		SAND (SW): well sorted medium sand with trace nonplastic silt, blue-grey, very dense, damp, HCLO
		5	SS	1.0	30 50/5"	>50	835.9		SW		SAND (SW): well sorted medium sand with trace nonplastic silt, blue-grey, very dense, wet, HCLO
25	-25	6	SS	0.4	75/4"	>75	1,270		SP		SAND with gravel (SP): poorly sorted sand with rounded coarse gravel and trace medium plasticity silt, blue-grey, very dense, wet, HCLO
		7	SS	1.0	19 50/6"	>50	258.6		ML		SILT (ML): low plasticity silt, blue-grey, very dense, wet



Well/Boring Construction

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PID = Photoionization Detector
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HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/10/2014 - 6/11/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 26.5 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-5**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Concrete	Concrete
											Boring cleared to a depth of 6.5 ft bgs with air-knife and vacuum truck	2" Well Cap
												2/12 Silica Sand
5	-5	1	HA	0.5			9.4		CL		CLAY (CL): medium plasticity clay, blue-grey, dense, damp, slight HCLO	
10	-10	2	SS	0.5	14 13 11	24	24.5		CL		CLAY (CL): low plasticity clay, grey and brown, medium density, dry and crumbly, slight HCLO	Neat Cement
												2" Schedule 80 PVC Riser
15	-15	3	SS	1.5	14 20 20	40	1,553		CL		CLAY (CL): medium plasticity clay with some silt, blue-grey, dense, damp, strong HCLO	
												Coated Bentonite Pellets

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HA = Hand Auger
NE = Not Established
PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/10/2014 - 6/11/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 26.5 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-5**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
20	-20	4	SS	0.5	50/6"	>50	1,106		SW		SAND (SW): well sorted fine to medium sand with trace silt, brown, very dense, damp, strong HCLO	20/40 Silica Sand
		5	SS	0.5	50/6"	>50	1,353		SP		Gravelly SAND (SP): poorly sorted fine to coarse sand with large rounded gravel and trace nonplastic silt, brown, very dense, damp, strong HCLO	0.020" Schedule 80 PVC Screen
25	-25	6	SS	0.5	26 50/5"	>50	637.1		ML		Clayey SILT (ML): low plasticity silt with clay and trace very fine sand, brown-grey, very dense, damp, HCLO	Schedule 80 PVC Sump 2/12 Silica Sand

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ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Date Start/Finish: 6/9/2014 - 6/10/2014 - 6/11/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 8" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 29 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: **AS-6**

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Concrete	Concrete
											Boring cleared to a depth of 6.5 ft bgs with air-knife and vacuum truck	2" Well Cap
												2/12 Silica Sand
5	-5	1	HA	0.5			0.1		CL		CLAY (CL): low to medium plasticity clay with trace poorly-sorted medium sand, greyish-brown, very dense, damp	
10	-10	2	SS	1.5	7 8 9	17	13.3		CL		CLAY (CL): low plasticity clay and silt with trace fine sand, blue-grey, medium density, moist, woody debris present	Neat Cement
												2" Schedule 80 PVC Riser
15	-15	3	SS	1.5	10 12 12	24	1,607		SM		Silty SAND (SM): well-sorted fine to medium sand with nonplastic silt and trace coarse rounded gravel, grey, medium density, wet, HCLO	First Encountered Groundwater

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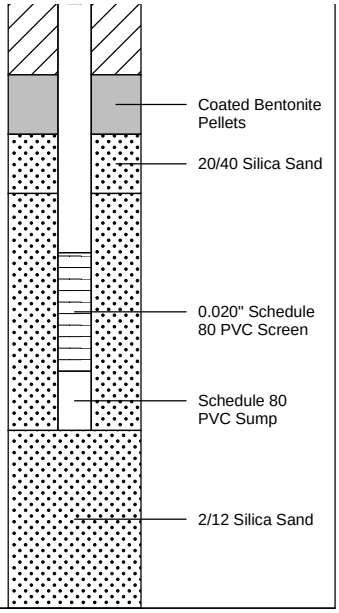
HA = Hand Auger
NE = Not Established
PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/10/2014 - 6/11/2014 **Drilling Company:** Cascade Drilling **Driller's Name:** Curtis Askew **Drilling Method:** Hollow Stem Auger **Auger Size:** 8" Outer Diameter **Rig Type:** **Sampling Method:** HA/SS	**Northing:** NE **Easting:** NE **Casing Elevation:** NE **Borehole Depth:** 29 feet bgs **Surface Elevation:** NE **Descriptions By:** Ryan Brauchla	**Well/Boring ID: AS-6** **Client:** BP West Coast Products, LLC. **Location:** Former ARCO 11060, Shell Station, 4580 Fauntleroy Way SW Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
20	-20	4	SS	1.0	15 24 20	44	895.7		SM		Silty SAND (SM): well-sorted fine to medium sand with little nonplastic silt, brown, dense, wet, HCLO	
		5	SS	1.5	23 24 27	51	1,383		SM		Silty SAND (SM): well-sorted fine to medium sand with nonplastic silt, brown, dense, wet, HCLO	
									CL		CLAY lens @ 23.5 ft bgs	
									SW		SAND with gravel (SW): well-sorted medium sand with little coarse rounded gravel, brown-grey, dense, dry, HCLO	
25	-25	6	SS	1.5	19 24 17	41	1,495		ML		Sandy SILT (ML): nonplastic silt with fine sand, brownish-grey, dense, wet, HCLO	
		7	SS	1.5	27 30 31	61	69.6		ML		Sandy SILT (ML): nonplastic silt with fine sand, brownish-grey, dense, wet, HCLO	



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HA = Hand Auger
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PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Date Start/Finish: 6/9/14 - 6/10/14 - 6/11/14 - 6/13/14
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 10" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 16.5 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: VE-3

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Concrete	Jet Set Concrete Seal
												2/12 Silica Sand
												4" Well Cap
											Boring cleared to a depth of 6.5 feet bgs with air-knife and vacuum truck	Bentonite Chips
												4" Schedule 40 PVC Riser
5	-5	1	HA	0.5			0.0		CL		CLAY with gravel (CL): low plasticity clay with dry clods and rounded medium gravel, brown, very dense, dry to damp	
												2/12 Silica Sand
10	-10	2	SS	1.0	10 8 8	16	3.5		SC		Clayey SAND (SC): low plasticity clay and coarse rounded sand in roughly equal proportions, brown, loose, damp	0.020" Schedule 40 PVC Screen
15	-15	3	SS	1.0	15 20 50/6"	>70	6.4		CL		CLAY (CL): medium plasticity clay, blue-grey, very dense, damp	

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PID = Photoionization Detector
ppm = parts per million
HCLO = Hydrocarbon-like Odor
SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/13/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 10" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 16.5 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: VE-4

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Concrete	Jet Set Concrete Seal
											Construction backfill with fragments of concrete and tile was observed to a depth of 3 feet bgs	2/12 Silica Sand
												4" Well Cap
											Boring cleared to a depth of 6.5 feet bgs with air-knife and vacuum truck	Bentonite Chips
												4" Schedule 40 PVC Riser
5	-5	1	HA	0.5			0.0		CL		CLAY (CL): low to medium plasticity clay with some poorly-sorted fine to medium sand, brown, dense, damp	
												2/12 Silica Sand
10	-10	2	SS	1.0	7 10 10	20	119.9		CL		CLAY with gravel (CL): low to medium plasticity clay with coarse rounded gravel, brown, medium density, damp	0.020" Schedule 40 PVC Screen
15	-15	3	SS	0	50/6"	>50					No recovery	
		4	SS	0	50/6"	>50					No recovery	

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SS = Split Spoon sample, 2" x 1.5'
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Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

Date Start/Finish: 6/9/2014 - 6/10/2014 - 6/11/2014
Drilling Company: Cascade Drilling
Driller's Name: Curtis Askew
Drilling Method: Hollow Stem Auger
Auger Size: 10" Outer Diameter
Rig Type:
Sampling Method: HA/SS

Northing: NE
Easting: NE
Casing Elevation: NE

Borehole Depth: 16.5 feet bgs
Surface Elevation: NE

Descriptions By: Ryan Brauchla

Well/Boring ID: VE-5

Client: BP West Coast Products, LLC.

Location: Former ARCO 11060, Shell Station,
4580 Fauntleroy Way SW
Seattle, WA 98116

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	USCS Code	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										Concrete	Jet Set Concrete Seal
												2/12 Silica Sand
												4" Well Cap
											Boring cleared to a depth of 6.5 ft bgs with air-knife and vacuum truck	Bentonite Chips
												4" Schedule 40 PVC Riser
											Rubble blocking part of boring at 4.8 ft bgs	
5	-5	1	HA	0.5			148.9		SP-SM		SAND with silt and gravel (SP-SM): poorly sorted fine to coarse sand with nonplastic silt and coarse gravel, grey, medium density, dry, strong HCLO	
												2/12 Silica Sand
10	-10	2	SS	1.0	5 10 13	23	975.5		CL		CLAY (CL): medium plasticity clay with trace sand and gravel, blue-grey, medium density, damp, HCLO	0.020" Schedule 40 PVC Screen
												First Encountered Groundwater
15	-15	3	SS	1.5	10 12 11	23	885.2		SW		SAND (SW): well sorted medium sand with little nonplastic silt, grey-brown, medium density, wet, HCLO	

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SS = Split Spoon sample, 2" x 1.5'
PVC = Polyvinyl Chloride

Traffic rate well vault to be installed at later date

Project Number:GP09BPNAWA48
Data File:
Template:
Date: 8/21/2014
Created/Edited by:RB

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Attachment C

Soil Laboratory Reports and
Chain-of-Custody Documentation

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

July 09, 2014

Project: WA-11060

Submittal Date: 06/13/2014
Group Number: 1481695
PO Number: GP09BPNA.WA48
State of Sample Origin: WA

Client Sample Description	Lancaster Labs (LL) #
AS-4 Soil	7498017
AS-5 Soil	7498018
AS-6 Soil	7498019
DUP-1 Soil	7498021

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Sam Miles
ELECTRONIC COPY TO	Atlantic Richfield c/o ARCADIS	Attn: Rory Henneck
ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Prajakta Ghatpande

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

Project Name: WA-11060
LL Group #: 1481695

General Comments:

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client. The compliance signature is located on the cover page of the Analysis Reports.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

SW-846 8270C SIM, GC/MS Semivolatiles
Batch #: 14174SLE026 (Sample number(s): 7498018-7498019 UNSPK: 7498018)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Naphthalene

ECY 97-602 NWTPH-Gx, GC Volatiles
Batch #: 14168A31A (Sample number(s): 7498017-7498019, 7498021)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7498019, 7498021

ECY 97-602 WA EPH, GC Petroleum Hydrocarbons
Batch #: 141740040A (Sample number(s): 7498019 UNSPK: 7498019 BKG: 7498019)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: >C10-C12 Aliphatic, >C12-C16 Aliphatic, >C10-C12 Aromatic, >C12-C16 Aromatic

ECY 97-602 WA VPH, GC Petroleum Hydrocarbons
Batch #: 14176A08A (Sample number(s): 7498019)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7498019

Sample Description: AS-4 Soil
WA-11060 COC: R215404
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # SW 7498017
LL Group # 1481695
Account # 13255

Project Name: WA-11060

Collected: 06/11/2014 14:30 by RB

Submitted: 06/13/2014 09:45
Reported: 07/09/2014 16:02

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

RWSA4

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**	**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	0.0073	0.00057	0.0057	0.94
10237	Ethylbenzene	100-41-4	0.0017 J	0.0011	0.0057	0.94
10237	Toluene	108-88-3	N.D.	0.0011	0.0057	0.94
10237	Xylene (Total)	1330-20-7	N.D.	0.0011	0.0057	0.94
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**	**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	N.D.	1.6	8.1	33.39
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**	**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	N.D.	3.6	8.5	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.	12	36	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	17.8	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	A141681AA	06/17/2014 18:12	Chelsea B Stong	0.94
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201416434794	06/11/2014 14:30	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201416434794	06/11/2014 14:30	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201416434794	06/11/2014 14:30	Client Supplied	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14168A31A	06/17/2014 19:34	Laura M Krieger	33.39
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416434797	06/11/2014 14:30	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141650006A	06/17/2014 14:20	Michele D Hamilton	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141650006A	06/16/2014 10:50	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	14168820002A	06/17/2014 18:55	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-5 Soil
WA-11060 COC: R215404
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # SW 7498018
LL Group # 1481695
Account # 13255

Project Name: WA-11060

Collected: 06/11/2014 09:20 by RB

Submitted: 06/13/2014 09:45
Reported: 07/09/2014 16:02

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

RWSA5

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**		**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	0.62		0.025	0.25	39.56
10237	Ethylbenzene	100-41-4	0.12	J	0.049	0.25	39.56
10237	Toluene	108-88-3	0.19	J	0.049	0.25	39.56
10237	Xylene (Total)	1330-20-7	0.46		0.049	0.25	39.56
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**		**mg/kg**	**mg/kg**	
10725	1-Methylnaphthalene	90-12-0	0.020	J	0.0083	0.021	10
10725	2-Methylnaphthalene	91-57-6	0.046		0.0083	0.021	10
10725	Naphthalene	91-20-3	0.11		0.0083	0.021	10
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**		**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	18		2.6	13	53.34
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**		**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	30		3.7	8.7	1
08272	Heavy Range Organics C24-C40	n.a.	43		12	37	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	19.3		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	R141671AA	06/16/2014 16:13	Sarah A Guill	39.56
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201416434794	06/11/2014 09:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201416434794	06/11/2014 09:20	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201416434794	06/11/2014 09:20	Client Supplied	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14174SLE026	06/27/2014 04:52	Mark A Clark	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	14174SLE026	06/24/2014 09:00	David S Schrum	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14168A31A	06/17/2014 20:10	Laura M Krieger	53.34

*=This limit was used in the evaluation of the final result

Sample Description: AS-5 Soil
WA-11060 COC: R215404
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # SW 7498018
LL Group # 1481695
Account # 13255

Project Name: WA-11060

Collected: 06/11/2014 09:20 by RB

Submitted: 06/13/2014 09:45
Reported: 07/09/2014 16:02

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

RWSA5

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416434797	06/11/2014 09:20	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141650006A	06/17/2014 15:50	Michele D Hamilton	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141650006A	06/16/2014 10:50	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	14168820002A	06/17/2014 18:55	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-6 Soil
WA-11060 COC: R215404
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # SW 7498019
LL Group # 1481695
Account # 13255

Project Name: WA-11060

Collected: 06/11/2014 11:00 by RB

Submitted: 06/13/2014 09:45
Reported: 07/09/2014 16:02

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

RWSA6

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**		**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	0.34		0.027	0.27	43.71
10237	Ethylbenzene	100-41-4	0.54		0.055	0.27	43.71
10237	Toluene	108-88-3	0.46		0.055	0.27	43.71
10237	Xylene (Total)	1330-20-7	2.2		0.055	0.27	43.71
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**		**mg/kg**	**mg/kg**	
10725	1-Methylnaphthalene	90-12-0	0.026		0.00083	0.0021	1
10725	2-Methylnaphthalene	91-57-6	0.057		0.00083	0.0021	1
10725	Naphthalene	91-20-3	0.10		0.00083	0.0021	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**		**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	130		11	53	210.11
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**		**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	N.D.		3.8	8.8	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.		13	38	1
GC Petroleum Hydrocarbons	**ECY 97-602 WA EPH**		**mg/kg**		**mg/kg**	**mg/kg**	
05970	>C10-C12 Aliphatic	n.a.	31		1.3	6.3	1
05970	>C10-C12 Aromatic	n.a.	6.5		1.3	6.3	1
05970	>C12-C16 Aliphatic	n.a.	3.2	J	1.3	6.3	1
05970	>C12-C16 Aromatic	n.a.	2.2	J	1.3	6.3	1
05970	>C16-C21 Aliphatic	n.a.	N.D.		3.8	6.3	1
05970	>C16-C21 Aromatic	n.a.	N.D.		2.5	6.3	1
05970	>C21-C34 Aliphatic	n.a.	N.D.		7.5	13	1
05970	>C21-C34 Aromatic	n.a.	N.D.		2.5	6.3	1
GC Petroleum Hydrocarbons	**ECY 97-602 WA VPH**		**mg/kg**		**mg/kg**	**mg/kg**	
05666	Benzene	71-43-2	0.577	J	0.0643	0.643	51.47
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	15.8		3.22	6.43	51.47
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	55.4		3.22	6.43	51.47
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	72.8		3.22	6.43	51.47
05666	C8-C10 Aromatic Hydrocarbons	n.a.	40.8		3.22	6.43	51.47
05666	Ethylbenzene	100-41-4	1.45		0.0643	0.643	51.47
05666	Methyl t-butyl ether	1634-04-4	N.D.		0.0643	0.643	51.47
05666	Toluene	108-88-3	0.554	J	0.0643	0.643	51.47
05666	o-Xylene	95-47-6	1.07		0.0643	0.643	51.47
05666	m,p-Xylenes	179601-23-1	2.76		0.129	1.29	51.47
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	20.0		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

*=This limit was used in the evaluation of the final result

Sample Description: AS-6 Soil
WA-11060 COC: R215404
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # SW 7498019
LL Group # 1481695
Account # 13255

Project Name: WA-11060

Collected: 06/11/2014 11:00 by RB

Submitted: 06/13/2014 09:45
Reported: 07/09/2014 16:02

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

RWSA6

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	R141671AA	06/16/2014 16:37	Sarah A Guill	43.71
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201416434794	06/11/2014 11:00	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201416434794	06/11/2014 11:00	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201416434794	06/11/2014 11:00	Client Supplied	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14174SLE026	06/26/2014 07:12	Mark A Clark	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	14174SLE026	06/24/2014 09:00	David S Schrum	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14168A31A	06/17/2014 20:46	Laura M Krieger	210.11
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416434797	06/11/2014 11:00	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141650006A	06/17/2014 15:05	Michele D Hamilton	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141740040A	06/29/2014 06:56	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141740040A	06/29/2014 07:36	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	14176A08A	06/25/2014 17:12	Nicholas R Rossi	51.47
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141650006A	06/16/2014 10:50	Denise L Trimby	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	141740040A	06/24/2014 07:00	Joseph S Feister	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201417534890	06/11/2014 11:00	Client Supplied	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	141740040A	06/27/2014 15:30	Edwin Ortiz	1
00111	Moisture	SM 2540 G-1997	1	14168820002A	06/17/2014 18:55	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-1 Soil
WA-11060 COC: R215404
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # SW 7498021
LL Group # 1481695
Account # 13255

Project Name: WA-11060

Collected: 06/11/2014 by RB

Submitted: 06/13/2014 09:45
Reported: 07/09/2014 16:02

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

RWSFD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**		**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	0.20	J	0.027	0.27	43.48
10237	Ethylbenzene	100-41-4	0.28		0.054	0.27	43.48
10237	Toluene	108-88-3	0.20	J	0.054	0.27	43.48
10237	Xylene (Total)	1330-20-7	1.1		0.054	0.27	43.48
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**		**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	71		5.0	25	100.61
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**		**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	N.D.		3.8	8.8	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.		13	38	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	20.2		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	R141671AA	06/16/2014 17:47	Sarah A Guill	43.48
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201416434794	06/11/2014 00:00	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201416434794	06/11/2014 00:00	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201416434794	06/11/2014 00:00	Client Supplied	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14168A31A	06/17/2014 21:23	Laura M Krieger	100.61
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416434797	06/11/2014 00:00	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141650006A	06/17/2014 15:27	Michele D Hamilton	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141650006A	06/16/2014 10:50	Denise L Trimby	1
00111	Moisture	SM 2540 G-1997	1	14168820002A	06/17/2014 18:55	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1481695
Reported: 07/09/14 at 04:02 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: A141681AA	Sample number(s): 7498017								
Benzene	N.D.	0.00050	0.0050	mg/kg	96	92	80-120	5	30
Ethylbenzene	N.D.	0.0010	0.0050	mg/kg	95	90	80-120	5	30
Toluene	N.D.	0.0010	0.0050	mg/kg	96	92	80-120	4	30
Xylene (Total)	N.D.	0.0010	0.0050	mg/kg	96	92	80-120	5	30
Batch number: R141671AA	Sample number(s): 7498018-7498019,7498021								
Benzene	N.D.	0.025	0.25	mg/kg	94	103	80-120	9	30
Ethylbenzene	N.D.	0.050	0.25	mg/kg	90	97	80-120	7	30
Toluene	N.D.	0.050	0.25	mg/kg	91	101	80-120	11	30
Xylene (Total)	N.D.	0.050	0.25	mg/kg	92	98	80-120	7	30
Batch number: 14174SLE026	Sample number(s): 7498018-7498019								
1-Methylnaphthalene	N.D.	0.00067	0.0017	mg/kg	103		78-119		
2-Methylnaphthalene	N.D.	0.00067	0.0017	mg/kg	106		78-121		
Naphthalene	N.D.	0.00067	0.0017	mg/kg	102		79-113		
Batch number: 14168A31A	Sample number(s): 7498017-7498019,7498021								
NWTPH-GX Soil C7-C12	N.D.	1.0	5.0	mg/kg	84	88	65-120	4	30
Batch number: 141650006A	Sample number(s): 7498017-7498019,7498021								
Diesel Range Organics C12-C24	N.D.	3.0	7.0	mg/kg	76		60-120		
Heavy Range Organics C24-C40	N.D.	10.	30	mg/kg					
Batch number: 141740040A	Sample number(s): 7498019								
>C10-C12 Aliphatic	N.D.	1.0	5.0	mg/kg	87		31-137		
>C10-C12 Aromatic	N.D.	1.0	5.0	mg/kg	80		22-119		
>C12-C16 Aliphatic	N.D.	1.0	5.0	mg/kg	94		42-146		
>C12-C16 Aromatic	N.D.	1.0	5.0	mg/kg	77		24-136		
>C16-C21 Aliphatic	N.D.	3.0	5.0	mg/kg	98		57-111		
>C16-C21 Aromatic	N.D.	2.0	5.0	mg/kg	85		34-143		
>C21-C34 Aliphatic	N.D.	6.0	10	mg/kg	95		50-124		
>C21-C34 Aromatic	N.D.	2.0	5.0	mg/kg	81		44-134		
Batch number: 14176A08A	Sample number(s): 7498019								
Benzene	N.D.	0.0500	0.500	mg/kg	94	95	70-130	1	50
C5-C6 Aliphatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	83	84	70-130	2	50
C6-C8 Aliphatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	87	89	70-130	3	50
C8-C10 Aliphatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	84	86	70-130	3	50
C8-C10 Aromatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	95	97	70-130	3	50
Ethylbenzene	N.D.	0.0500	0.500	mg/kg	93	95	70-130	2	50
Methyl t-butyl ether	N.D.	0.0500	0.500	mg/kg	90	91	70-130	1	50
Toluene	N.D.	0.0500	0.500	mg/kg	95	96	70-130	1	50
o-Xylene	N.D.	0.0500	0.500	mg/kg	95	96	70-130	1	50

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1481695
Reported: 07/09/14 at 04:02 PM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
m,p-Xylenes	N.D.	0.100	1.00	mg/kg	94	96	70-130	2	50
Batch number: 14168820002A	Sample number(s): 7498017-7498019,7498021								
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc		DUP Conc		DUP RPD	Dup RPD Max
Batch number: 14174SLE026	Sample number(s): 7498018-7498019 UNSPK: 7498018										
1-Methylnaphthalene	78	88	59-139	7	30						
2-Methylnaphthalene	64	85	46-147	11	30						
Naphthalene	-3*	26*	52-136	11	30						
Batch number: 141650006A	Sample number(s): 7498017-7498019,7498021 BKG: 7498017										
Diesel Range Organics C12-C24						N.D.		N.D.		0 (1)	20
Heavy Range Organics C24-C40						N.D.		N.D.		0 (1)	20
Batch number: 141740040A	Sample number(s): 7498019 UNSPK: 7498019 BKG: 7498019										
>C10-C12 Aliphatic	83 (2)		31-137			25		13		66* (1)	25
>C10-C12 Aromatic	90		22-119			5.2		3.0	J	54* (1)	25
>C12-C16 Aliphatic	117		42-146			2.6	J	1.1	J	84* (1)	25
>C12-C16 Aromatic	81		42-122			1.8	J	N.D.		200* (1)	25
>C16-C21 Aliphatic	97		57-111			N.D.		N.D.		0 (1)	25
>C16-C21 Aromatic	88		53-132			N.D.		N.D.		0 (1)	25
>C21-C34 Aliphatic	94		38-120			N.D.		N.D.		0 (1)	25
>C21-C34 Aromatic	80		55-126			N.D.		N.D.		0 (1)	25
Batch number: 14168820002A	Sample number(s): 7498017-7498019,7498021 BKG: P497337										
Moisture						81.6		81.9		0	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: NC UST Volatiles
Batch number: A141681AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7498017	104	108	100	97
Blank	110	111	97	93
LCS	106	108	102	103
LCSD	104	107	101	102
Limits:	50-141	54-135	52-141	50-131

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1481695
Reported: 07/09/14 at 04:02 PM

Surrogate Quality Control

Analysis Name: NC UST Volatiles
Batch number: R141671AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7498018	71	73	67	63
7498019	71	72	69	70
7498021	70	69	67	64
Blank	94	93	86	80
LCS	91	91	86	82
LCSD	101	99	96	88
Limits:	50-141	54-135	52-141	50-131

Analysis Name: SIM SVOA (microwave)
Batch number: 14174SLE026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
7498018	108	114	100
7498019	99	104	93
Blank	99	107	94
LCS	103	107	95
MS	105	109	98
MSD	106	109	98
Limits:	59-115	61-118	70-127

Analysis Name: NWTPH-GX Soil C7-C12
Batch number: 14168A31A

	Trifluorotoluene-F
7498017	70
7498018	82
7498019	189*
7498021	40*
Blank	85
LCS	84
LCSD	86
Limits:	50-142

Analysis Name: NWTPH-Dx soil
Batch number: 141650006A

	Orthoterphenyl
7498017	85
7498018	95
7498019	100
7498021	103
Blank	107
DUP	90
LCS	98
Limits:	50-150

Analysis Name: WA EPH in Soil

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1481695
Reported: 07/09/14 at 04:02 PM

Surrogate Quality Control

Batch number: 141740040A

	Orthoterphenyl	1-chlorooctadecane
7498019	84	57
Blank	93	57
DUP	82	55
LCS	82	64
MS	79	56
Limits:	50-142	33-122

Analysis Name: WA- VPH soils
Batch number: 14176A08A

	Trifluorotoluene-P	Trifluorotoluene-F
7498019	281*	337*
Blank	97	93
LCS	98	93
LCSD	99	96
Limits:	60-140	60-140

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

13255 | 1481695 | 7498017-21

bp rm **Laboratory Management Program LaMP Chain of Custody Record** R215404

Page 1 of 1

BP Site Node Path: _____ Req Due Date (mm/dd/yy): See Comments Rush TAT: Yes ___ No ___

BP Facility No: 11060 Lab Work Order Number: _____

Lab Name: Eurofins Lancaster Labs Env LLC	Facility Address: 4580 Fauntleroy Way SW	Consultant/Contractor: ARCADIS
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601	City, State, ZIP Code: Seattle, WA 98116	Consultant/Contractor Project No: GP09BPNAWA48
Lab PM: Natalie Luciano	Lead Regulatory Agency: Ecology	Address: 1100 Olive Way, Suite 800, Seattle, WA 98101
Lab Phone: 717-556-7258	California Global ID No.:	Consultant/Contractor PM: Praj Ghatpande
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 206-726-4762 Email: praj.ghatpande@arcadis-us.com
Lab Bottle Order No:	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: samuel.miles@arcadis-us.com and to lab.enfosdoc@bp.com ryan.brauchla@arcadis-us.com
Other Info:	Stage: Activity:	Invoice To: BP ___ Contractor X

BP Project Manager (PM):

BP PM Phone:

BP PM Email:

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: GRO by NWTPH-Gx	DRO/HO by NWTPH-Dx	BTEX by 8260	Naphthalenes by 8270	EPH by WA-EPH soils	VPH by WA-VPH soils	cPAHs by 8270				Report Type & QC Level / Comments
	AS-4-15-S-061114	06/11/2014	1430	X			Y	7	2				3	2	X	X	X		X	X	X				GRO/DRO/HO = 5-DAY TAT
	AS-5-25-S-061114	06/11/2014	0920	X			Y	7	2				3	2	X	X	X	X	X	X	X				GRO/DRO/HO: 5-DAY TAT
	AS-6-25-S-061114	06/11/2014	1100	X			Y	7	2				3	2	X	X	X	X	X	X	X				GRO/DRO/HO: 5-DAY TAT
	VE-5-15-S-061114	06/11/2014	1600	X			Y	7	2				3	2	X	X	X		X	X	X				ON HOLD
	DUP-1	06/11/2014	—	X			Y	7	2				3	2	X	X	X		X	X	X				GRO/DRO/HO: 5-DAY TAT

Report Type & QC Level: Standard X Full Data Package ___

Comments: Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Sampler's Name: Ryan Brauchla	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: ARCADIS						
Shipment Method: UPS 2nd Day Air Ship Date: 06/12/2014	Ryan Brauchla / ARCADIS	06/12/2014	1330	UPS	06/12/2014	1330
Shipment Tracking No:				FEDEX 6151 4445		

Special Instructions: EPH/VPH & cPAHs submitted on HOLD; VE-5-15-S-061114 submitted on HOLD; 5-DAY TAT requested for GRO & DRO/HO

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 0.5 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 17300

Group Number(s): 1481695

Client: Arcadis

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	06/13/2014 9:45
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	WA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Total Trip Blank Qty:	0
Custody Seal Present:	Yes	Trip Blank Type:	N/A
Custody Seal Intact:	Yes	Air Quality Samples Present:	No
Samples Chilled:	Yes	Air Quality Flow Controllers Present:	N/A
Paperwork Enclosed:	Yes	Flow Controller Quantity:	0
Samples Intact:	Yes	Air Quality Returns:	N/A
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		
Sample IDs on COC match Containers:	Yes		
Sample Date/Times match COC:	Yes		
VOA Vial Headspace ≥ 6mm:	N/A		
VOA IDs (≥ 6mm):	N/A		

Unpacked by Brandy Barclay (2299) at 10:54 on 06/13/2014

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Samples Collected Same Day as Receipt?	Elevated Temp?
1	DT121	0.3	DT	Wet	Y	Bagged	N	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

July 03, 2014

Project: WA-11060

Submittal Date: 06/17/2014
Group Number: 1482459
PO Number: GP09BPNA.WA48
State of Sample Origin: WA

Client Sample Description	Lancaster Labs (LL) #
AS-2-20-S-061314 Grab Soil	7501552
AS-3-10-S-061314 Grab Soil	7501553
AS-3-15-S-061314 Grab Soil	7501554
AS-3-20-S-061314 Grab Soil	7501555
AS-3-25-S-061314 Grab Soil	7501556
VE-4-10-S-061314 Grab Soil	7501558

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Sam Miles
ELECTRONIC COPY TO	Atlantic Richfield c/o ARCADIS	Attn: Rory Henneck
ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Hridaya Bastola
ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Prajakta Ghatpande
ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Sam Miles

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

Project Name: WA-11060
LL Group #: 1482459

General Comments:

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client. The compliance signature is located on the cover page of the Analysis Reports.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

SW-846 8260B, GC/MS Volatiles

Sample #s: 7501554, 7501558
Reporting limits were raised due to interference from the sample matrix.

SW-846 8270C SIM, GC/MS Semivolatiles
Batch #: 14171SLD026 (Sample number(s): 7501552-7501556, 7501558 UNSPK: 7501552)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7501558

ECY 97-602 NWTPH-Gx, GC Volatiles
Batch #: 14168A31B (Sample number(s): 7501553, 7501555, 7501558)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7501555

Batch #: 14177A34A (Sample number(s): 7501554, 7501556)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7501556

ECY 97-602 NWTPH-Dx modified, GC Petroleum Hydrocarbons

Sample #s: 7501558
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

Batch #: 141690034A (Sample number(s): 7501552-7501553, 7501555, 7501558 BKG: P501211)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7501558

Batch #: 141770025A (Sample number(s): 7501554, 7501556 BKG: 7501556)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: Diesel Range Organics C12-C24

ECY 97-602 WA EPH, GC Petroleum Hydrocarbons

Batch #: 141770007A (Sample number(s): 7501552, 7501555, 7501558 UNSPK: 7501552 BKG: 7501552)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: >C10-C12 Aliphatic

ECY 97-602 WA VPH, GC Petroleum Hydrocarbons

Batch #: 14176A08B (Sample number(s): 7501552, 7501555, 7501558)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7501555

Sample Description: AS-2-20-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501552
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 09:30 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS220

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**		**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	0.0012	J	0.00052	0.0052	0.89
10237	Ethylbenzene	100-41-4	0.031		0.0010	0.0052	0.89
10237	Toluene	108-88-3	0.0027	J	0.0010	0.0052	0.89
10237	Xylene (Total)	1330-20-7	0.0094		0.0010	0.0052	0.89
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**		**mg/kg**	**mg/kg**	
10725	Benzo(a)anthracene	56-55-3	N.D.		0.00077	0.0019	1
10725	Benzo(a)pyrene	50-32-8	N.D.		0.00077	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.		0.00077	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.		0.00077	0.0019	1
10725	Chrysene	218-01-9	0.00052	J	0.00039	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.		0.00077	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.00077	0.0019	1
10725	1-Methylnaphthalene	90-12-0	0.011		0.00077	0.0019	1
10725	2-Methylnaphthalene	91-57-6	0.021		0.00077	0.0019	1
10725	Naphthalene	91-20-3	0.021		0.00077	0.0019	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**		**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	16		2.3	11	49.29
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**		**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	N.D.		3.5	8.1	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.		12	35	1
GC Petroleum Hydrocarbons	**ECY 97-602 WA EPH**		**mg/kg**		**mg/kg**	**mg/kg**	
05970	>C10-C12 Aliphatic	n.a.	1.3	J	1.2	5.8	1
05970	>C10-C12 Aromatic	n.a.	N.D.		1.2	5.8	1
05970	>C12-C16 Aliphatic	n.a.	N.D.		1.2	5.8	1
05970	>C12-C16 Aromatic	n.a.	N.D.		1.2	5.8	1
05970	>C16-C21 Aliphatic	n.a.	N.D.		3.5	5.8	1
05970	>C16-C21 Aromatic	n.a.	N.D.		2.3	5.8	1
05970	>C21-C34 Aliphatic	n.a.	N.D.		6.9	12	1
05970	>C21-C34 Aromatic	n.a.	N.D.		2.3	5.8	1
GC Petroleum Hydrocarbons	**ECY 97-602 WA VPH**		**mg/kg**		**mg/kg**	**mg/kg**	
05666	Benzene	71-43-2	N.D.		0.0555	0.555	48.02
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	N.D.		2.78	5.55	48.02
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	5.44	J	2.78	5.55	48.02
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	5.76		2.78	5.55	48.02
05666	C8-C10 Aromatic Hydrocarbons	n.a.	N.D.		2.78	5.55	48.02
05666	Ethylbenzene	100-41-4	0.129	J	0.0555	0.555	48.02
05666	Methyl t-butyl ether	1634-04-4	N.D.		0.0555	0.555	48.02
05666	Toluene	108-88-3	N.D.		0.0555	0.555	48.02
05666	o-Xylene	95-47-6	N.D.		0.0555	0.555	48.02

*=This limit was used in the evaluation of the final result

Sample Description: AS-2-20-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501552
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 09:30 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS220

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**ECY 97-602 WA VPH**		**mg/kg**	**mg/kg**	**mg/kg**	
05666	m,p-Xylenes	179601-23-1	N.D.	0.111	1.11	48.02
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	13.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	A141692AA	06/19/2014 06:03	Andrea E Lando	0.89
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201416834830	06/13/2014 09:30	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201416834830	06/13/2014 09:30	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201416834830	06/13/2014 09:30	Client Supplied	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14171SLD026	06/23/2014 10:11	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	14171SLD026	06/21/2014 11:00	Sally L Appleyard	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14175A31A	06/24/2014 19:26	Laura M Krieger	49.29
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416834830	06/13/2014 09:30	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141690034A	06/20/2014 07:05	Glorines Suarez-Rivera	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141770007A	07/01/2014 13:30	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141770007A	07/01/2014 14:11	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	14176A08B	06/26/2014 11:39	Nicholas R Rossi	48.02
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141690034A	06/19/2014 11:00	David S Schrum	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	141770007A	06/26/2014 16:20	JoElla L Rice	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201417634906	06/13/2014 09:30	Client Supplied	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	141770007A	06/30/2014 14:20	Edwin Ortiz	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-2-20-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501552
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 09:30 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS220

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	SM 2540 G-1997	1	14169820003A	06/18/2014 17:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-3-10-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501553
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 11:20 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS310

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**		**mg/kg**	**mg/kg**	
10725	Benzo(a)anthracene	56-55-3	0.70		0.0039	0.0097	5
10725	Benzo(a)pyrene	50-32-8	0.52		0.0039	0.0097	5
10725	Benzo(b)fluoranthene	205-99-2	0.77		0.0039	0.0097	5
10725	Benzo(k)fluoranthene	207-08-9	0.28		0.00078	0.0019	1
10725	Chrysene	218-01-9	0.81		0.0019	0.0097	5
10725	Dibenz(a,h)anthracene	53-70-3	0.10		0.00078	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.32		0.00078	0.0019	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**		**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	2.9	J	1.3	6.7	28.61
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**		**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	7.3	J	3.5	8.1	1
08272	Heavy Range Organics C24-C40	n.a.	39		12	35	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00111	Moisture	n.a.	14.1		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14171SLD026	06/23/2014 12:15	Joseph M Gambler	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14171SLD026	06/24/2014 09:11	Joseph M Gambler	5
10811	BNA Soil Microwave SIM	SW-846 3546	1	14171SLD026	06/21/2014 11:00	Sally L Appleyard	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14168A31B	06/23/2014 17:39	Marie D Beamenderfer	28.61
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416834830	06/13/2014 11:20	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141690034A	06/20/2014 08:55	Glorines Suarez-Rivera	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141690034A	06/19/2014 11:00	David S Schrum	1
00111	Moisture	SM 2540 G-1997	1	14169820003A	06/18/2014 17:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-3-15-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501554
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 11:40 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS315

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**	**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	N.D.	0.027	0.27	46.88
10237	Ethylbenzene	100-41-4	N.D.	0.054	0.27	46.88
10237	Toluene	108-88-3	N.D.	0.054	0.27	46.88
10237	Xylene (Total)	1330-20-7	0.33	0.054	0.27	46.88
	Reporting limits were raised due to interference from the sample matrix.					
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**	**mg/kg**	**mg/kg**	
10725	Benzo(a)anthracene	56-55-3	0.011	0.00077	0.0019	1
10725	Benzo(a)pyrene	50-32-8	0.014	0.00077	0.0019	1
10725	Benzo(b)fluoranthene	205-99-2	0.016	0.00077	0.0019	1
10725	Benzo(k)fluoranthene	207-08-9	0.0063	0.00077	0.0019	1
10725	Chrysene	218-01-9	0.016	0.00038	0.0019	1
10725	Dibenz(a,h)anthracene	53-70-3	0.0021	0.00077	0.0019	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0066	0.00077	0.0019	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**	**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	7.0	1.1	5.5	23.98
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**	**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	17	3.4	7.9	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.	11	34	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	13.1	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	R141771AA	06/26/2014 14:19	Sarah A Guill	46.88
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201417634906	06/13/2014 11:40	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201417634906	06/13/2014 11:40	Client Supplied	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-3-15-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501554
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 11:40 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS315

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201417634906	06/13/2014 11:40	Client Supplied	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14171SLD026	06/23/2014 12:47	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	14171SLD026	06/21/2014 11:00	Sally L Appleyard	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14177A34A	06/26/2014 20:20	Marie D Beamenderfer	23.98
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201417634906	06/13/2014 11:40	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141770025A	06/30/2014 11:06	Glorines Suarez-Rivera	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141770025A	06/27/2014 11:00	William H Saadeh	1
00111	Moisture	SM 2540 G-1997	1	14169820003A	06/18/2014 17:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-3-20-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501555
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 11:45 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS320

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**	**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	0.085 J	0.051	0.51	92.42
10237	Ethylbenzene	100-41-4	8.3	0.10	0.51	92.42
10237	Toluene	108-88-3	2.1	0.10	0.51	92.42
10237	Xylene (Total)	1330-20-7	33	0.10	0.51	92.42
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**	**mg/kg**	**mg/kg**	
10725	Benzo(a)anthracene	56-55-3	N.D.	0.00073	0.0018	1
10725	Benzo(a)pyrene	50-32-8	N.D.	0.00073	0.0018	1
10725	Benzo(b)fluoranthene	205-99-2	N.D.	0.00073	0.0018	1
10725	Benzo(k)fluoranthene	207-08-9	N.D.	0.00073	0.0018	1
10725	Chrysene	218-01-9	0.00046 J	0.00037	0.0018	1
10725	Dibenz(a,h)anthracene	53-70-3	N.D.	0.00073	0.0018	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.00073	0.0018	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**	**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	1,800	210	1,000	4713.91
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**	**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	8.1	3.3	7.7	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.	11	33	1
GC Petroleum Hydrocarbons	**ECY 97-602 WA EPH**		**mg/kg**	**mg/kg**	**mg/kg**	
05970	>C10-C12 Aliphatic	n.a.	45	1.1	5.5	1
05970	>C10-C12 Aromatic	n.a.	12	1.1	5.5	1
05970	>C12-C16 Aliphatic	n.a.	3.6 J	1.1	5.5	1
05970	>C12-C16 Aromatic	n.a.	3.8 J	1.1	5.5	1
05970	>C16-C21 Aliphatic	n.a.	N.D.	3.3	5.5	1
05970	>C16-C21 Aromatic	n.a.	N.D.	2.2	5.5	1
05970	>C21-C34 Aliphatic	n.a.	N.D.	6.6	11	1
05970	>C21-C34 Aromatic	n.a.	N.D.	2.2	5.5	1
GC Petroleum Hydrocarbons	**ECY 97-602 WA VPH**		**mg/kg**	**mg/kg**	**mg/kg**	
05666	Benzene	71-43-2	N.D.	0.0512	0.512	46.61
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	76.1	25.6	51.2	466.12
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	431	25.6	51.2	466.12
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	446	25.6	51.2	466.12
05666	C8-C10 Aromatic Hydrocarbons	n.a.	307	25.6	51.2	466.12
05666	Ethylbenzene	100-41-4	8.77	0.0512	0.512	46.61
05666	Methyl t-butyl ether	1634-04-4	N.D.	0.0512	0.512	46.61
05666	Toluene	108-88-3	0.613	0.0512	0.512	46.61
05666	o-Xylene	95-47-6	9.26	0.0512	0.512	46.61
05666	m,p-Xylenes	179601-23-1	13.7	0.102	1.02	46.61
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	

*=This limit was used in the evaluation of the final result

Sample Description: AS-3-20-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501555
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 11:45 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS320

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Wet Chemistry	**SM 2540 G-1997**		%	%	%	
00111	Moisture	n.a.	9.0	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	R141762AA	06/26/2014 02:14	Stephanie A Selis	92.42
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201417634906	06/13/2014 11:45	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201417634906	06/13/2014 11:45	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201417634906	06/13/2014 11:45	Client Supplied	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14171SLD026	06/23/2014 13:18	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	14171SLD026	06/21/2014 11:00	Sally L Appleyard	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14168A31B	06/23/2014 21:53	Marie D Beamenderfer	4713.91
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416834830	06/13/2014 11:45	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141690034A	06/20/2014 07:27	Glorines Suarez-Rivera	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141770007A	07/01/2014 18:53	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141770007A	07/01/2014 19:34	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	14176A08B	06/26/2014 13:02	Nicholas R Rossi	46.61
05666	WA- VPH soils	ECY 97-602 WA VPH	1	14176A08B	06/26/2014 13:43	Nicholas R Rossi	466.12
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141690034A	06/19/2014 11:00	David S Schrum	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	141770007A	06/26/2014 16:20	JoElla L Rice	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201417634906	06/13/2014 11:45	Client Supplied	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	141770007A	06/30/2014 14:20	Edwin Ortiz	1
00111	Moisture	SM 2540 G-1997	1	14169820003A	06/18/2014 17:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-3-25-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501556
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 11:55 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS325

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**	**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	0.63 J	0.15	1.5	237.81
10237	Ethylbenzene	100-41-4	19	0.29	1.5	237.81
10237	Toluene	108-88-3	21	0.29	1.5	237.81
10237	Xylene (Total)	1330-20-7	84	0.29	1.5	237.81
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**	**mg/kg**	**mg/kg**	
10725	Benzo(a)anthracene	56-55-3	0.0062	0.00082	0.0021	1
10725	Benzo(a)pyrene	50-32-8	0.0066	0.00082	0.0021	1
10725	Benzo(b)fluoranthene	205-99-2	0.0069	0.00082	0.0021	1
10725	Benzo(k)fluoranthene	207-08-9	0.0024	0.00082	0.0021	1
10725	Chrysene	218-01-9	0.0074	0.00041	0.0021	1
10725	Dibenz(a,h)anthracene	53-70-3	0.00090 J	0.00082	0.0021	1
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.0031	0.00082	0.0021	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**	**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	3,700	430	2,200	8821.15
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**	**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	5.6 J	3.7	8.5	1
08272	Heavy Range Organics C24-C40	n.a.	N.D.	12	37	1
Wet Chemistry	**SM 2540 G-1997**		**%**	**%**	**%**	
00111	Moisture	n.a.	18.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	R141771AA	06/26/2014 14:43	Sarah A Guill	237.81
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201417634906	06/13/2014 11:55	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201417634906	06/13/2014 11:55	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201417634906	06/13/2014 11:55	Client Supplied	1

*=This limit was used in the evaluation of the final result

Sample Description: AS-3-25-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501556
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 11:55 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

AS325

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14171SLD026	06/23/2014 13:49	Joseph M Gambler	1
10811	BNA Soil Microwave SIM	SW-846 3546	1	14171SLD026	06/21/2014 11:00	Sally L Appleyard	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14177A34A	06/26/2014 21:53	Marie D Beamenderfer	8821.15
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201417634906	06/13/2014 11:55	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141770025A	06/30/2014 10:21	Glorines Suarez-Rivera	1
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141770025A	06/27/2014 11:00	William H Saadeh	1
00111	Moisture	SM 2540 G-1997	1	14169820003A	06/18/2014 17:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: VE-4-10-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501558
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 14:10 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

VE410

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**mg/kg**		**mg/kg**	**mg/kg**	
10237	Benzene	71-43-2	N.D.		0.026	0.26	44.97
10237	Ethylbenzene	100-41-4	0.14	J	0.052	0.26	44.97
10237	Toluene	108-88-3	0.061	J	0.052	0.26	44.97
10237	Xylene (Total)	1330-20-7	0.98		0.052	0.26	44.97
	Reporting limits were raised due to interference from the sample matrix.						
GC/MS Semivolatiles	**SW-846 8270C SIM**		**mg/kg**		**mg/kg**	**mg/kg**	
10725	Benzo(a)anthracene	56-55-3	0.12		0.0077	0.019	10
10725	Benzo(a)pyrene	50-32-8	0.14		0.0077	0.019	10
10725	Benzo(b)fluoranthene	205-99-2	0.16		0.0077	0.019	10
10725	Benzo(k)fluoranthene	207-08-9	0.073		0.0077	0.019	10
10725	Chrysene	218-01-9	0.20		0.0039	0.019	10
10725	Dibenz(a,h)anthracene	53-70-3	0.019		0.0077	0.019	10
10725	Indeno(1,2,3-cd)pyrene	193-39-5	0.054		0.0077	0.019	10
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**mg/kg**		**mg/kg**	**mg/kg**	
02005	NWTPH-GX Soil C7-C12	n.a.	440		47	240	1018.26
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**mg/kg**		**mg/kg**	**mg/kg**	
08272	Diesel Range Organics C12-C24	n.a.	520		3.5	8.1	1
08272	Heavy Range Organics C24-C40	n.a.	290		12	35	1
	The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						
GC Petroleum Hydrocarbons	**ECY 97-602 WA EPH**		**mg/kg**		**mg/kg**	**mg/kg**	
05970	>C10-C12 Aliphatic	n.a.	83		1.2	5.8	1
05970	>C10-C12 Aromatic	n.a.	30		1.2	5.8	1
05970	>C12-C16 Aliphatic	n.a.	280		1.2	5.8	1
05970	>C12-C16 Aromatic	n.a.	100		1.2	5.8	1
05970	>C16-C21 Aliphatic	n.a.	280		3.5	5.8	1
05970	>C16-C21 Aromatic	n.a.	150		2.3	5.8	1
05970	>C21-C34 Aliphatic	n.a.	150		6.9	12	1
05970	>C21-C34 Aromatic	n.a.	88		2.3	5.8	1
GC Petroleum Hydrocarbons	**ECY 97-602 WA VPH**		**mg/kg**		**mg/kg**	**mg/kg**	
05666	Benzene	71-43-2	N.D.		0.0537	0.537	46.45
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	N.D.		2.68	5.37	46.45
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	N.D.		2.68	5.37	46.45
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	41.3		2.68	5.37	46.45
05666	C8-C10 Aromatic Hydrocarbons	n.a.	37.9		2.68	5.37	46.45
05666	Ethylbenzene	100-41-4	0.609		0.0537	0.537	46.45
05666	Methyl t-butyl ether	1634-04-4	N.D.		0.0537	0.537	46.45
05666	Toluene	108-88-3	0.256	J	0.0537	0.537	46.45
05666	o-Xylene	95-47-6	1.41		0.0537	0.537	46.45
05666	m,p-Xylenes	179601-23-1	2.58		0.107	1.07	46.45

*=This limit was used in the evaluation of the final result

Sample Description: VE-4-10-S-061314 Grab Soil
WA-11060 COC: R218639
4580 Fauntleroy Way SW-Seattle, WA

LL Sample # SW 7501558
LL Group # 1482459
Account # 13255

Project Name: WA-11060

Collected: 06/13/2014 14:10 by RB

Submitted: 06/17/2014 09:35
Reported: 07/03/2014 10:13

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

VE410

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Wet Chemistry	**SM 2540 G-1997**		%	%	%	
00111	Moisture	n.a.	13.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	BTEX (total xylene)	SW-846 8260B	1	Q141711AA	06/20/2014 23:48	Andrea E Lando	44.97
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201416834830	06/13/2014 14:10	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201416834830	06/13/2014 14:10	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201416834830	06/13/2014 14:10	Client Supplied	1
10725	SIM SVOA (microwave)	SW-846 8270C SIM	1	14171SLD026	06/23/2014 14:20	Joseph M Gambler	10
10811	BNA Soil Microwave SIM	SW-846 3546	1	14171SLD026	06/21/2014 11:00	Sally L Appleyard	1
02005	NWTPH-GX Soil C7-C12	ECY 97-602 NWTPH-Gx	1	14168A31B	06/23/2014 20:40	Marie D Beamenderfer	1018.26
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201416834830	06/13/2014 14:10	Client Supplied	n.a.
08272	NWTPH-Dx soil	ECY 97-602 NWTPH-Dx modified	1	141690034A	06/20/2014 10:01	Glorines Suarez-Rivera	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141770007A	07/01/2014 20:14	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	141770007A	07/01/2014 21:35	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	14176A08B	06/26/2014 12:21	Nicholas R Rossi	46.45
11234	WA DRO NW DX Soils (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141690034A	06/19/2014 11:00	David S Schrum	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	141770007A	06/26/2014 16:20	JoElla L Rice	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201417634906	06/13/2014 14:10	Client Supplied	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	141770007A	06/30/2014 14:20	Edwin Ortiz	1
00111	Moisture	SM 2540 G-1997	1	14169820003A	06/18/2014 17:28	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1482459
Reported: 07/03/14 at 10:13 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: A141692AA	Sample number(s): 7501552								
Benzene	N.D.	0.00050	0.0050	mg/kg	101		80-120		
Ethylbenzene	N.D.	0.0010	0.0050	mg/kg	99		80-120		
Toluene	N.D.	0.0010	0.0050	mg/kg	99		80-120		
Xylene (Total)	N.D.	0.0010	0.0050	mg/kg	100		80-120		
Batch number: Q141711AA	Sample number(s): 7501558								
Benzene	N.D.	0.025	0.25	mg/kg	106	111	80-120	5	30
Ethylbenzene	N.D.	0.050	0.25	mg/kg	105	110	80-120	5	30
Toluene	N.D.	0.050	0.25	mg/kg	107	114	80-120	6	30
Xylene (Total)	N.D.	0.050	0.25	mg/kg	104	110	80-120	6	30
Batch number: R141762AA	Sample number(s): 7501555								
Benzene	N.D.	0.025	0.25	mg/kg	95	100	80-120	5	30
Ethylbenzene	N.D.	0.050	0.25	mg/kg	93	98	80-120	5	30
Toluene	N.D.	0.050	0.25	mg/kg	97	99	80-120	3	30
Xylene (Total)	N.D.	0.050	0.25	mg/kg	95	102	80-120	7	30
Batch number: R141771AA	Sample number(s): 7501554,7501556								
Benzene	N.D.	0.025	0.25	mg/kg	97	91	80-120	6	30
Ethylbenzene	N.D.	0.050	0.25	mg/kg	93	91	80-120	3	30
Toluene	N.D.	0.050	0.25	mg/kg	100	95	80-120	5	30
Xylene (Total)	N.D.	0.050	0.25	mg/kg	95	92	80-120	3	30
Batch number: 14171SLD026	Sample number(s): 7501552-7501556,7501558								
Benzo(a)anthracene	N.D.	0.00067	0.0017	mg/kg	114		83-119		
Benzo(a)pyrene	N.D.	0.00067	0.0017	mg/kg	102		80-122		
Benzo(b)fluoranthene	N.D.	0.00067	0.0017	mg/kg	111		82-135		
Benzo(k)fluoranthene	N.D.	0.00067	0.0017	mg/kg	106		79-123		
Chrysene	N.D.	0.00033	0.0017	mg/kg	112		84-113		
Dibenz(a,h)anthracene	N.D.	0.00067	0.0017	mg/kg	109		83-123		
Indeno(1,2,3-cd)pyrene	N.D.	0.00067	0.0017	mg/kg	106		82-123		
1-Methylnaphthalene	N.D.	0.00067	0.0017	mg/kg	102		78-119		
2-Methylnaphthalene	N.D.	0.00067	0.0017	mg/kg	105		78-121		
Naphthalene	N.D.	0.00067	0.0017	mg/kg	104		79-113		
Batch number: 14168A31B	Sample number(s): 7501553,7501555,7501558								
NWTPH-GX Soil C7-C12	N.D.	1.0	5.0	mg/kg	84	88	65-120	4	30
Batch number: 14175A31A	Sample number(s): 7501552								
NWTPH-GX Soil C7-C12	N.D.	1.0	5.0	mg/kg	101	108	65-120	7	30
Batch number: 14177A34A	Sample number(s): 7501554,7501556								
NWTPH-GX Soil C7-C12	N.D.	1.0	5.0	mg/kg	81	86	65-120	6	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1482459
Reported: 07/03/14 at 10:13 AM

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 141690034A	Sample number(s): 7501552-7501553,7501555,7501558								
Diesel Range Organics C12-C24	N.D.	3.0	7.0	mg/kg	85		60-120		
Heavy Range Organics C24-C40	N.D.	10.	30	mg/kg					
Batch number: 14176A08B	Sample number(s): 7501552,7501555,7501558								
Benzene	N.D.	0.0500	0.500	mg/kg	94	95	70-130	1	50
C5-C6 Aliphatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	83	84	70-130	2	50
C6-C8 Aliphatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	87	89	70-130	3	50
C8-C10 Aliphatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	84	86	70-130	3	50
C8-C10 Aromatic Hydrocarbons	N.D.	2.50	5.00	mg/kg	95	97	70-130	3	50
Ethylbenzene	N.D.	0.0500	0.500	mg/kg	93	95	70-130	2	50
Methyl t-butyl ether	N.D.	0.0500	0.500	mg/kg	90	91	70-130	1	50
Toluene	N.D.	0.0500	0.500	mg/kg	95	96	70-130	1	50
o-Xylene	N.D.	0.0500	0.500	mg/kg	95	96	70-130	1	50
m,p-Xylenes	N.D.	0.100	1.00	mg/kg	94	96	70-130	2	50
Batch number: 141770007A	Sample number(s): 7501552,7501555,7501558								
>C10-C12 Aliphatic	N.D.	1.0	5.0	mg/kg	69		31-137		
>C10-C12 Aromatic	N.D.	1.0	5.0	mg/kg	71		22-119		
>C12-C16 Aliphatic	N.D.	1.0	5.0	mg/kg	75		42-146		
>C12-C16 Aromatic	N.D.	1.0	5.0	mg/kg	67		24-136		
>C16-C21 Aliphatic	N.D.	3.0	5.0	mg/kg	78		57-111		
>C16-C21 Aromatic	N.D.	2.0	5.0	mg/kg	75		34-143		
>C21-C34 Aliphatic	N.D.	6.0	10	mg/kg	77		50-124		
>C21-C34 Aromatic	N.D.	2.0	5.0	mg/kg	72		44-134		
Batch number: 141770025A	Sample number(s): 7501554,7501556								
Diesel Range Organics C12-C24	N.D.	3.0	7.0	mg/kg	79		60-120		
Heavy Range Organics C24-C40	N.D.	10.	30	mg/kg					
Batch number: 14169820003A	Sample number(s): 7501552-7501556,7501558								
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: A141692AA	Sample number(s): 7501552 UNSPK: P499656								
Benzene	90	76	55-143	19	30				
Ethylbenzene	76	58	44-141	30	30				
Toluene	95	72	50-146	26	30				
Xylene (Total)	73	56	44-136	30	30				
Batch number: 14171SLD026	Sample number(s): 7501552-7501556,7501558 UNSPK: 7501552								
Benzo(a)anthracene	109	112	44-143	2	30				
Benzo(a)pyrene	98	100	49-137	3	30				
Benzo(b)fluoranthene	104	107	26-142	3	30				
Benzo(k)fluoranthene	102	104	49-144	2	30				
Chrysene	106	108	43-141	2	30				

*- Outside of specification
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(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1482459
Reported: 07/03/14 at 10:13 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Dibenz(a,h)anthracene	103	106	25-145	3	30				
Indeno(1,2,3-cd)pyrene	100	103	26-139	3	30				
1-Methylnaphthalene	91	99	59-139	7	30				
2-Methylnaphthalene	91	103	46-147	8	30				
Naphthalene	96	110	52-136	9	30				
Batch number: 141690034A	Sample number(s): 7501552-7501553,7501555,7501558					BKG: P501211			
Diesel Range Organics C12-C24						110	94	13	20
Heavy Range Organics C24-C40						100	99	6 (1)	20
Batch number: 141770007A	Sample number(s): 7501552,7501555,7501558 UNSPK: 7501552 BKG: 7501552								
>C10-C12 Aliphatic	77		31-137			1.1 J	1.5 J	27* (1)	25
>C10-C12 Aromatic	86		22-119			N.D.	N.D.	0 (1)	25
>C12-C16 Aliphatic	90		42-146			N.D.	N.D.	0 (1)	25
>C12-C16 Aromatic	80		42-122			N.D.	N.D.	0 (1)	25
>C16-C21 Aliphatic	86		57-111			N.D.	N.D.	0 (1)	25
>C16-C21 Aromatic	87		53-132			N.D.	N.D.	0 (1)	25
>C21-C34 Aliphatic	78		38-120			N.D.	N.D.	0 (1)	25
>C21-C34 Aromatic	80		55-126			N.D.	N.D.	0 (1)	25
Batch number: 141770025A	Sample number(s): 7501554,7501556 BKG: 7501556								
Diesel Range Organics C12-C24						4.5 J	11	80* (1)	20
Heavy Range Organics C24-C40						N.D.	N.D.	0 (1)	20
Batch number: 14169820003A	Sample number(s): 7501552-7501556,7501558 BKG: P501546								
Moisture						26.2	26.4	1	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: NC UST Volatiles
Batch number: A141692AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7501552	98	104	113	110
Blank	109	106	98	92
LCS	105	104	102	103
MS	104	106	109	90
MSD	100	107	108	90
Limits:	50-141	54-135	52-141	50-131

Analysis Name: NC UST Volatiles
Batch number: Q141711AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7501558	92	91	88	87

*- Outside of specification
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(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1482459
Reported: 07/03/14 at 10:13 AM

Surrogate Quality Control

Blank	108	107	106	103
LCS	103	100	103	99
LCSD	108	105	108	103
Limits:	50-141	54-135	52-141	50-131

Analysis Name: NC UST Volatiles
Batch number: R141762AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7501555	85	88	113	127
Blank	92	92	90	87
LCS	96	95	95	87
LCSD	89	88	85	84
Limits:	50-141	54-135	52-141	50-131

Analysis Name: NC UST Volatiles
Batch number: R141771AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7501554	85	87	86	80
7501556	77	77	102	129
Blank	88	85	84	76
LCS	85	83	84	78
LCSD	93	91	92	82
Limits:	50-141	54-135	52-141	50-131

Analysis Name: SIM SVOA (microwave)
Batch number: 14171SLD026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
7501552	96	110	92
7501553	97	106	92
7501554	101	113	102
7501555	103	116	87
7501556	96	108	79
7501558	108	113	67*
Blank	100	116	93
LCS	107	118	96
MS	97	111	93
MSD	101	115	96
Limits:	59-115	61-118	70-127

Analysis Name: NWTPH-GX Soil C7-C12
Batch number: 14168A31B

	Trifluorotoluene-F
7501553	74
7501555	786*
7501558	95
Blank	87
LCS	84

*- Outside of specification
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(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1482459
Reported: 07/03/14 at 10:13 AM

Surrogate Quality Control

LCSD 86

Limits: 50-142

Analysis Name: NWTPH-GX Soil C7-C12
Batch number: 14175A31A

	Trifluorotoluene-F
7501552	83
Blank	97
LCS	87
LCSD	95
Limits:	50-142

Analysis Name: NWTPH-GX Soil C7-C12
Batch number: 14177A34A

	Trifluorotoluene-F
7501554	71
7501556	1105*
Blank	88
LCS	82
LCSD	88
Limits:	50-142

Analysis Name: NWTPH-Dx soil
Batch number: 141690034A

	Orthoterphenyl
7501552	102
7501553	114
7501555	104
7501558	160*
Blank	103
DUP	103
LCS	108
Limits:	50-150

Analysis Name: WA- VPH soils
Batch number: 14176A08B

	Trifluorotoluene-P	Trifluorotoluene-F
7501552	116	138
7501555	1711*	2262*
7501558	109	106
Blank	98	93
LCS	98	93
LCSD	99	96
Limits:	60-140	60-140

Analysis Name: WA EPH in Soil
Batch number: 141770007A

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1482459
Reported: 07/03/14 at 10:13 AM

Surrogate Quality Control

	Orthoterphenyl	1-chlorooctadecane
7501552	70	53
7501555	76	57
7501558	74	39
Blank	70	57
DUP	71	53
LCS	72	56
MS	79	53
Limits:	50-142	33-122

Analysis Name: NWTPH-Dx soil
Batch number: 141770025A

	Orthoterphenyl
7501554	87
7501556	99
Blank	101
DUP	95
LCS	102
Limits:	50-150

*- Outside of specification
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(2) The unspiked result was more than four times the spike added.

A- 13255 G-1482459 S-750155 2-58

bp rm **Laboratory Management Program LaMP** **Chain of Custody Record** R218639

Page 1 of 1

BP Site Node Path: _____ **Req Due Date (mm/dd/yy):** See Comments **Rush TAT:** Yes ___ No ___

BP Facility No: 11060 **Lab Work Order Number:** _____

Lab Name: Eurofins Lancaster Labs Env LLC	Facility Address: 4580 Fauntleroy Way SW	Consultant/Contractor: ARCADIS
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601	City, State, ZIP Code: Seattle, WA 98116	Consultant/Contractor Project No: GP09BPNA.WA48
Lab PM: Natalie Luciano	Lead Regulatory Agency: Ecology	Address: 1100 Olive Way Suite 800, Seattle, WA 98101
Lab Phone: 717-556-7258	California Global ID No.:	Consultant/Contractor PM: Praj Ghatpande
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 206 Email: praj.ghatpande@arcadis-us.com
Lab Bottle Order No:	Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To: samuel.miles@arcadis-us.com ryan.brauchla@arcadis-us.com and to lab.enfosdoc@bp.com
Other Info:	Stage: Activity:	Invoice To: BP ___ Contractor X

BP Project Manager (PM):
BP PM Phone:
BP PM Email:

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	NaHSO4	Requested Analyses: GRO by NWTPH-Gx	DRO/HC by NWTPH-Dx	BTEX by 8260	EPH by WA-EPH soil	VPH by WA-VPH soil	cPAHs/Naphthalene by 8270		TOC			Report Type & QC Level
	AS-2-20-S-061314	6/13/14	0930	X			Y	7	2				3	2	X	X	X	X	X	X					
	AS-3-10-S-061314	6/13/14	1120	X			Y	7	2				3	2	X	X	X	X	X	X					
	AS-3-15-S-061314	6/13/14	1140	X			Y	7	2				3	2	X	X	X	X	X	X					
	AS-3-20-S-061314	6/13/14	1145	X			Y	7	2				3	2	X	X	X	X	X	X					
	AS-3-25-S-061314	6/13/14	1155	X			Y	7	2				3	2	X	X	X	X	X	X					
	VE-3-15-S-061314	6/13/14	1535	X			Y	8	3				3	2	X	X	X	X	X	X		X			
	VE-4-10-S-061314	6/13/14	~~1345~~ 1410	X			Y	7	2				3	2	X	X	X	X	X	X					

Standard X
Full Data Package ___

Comments
Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Sampler's Name: Ryan Brauchla	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: ARCADIS						
Shipment Method: UPS Next Day Air Ship Date: 6/16/2014	R. Brauchla / ARCADIS	6/16/14	1030	UPS	6/16/14	1030
Shipment Tracking No:				C Cashle ELLE	6/17/14	0935

Special Instructions: Submit all samples on HOLD

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 1.0 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

6# 148459

Natalie Luciano

From: Ghatpande, Praj <Praj.Ghatpande@arcadis-us.com>
Sent: Thursday, June 19, 2014 5:27 PM
To: Natalie Luciano
Cc: Brauchla, Ryan; Miles, Samuel
Subject: RE: WA-11060: Soil samples collected 06/13/14

Hi Natalie,
This e-mail takes precedence over COC of the samples collected on 06/13/14.
Please report **ONLY analyses listed in the table** below.
Please analyze:

- **Only cPAHs** (NO naphthalenes) for AS-3-10, AS-3-15, AS-3-20, and AS-3-25.
- cPAHs & naphthalenes for AS-2-20

Let me know if you have any questions.
Thanks.
Praj

From: Natalie Luciano [mailto:NatalieLuciano@eurofinsUS.com]
Sent: Thursday, June 19, 2014 6:42 AM
To: Ghatpande, Praj
Cc: Brauchla, Ryan; Miles, Samuel
Subject: RE: WA-11060: Soil samples collected 06/13/14

Hi Praj,

I was reviewing the email below against the COC (attached) and had a question. The COC has cPAHs/Naphthalenes by 8270 on all samples, but the email has cPAHs only (no Naphthalenes) for AS-3-10, AS-3-15, AS-3-20, AS-3-25, and VE-4-10. Should Naphthalenes be included for these five samples as per the COC or should we really only do cPAHs without them? AS-2-20 includes Naphthalenes in the email below.

Thank you,
Natalie Luciano
Senior Specialist, Environmental Client Services
Phone: +1 717-556-7258

Note that my email address has changed. It is now natalieluciano@eurofinsus.com. Please update my contact information.

From: Ghatpande, Praj [mailto:Praj.Ghatpande@arcadis-us.com]
Sent: Monday, June 16, 2014 1:50 PM
To: Natalie Luciano
Cc: Brauchla, Ryan; Miles, Samuel
Subject: WA-11060: Soil samples collected 06/13/14

Hi Natalie,
We submitted samples for Site No. 11060 today for analysis with a COC indicating all samples to be put on HOLD.

G# 1482459

Please consider this e-mail as an authorization to proceed with the sample analysis per the table below and please place **all the rest of the samples on HOLD. We might do further analysis on the same samples or samples not tested before, based on 5 day TAT results.**

Sample ID	5 day TAT	Std TAT
AS-2-20-S-061314		GRO, DRO, HO, BTEX, cPAHs, napthalenes
AS-3-10-S-061314	GRO, DRO, HO	cPAHs
AS-3-15-S-061314		cPAHs
AS-3-20-S-061314	GRO, DRO, HO	cPAHs
AS-3-25-S-061314		cPAHs
VE-4-10-S-061314	GRO, DRO, HO	BTEX, cPAHs

Please let me know if you have any questions.
Thanks.

Prajakta Ghatpande, PE | Associate Project Manager
Praj.Ghatpande@arcadis-us.com
T: 206-726-4762| M: 206-579-7498

ARCADIS U.S., Inc. | 1100 Olive Way, Suite 800 | Seattle, Washington 98101
www.arcadis-us.com

ARCADIS, Imagine the result
Please consider the environment before printing this email.

---

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 17564

Group Number(s): 1482459

Client: BP

11060

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	06/17/2014 9:35
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	WA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Total Trip Blank Qty:	0
Custody Seal Present:	Yes	Trip Blank Type:	N/A
Custody Seal Intact:	Yes	Air Quality Samples Present:	No
Samples Chilled:	Yes	Air Quality Flow Controllers Present:	N/A
Paperwork Enclosed:	Yes	Flow Controller Quantity:	0
Samples Intact:	Yes	Air Quality Returns:	N/A
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		
Sample IDs on COC match Containers:	Yes		
Sample Date/Times match COC:	Yes		
VOA Vial Headspace ≥ 6mm:	N/A		
VOA IDs (≥ 6mm):	N/A		

Unpacked by Corey Eshleman (3647) at 11:04 on 06/17/2014

Samples Chilled Details: 11060

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Samples Collected Same Day as Receipt?	Elevated Temp?
1	DT121	1.0	DT	Wet	Y	Bagged	N	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

ARCADIS

Attachment D

Groundwater Monitoring
Field Data Sheets

WELL GAUGING DATA

Project # 140513 - JB1 Date 5-13-14 Client Acadis

Site 4580 fauntleroy way sw, Seattle WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	VOC Notes
mw-1	0740	4"					24.12	27.22		17.3
mw-2	0753	4"					23.74	27.84		477.5
mw-3	0810	4"					22.95	33.95		7.0
mw-4	0830	4"		23.30	2.50	/	25.80			155.3
mw-5	0840	4"					25.18	27.58		652.3
mw-6	0745	2"					22.76	29.23		2.1
mw-9	0859	2"					21.39	34.99		0.1
mw-10	1245	2"					24.78	35.32		427.3
VE-1	0850	4"		24.80	.40	/	25.20			58.3
mw-GW-1	0910	2"					22.83	34.34		256.3

WELL MONITORING DATA SHEET

Project #: 140513-JB1	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: mw-1	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 27.22	Depth to Water: 24.12
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer
Disposable Bailer
Positive Air Displacement
Electric Submersible
Other: ___
Waterra
Peristaltic
Extraction Pump

Sampling Method:
Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: ___

Instruments Used:
(Myron L Ultrameter)
(Durham Geoslope Indicator)
GeoTech Interface Probe
MMC Interface Probe
(HACH Turbidimeter)
YSI 556 Flow-Thru Cell
YSI 550 DO Meter
Other: ___

Model #: Screen Interval: ___ Pump Depth: ___

___ (Gals.) X ___ = ___ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond. (mS or (uS))	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	No Purge Sample taken			—	
1015	62.8	7.86	1044	13	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-13-14 Sampling Time: 1015 Depth to Water: 24.12

Sample I.D.: mw-1-05132014 Laboratory: Test America Other Lancaster Labs

Analyzed for: (GRO) (BTEX) OXYS ETHANOL Other: See CoC

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513-JB1	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: mw-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 27.84	Depth to Water: 23.74
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer
Disposable Bailer
Positive Air Displacement
Electric Submersible
Other: _____
Waterra
Peristaltic
Extraction Pump
Model #: Screen Interval: _____

Sampling Method:
Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: _____
Pump Depth: _____

Instruments Used:
(Myron L Ultrameter)
(Durham Geoslope Indicator)
GeoTech Interface Probe
MMC Interface Probe
(HACH Turbidimeter)
YSI 556 Flow-Thru Cell
YSI 550 DO Meter
Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	No Purge Sample taken			—	
1050	60.3	7.39	1124	13	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-13-14 Sampling Time: 1650 Depth to Water: 23.74

Sample I.D.: mw-2-05132014 ~~05132014-FD~~ Laboratory: Test America Other Lancaster

Analyzed for: (GRO) (BTEX) OXYS ETHANOL Other: See CoC

Duplicate I.D.: BD-11060-05132014 Analyzed for: (GRO) (BTEX) OXYS ETHANOL Other: See CoC

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513 - JBT	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: MW-3	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 33.95	Depth to Water: 22.95
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer
Disposable Bailer
Positive Air Displacement
Electric Submersible
Other: ___
Waterra
Peristaltic
Extraction Pump

Sampling Method:
Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: ___

Instruments Used:
(Myron L Ultrameter)
(Durham Geoslope Indicator)
GeoTech Interface Probe
MMC Interface Probe
(HACH Turbidimeter)
YSI 556 Flow-Thru Cell
YSI 550 DO Meter
Other: ___

Model #: Screen Interval: ___ Pump Depth: ___

___ (Gals.) X ___ = ___ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	No Purge Sample taken			—	
1135	59.8	7.40	758.0	147	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-13-14 Sampling Time: 1135 Depth to Water: 22.95

Sample I.D.: MW-3-05132014 Laboratory: Test America Other Lancaster

Analyzed for: GRO BTEX OXYS ETHANOL Other: See COC

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513 - JBI	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: MW-4	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: —	Depth to Water: 25.80
Depth to Free Product: 23.30	Thickness of Free Product (feet): 2.50'
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	—

Purge Method:
Bailer / Waterra
Disposable Bailer / Peristaltic
Positive Air Displacement / Extraction Pump
Electric Submersible
Other: _____
Model #: Screen Interval:_____

Sampling Method:
Bailer
Disposable Bailer
Extraction Port
Dedicated Tubing
Other: _____
Pump Depth:_____

Instruments Used:
Myron L Ultrameter / HACH Turbidimeter
Durham Geoslope Indicator / YSI 556 Flow-Thru Cell
(GeoTech Interface Probe) / YSI 550 DO Meter
MMC Interface Probe / Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume / Specified Volumes / Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	2.50' of SPH		Detected w/		
			Interface Probe		—	
		— N/O	Sample	Sample taken	—	

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Test America Other_____

Analyzed for: GRO BTEX OXYS ETHANOL Other:

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513-JBi	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: mw-5	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 27.58	Depth to Water: 25.18
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer
Disposable Bailer
Positive Air Displacement
Electric Submersible
Other: _____
Waterra
Peristaltic
Extraction Pump
Model #: Screen Interval: _____

Sampling Method:
Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: _____
Pump Depth: _____

Instruments Used:
(Myron L Ultrameter)
(Durham Geoslope Indicator)
GeoTech Interface Probe
MMC Interface Probe
(HACH Turbidimeter)
YSI 556 Flow-Thru Cell
YSI 550 DO Meter
Other: _____

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	No Purge Sample taken			—	
1210	61.9	7.14	981.7	147		

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-13-14 Sampling Time: 1210 Depth to Water: 25.18

Sample I.D.: mw-5-05132014 Laboratory: Test America Other Lancaster

Analyzed for: GRO (BTEX) OXYS ETHANOL Other: See CoC

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513 - JBi	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: mw-6	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 29.23	Depth to Water: 22.76
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer
Disposable Bailer
Positive Air Displacement
Electric Submersible
Other: ____
Waterra
Peristaltic
Extraction Pump
Model #: Screen Interval: ____

Sampling Method:
Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: ____
Pump Depth: ____

Instruments Used:
(Myron L Ultrameter)
(Durham Geoslope Indicator)
GeoTech Interface Probe
MMC Interface Probe
(HACH Turbidimeter)
YSI 556 Flow-Thru Cell
YSI 550 DO Meter
Other: ____

____(Gals.) X ____ = ____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	NO Purge sample taken			—	
1315	61.1	7.32	3746	147	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-13-14 Sampling Time: 1315 Depth to Water: 22.76

Sample I.D.: mw-6-05132014 Laboratory: Test America Other Lancaster

Analyzed for: ~~GRO~~ ~~BTEX~~ OXYS ETHANOL Other: See CoC

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513-JBI	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 34.99	Depth to Water: 21.39
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer
Disposable Bailer
Positive Air Displacement
Electric Submersible
Other: _____
Waterra
Peristaltic
Extraction Pump
Model #: Screen Interval: _____

Sampling Method:
Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: _____
Pump Depth: _____

Instruments Used:
(Myron L Ultrameter)
(Durham Geoslope Indicator)
GeoTech Interface Probe
MMC Interface Probe
(HACH Turbidimeter)
YSI 556 Flow-Thru Cell
YSI 550 DO Meter
Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	NO Purge Sample Taken			—	
1445	61.5	7.23	427.1	78	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-13-14 Sampling Time: 1445 Depth to Water: 21.39

Sample I.D.: MW-9-05132014 Laboratory: Test America Other Lancaster

Analyzed for: (GRO) (BTEX) OXYS ETHANOL Other: See COC

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513-JB1	Station #: 11061
Sampler: Justen Blackburn	Date: 5-13-14
Well I.D.: MW-10	Well Diameter: 2 3 4 6 8 ____
Total Well Depth: 35.32	Depth to Water: 24.78
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer
Disposable Bailer
Positive Air Displacement
Electric Submersible
Other: _____
Waterra
Peristaltic
Extraction Pump

Sampling Method:
Bailer
Disposable Bailer
Extraction Port
Dedicated Tubing
Other: _____

Instruments Used:
Myron L Ultrameter
Durham Geoslope Indicator
GeoTech Interface Probe
MMC Interface Probe
HACH Turbidimeter
YSI 556 Flow-Thru Cell
YSI 550 DO Meter
Other: _____

Model #: Screen Interval: _____ Pump Depth: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	No Purge Sample		taken		
1245	61.1	7.26	773.8	147	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-13-14 Sampling Time: 1245 Depth to Water: 24.78

Sample I.D.: MW-10-051320-14 Laboratory: Test America Other Lancaster

Analyzed for: GRO BTEX OXYS ETHANOL Other: See COC

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513-JB1	Station #: 11060
Sampler: Justin Blackburn	Date: 5-13-14
Well I.D.: VE-1	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: —	Depth to Water: 25.20
Depth to Free Product: 24.80	Thickness of Free Product (feet): 0.40
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer / Waterra
Disposable Bailer / Peristaltic
Positive Air Displacement / Extraction Pump
Electric Submersible
Other: _____
Model #: Screen Interval: _____

Sampling Method:
Bailer
Disposable Bailer
Extraction Port
Dedicated Tubing
Other: _____
Pump Depth: _____

Instruments Used:
Myron L Ultrameter / HACH Turbidimeter
Durham Geoslope Indicator / YSI 556 Flow-Thru Cell
(GeoTech Interface Probe) / YSI 550 DO Meter
MMC Interface Probe / Other: _____

_____ (Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
	—	—	.40' of	SPH Detected w/		
			Interface Probe —			
	—	NO	Sample Taken	—		

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: Laboratory: Test America Other_____

Analyzed for: GRO BTEX OXYS ETHANOL Other:

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 140513-JBl	Station #: 11060
Sampler: Justin Blackburn	Date: 5-14-14
Well I.D.: mw-GW-1	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 34.34	Depth to Water: 22.83
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: —	

Purge Method:
Bailer / Waterra
Disposable Bailer / Peristaltic
Positive Air Displacement / Extraction Pump
Electric Submersible
Other: _____
Model #: Screen Interval: _____

Sampling Method:
Bailer
(Disposable Bailer)
Extraction Port
Dedicated Tubing
Other: _____
Pump Depth: _____

Instruments Used:
(Myron L Ultrameter) (HACH Turbidimeter)
(Durham Geoslope Indicator) YSI 556 Flow-Thru Cell
GeoTech Interface Probe YSI 550 DO Meter
MMC Interface Probe Other: _____

_____(Gals.) X _____ = _____ Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations/ DTW
		— No Purge Sample taken —				
0715	60.6	8.29	236.5	78	—	

Did well dewater? Yes (No) Gallons actually evacuated: —

Sampling Date: 5-14-14 Sampling Time: 0715 Depth to Water: 22.83

Sample I.D.: mw-GW-1-05142014 Laboratory: Test America Other Lancaster

Analyzed for: (GRO) (BTEX) OXYS ETHANOL Other: See CoC

Duplicate I.D.: Analyzed for: GRO BTEX OXYS ETHANOL Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

ARCADIS

Attachment E

Groundwater Laboratory Reports and
Chain-of-Custody Documentation

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

May 28, 2014

Project: WA-11060

Submittal Date: 05/16/2014
Group Number: 1475050
PO Number: GP09BPNA.WA48
State of Sample Origin: WA

Client Sample Description	Lancaster Labs (LL) #
MW-1-05132014 Grab Water	7467128
MW-1-05132014 Filtered Grab Water	7467129
MW-2-05132014 Grab Water	7467130
MW-2-05132014 Filtered Grab Water	7467131
MW-3-05132014 Grab Water	7467132
MW-3-05132014 Filtered Grab Water	7467133
MW-5-05132014 Grab Water	7467134
MW-5-05132014 Filtered Grab Water	7467135
MW-6-05132014 Grab Water	7467136
MW-6-05132014 Filtered Grab Water	7467137
MW-9-05132014 Grab Water	7467138
MW-9-05132014 Filtered Grab Water	7467139
MW-10-05132014 Grab Water	7467140
MW-10-05132014 Filtered Grab Water	7467141
BD-11060-05132014 Grab Water	7467142
MW-GW-1-05142014 Grab Water	7467144
MW-GW-1-05142014 Filtered Grab Water	7467145

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Sam Miles
ELECTRONIC COPY TO	Atlantic Richfield c/o ARCADIS	Attn: Rory Henneck
ELECTRONIC COPY TO	ARCADIS U.S., Inc.	Attn: Prajakta Ghatpande

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

Project Name: WA-11060
LLI Group #: 1475050

General Comments:

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client. The compliance signature is located on the cover page of the Analysis Reports.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

ECY 97-602 NWTPH-Gx, GC Volatiles

Batch #: 14141A94A (Sample number(s): 7467128, 7467130, 7467132, 7467136, 7467138, 7467140, 7467142)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7467130, 7467142

Sample Description: MW-1-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467128
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 10:15 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWS01

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	Benzene	71-43-2	1.4		0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.		0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	0.67	J	0.50	1.0	1
10335	Toluene	108-88-3	N.D.		0.50	1.0	1
10335	Xylene (Total)	1330-20-7	0.57	J	0.50	1.0	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**		**ug/l**	**ug/l**	
08273	NWTPH-Gx water C7-C12	n.a.	490		50	250	1
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**ug/l**		**ug/l**	**ug/l**	
08271	Diesel Range Organics C12-C24	n.a.	250		28	95	1
08271	Heavy Range Organics C24-C40	n.a.	110	J	66	240	1
Metals	**SW-846 6010B**		**ug/l**		**ug/l**	**ug/l**	
07055	Lead	7439-92-1	6.9	J	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/22/2014 22:50	Amanda K Richards	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/22/2014 22:50	Amanda K Richards	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14141A94A	05/22/2014 18:31	Miranda P Tillinghast	1
01146	GC VOA Water Prep	SW-846 5030B	1	14141A94A	05/22/2014 18:31	Miranda P Tillinghast	1
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390032A	05/21/2014 19:00	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390032A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 10:05	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-1-05132014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467129
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 10:15 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 10:29	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-2-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467130
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 10:50 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWS02

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	Benzene	71-43-2	79		2.5	5.0	5
10335	Ethylbenzene	100-41-4	58		2.5	5.0	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	6.0		2.5	5.0	5
10335	Toluene	108-88-3	3.3	J	2.5	5.0	5
10335	Xylene (Total)	1330-20-7	20		2.5	5.0	5
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**		**ug/l**	**ug/l**	
08273	NWTPH-Gx water C7-C12	n.a.	3,100		50	250	1
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**ug/l**		**ug/l**	**ug/l**	
08271	Diesel Range Organics C12-C24	n.a.	1,800		28	95	1
08271	Heavy Range Organics C24-C40	n.a.	880		66	240	1
Metals	**SW-846 6010B**		**ug/l**		**ug/l**	**ug/l**	
07055	Lead	7439-92-1	6.6	J	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/23/2014 04:23	Amanda K Richards	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/23/2014 04:23	Amanda K Richards	5
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14141A94A	05/22/2014 20:13	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	14141A94A	05/22/2014 20:13	Marie D Beamenderfer	1
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390032A	05/21/2014 19:21	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390032A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 10:33	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-2-05132014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467131
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 10:50 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 10:45	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-3-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467132
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 11:35 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWS03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	**ug/l**	
10335	Benzene	71-43-2	8.4	0.50	1.0	1
10335	Ethylbenzene	100-41-4	17	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	1.1	0.50	1.0	1
10335	Toluene	108-88-3	0.94 J	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	3.7	0.50	1.0	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	**ug/l**	
08273	NWTPH-Gx water C7-C12	n.a.	1,100	50	250	1
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	**ug/l**	
08271	Diesel Range Organics C12-C24	n.a.	710	28	94	1
08271	Heavy Range Organics C24-C40	n.a.	700	66	240	1
Metals	**SW-846 6010B**		**ug/l**	**ug/l**	**ug/l**	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/23/2014 02:48	Amanda K Richards	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/23/2014 02:48	Amanda K Richards	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14141A94A	05/22/2014 18:57	Miranda P Tillinghast	1
01146	GC VOA Water Prep	SW-846 5030B	1	14141A94A	05/22/2014 18:57	Miranda P Tillinghast	1
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390032A	05/21/2014 19:43	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390032A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 10:50	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-3-05132014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467133
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 11:35 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 10:54	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-5-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467134
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 12:10 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWS05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	**ug/l**	
10335	Benzene	71-43-2	17	0.50	1.0	1
10335	Ethylbenzene	100-41-4	69	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	7.5	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	23	0.50	1.0	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	**ug/l**	
08273	NWTPH-Gx water C7-C12	n.a.	4,400	250	1,300	5
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	**ug/l**	
08271	Diesel Range Organics C12-C24	n.a.	440	28	95	1
08271	Heavy Range Organics C24-C40	n.a.	370	66	240	1
Metals	**SW-846 6010B**		**ug/l**	**ug/l**	**ug/l**	
07055	Lead	7439-92-1	16.2	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/23/2014 03:35	Amanda K Richards	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/23/2014 03:35	Amanda K Richards	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14147A53A	05/27/2014 14:33	Marie D Beamenderfer	5
01146	GC VOA Water Prep	SW-846 5030B	1	14147A53A	05/27/2014 14:33	Marie D Beamenderfer	5
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390032A	05/21/2014 22:36	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390032A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 10:58	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-5-05132014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467135
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 12:10 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		ug/l		ug/l	ug/l	
07055	Lead	7439-92-1	9.2	J	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:02	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-6-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467136
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 13:15 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWS06

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	Benzene	71-43-2	N.D.		0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.		0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.		0.50	1.0	1
10335	Toluene	108-88-3	N.D.		0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.		0.50	1.0	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**		**ug/l**	**ug/l**	
08273	NWTPH-Gx water C7-C12	n.a.	120	J	50	250	1
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		**ug/l**		**ug/l**	**ug/l**	
08271	Diesel Range Organics C12-C24	n.a.	80	J	29	95	1
08271	Heavy Range Organics C24-C40	n.a.	180	J	67	240	1
Metals	**SW-846 6010B**		**ug/l**		**ug/l**	**ug/l**	
07055	Lead	7439-92-1	N.D.		4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/22/2014 23:14	Amanda K Richards	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/22/2014 23:14	Amanda K Richards	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14141A94A	05/22/2014 15:33	Miranda P Tillinghast	1
01146	GC VOA Water Prep	SW-846 5030B	1	14141A94A	05/22/2014 15:33	Miranda P Tillinghast	1
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390032A	05/21/2014 22:58	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390032A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:06	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-6-05132014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467137
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 13:15 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:10	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-9-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467138
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 14:45 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWS09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	ug/l	
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		ug/l	ug/l	ug/l	
08271	Diesel Range Organics C12-C24	n.a.	N.D.	29	95	1
08271	Heavy Range Organics C24-C40	n.a.	N.D.	67	240	1
Metals	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/22/2014 23:38	Amanda K Richards	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/22/2014 23:38	Amanda K Richards	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14141A94A	05/22/2014 19:22	Miranda P Tillinghast	1
01146	GC VOA Water Prep	SW-846 5030B	1	14141A94A	05/22/2014 19:22	Miranda P Tillinghast	1
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390032A	05/21/2014 23:19	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390032A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:14	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-9-05132014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467139
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 14:45 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:18	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-10-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467140
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 12:45 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWS10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	ug/l	
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	N.D.	50	250	1
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		ug/l	ug/l	ug/l	
08271	Diesel Range Organics C12-C24	n.a.	N.D.	28	95	1
08271	Heavy Range Organics C24-C40	n.a.	N.D.	66	240	1
Metals	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/23/2014 00:02	Amanda K Richards	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/23/2014 00:02	Amanda K Richards	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14141A94A	05/22/2014 19:48	Miranda P Tillinghast	1
01146	GC VOA Water Prep	SW-846 5030B	1	14141A94A	05/22/2014 19:48	Miranda P Tillinghast	1
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390034A	05/21/2014 21:53	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390034A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:22	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-10-05132014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467141
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 12:45 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:33	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: BD-11060-05132014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467142
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/13/2014 10:50 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWSFD

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l		ug/l	ug/l	
10335	Benzene	71-43-2	22		2.5	5.0	5
10335	Ethylbenzene	100-41-4	47		2.5	5.0	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	2.6	J	2.5	5.0	5
10335	Toluene	108-88-3	2.5	J	2.5	5.0	5
10335	Xylene (Total)	1330-20-7	18		2.5	5.0	5
GC Volatiles	**ECY 97-602 NWTPH-Gx**		ug/l		ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	2,500		50	250	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/23/2014 05:10	Amanda K Richards	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/23/2014 05:10	Amanda K Richards	5
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14141A94A	05/22/2014 21:30	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	14141A94A	05/22/2014 21:30	Marie D Beamenderfer	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-GW-1-05142014 Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467144
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/14/2014 07:15 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

FWSG1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	ug/l	
10335	Benzene	71-43-2	N.D.	0.50	1.0	1
10335	Ethylbenzene	100-41-4	N.D.	0.50	1.0	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.50	1.0	1
10335	Toluene	108-88-3	N.D.	0.50	1.0	1
10335	Xylene (Total)	1330-20-7	N.D.	0.50	1.0	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		ug/l	ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	590	50	250	1
GC Petroleum Hydrocarbons	**ECY 97-602 NWTPH-Dx modified**		ug/l	ug/l	ug/l	
08271	Diesel Range Organics C12-C24	n.a.	560	28	95	1
08271	Heavy Range Organics C24-C40	n.a.	N.D.	66	240	1
Metals	**SW-846 6010B**		ug/l	ug/l	ug/l	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs 8260 BTEX/MTBE	SW-846 8260B	1	T141422AA	05/23/2014 00:26	Amanda K Richards	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T141422AA	05/23/2014 00:26	Amanda K Richards	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14142B94A	05/23/2014 19:50	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	14142B94A	05/23/2014 19:50	Marie D Beamenderfer	1
08271	NWTPH-Dx water	ECY 97-602 NWTPH-Dx modified	1	141390034A	05/21/2014 22:14	Christine E Dolman	1
11197	WA DRO NW DX Ext (Non SG)	ECY 97-602 NWTPH-Dx 06/97	1	141390034A	05/20/2014 09:30	David S Schrum	1
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:37	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-GW-1-05142014 Filtered Grab Water
BP 11060
4580 Fauntleroy Way SW - Seattle, WA

LL Sample # WW 7467145
LL Group # 1475050
Account # 13255

Project Name: WA-11060

Collected: 05/14/2014 07:15 by JB

Submitted: 05/16/2014 16:15
Reported: 05/28/2014 16:50

Atlantic Richfield c/o ARCADIS
Suite 600
630 Plaza Drive
Highlands Ranch CO 80129

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals Dissolved	**SW-846 6010B**		**ug/l**	**ug/l**	**ug/l**	
07055	Lead	7439-92-1	N.D.	4.7	15.0	1

General Sample Comments

State of Washington Lab Certification No. C457
This sample was field filtered for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07055	Lead	SW-846 6010B	1	141391848003	05/21/2014 11:41	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	141391848003	05/20/2014 10:15	Micaela L Dishong	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1475050
Reported: 05/28/14 at 04:50 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL**	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: T141422AA	Sample number(s): 7467128,7467130,7467132,7467134,7467136,7467138,7467140,7467142,7467144								
Benzene	N.D.	0.50	1.0	ug/l	111	108	78-120	3	30
Ethylbenzene	N.D.	0.50	1.0	ug/l	96	100	79-120	4	30
Methyl Tertiary Butyl Ether	N.D.	0.50	1.0	ug/l	94	93	75-120	1	30
Toluene	N.D.	0.50	1.0	ug/l	99	102	80-120	3	30
Xylene (Total)	N.D.	0.50	1.0	ug/l	87	89	80-120	3	30
Batch number: 14141A94A	Sample number(s): 7467128,7467130,7467132,7467136,7467138,7467140,7467142								
NWTPH-Gx water C7-C12	N.D.	50.	250	ug/l	110	113	75-135	3	30
Batch number: 14142B94A	Sample number(s): 7467144								
NWTPH-Gx water C7-C12	N.D.	50.	250	ug/l	107		75-135		
Batch number: 14147A53A	Sample number(s): 7467134								
NWTPH-Gx water C7-C12	N.D.	50.	250	ug/l	108	108	75-135	0	30
Batch number: 141390032A	Sample number(s): 7467128,7467130,7467132,7467134,7467136,7467138								
Diesel Range Organics C12-C24	N.D.	30.	100	ug/l	76	79	50-113	4	20
Heavy Range Organics C24-C40	N.D.	70.	250	ug/l					
Batch number: 141390034A	Sample number(s): 7467140,7467144								
Diesel Range Organics C12-C24	N.D.	30.	100	ug/l	73	78	50-113	7	20
Heavy Range Organics C24-C40	N.D.	70.	250	ug/l					
Batch number: 141391848003	Sample number(s): 7467128-7467141,7467144-7467145								
Lead	N.D.	4.7	15.0	ug/l	113		88-116		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 14142B94A	Sample number(s): 7467144 UNSPK: P468038								
NWTPH-Gx water C7-C12	109	109	75-135	0	30				
Batch number: 141391848003	Sample number(s): 7467128-7467141,7467144-7467145 UNSPK: 7467128 BKG: 7467128								
Lead	106	105	75-125	1	20	6.9 J	7.4 J	8 (1)	20

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1475050
Reported: 05/28/14 at 04:50 PM

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PPL + Xylene (total) by 8260
Batch number: T141422AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7467128	105	94	98	99
7467130	102	97	100	101
7467132	104	99	96	100
7467134	102	94	101	103
7467136	108	98	93	94
7467138	106	98	95	96
7467140	106	101	91	93
7467142	101	98	99	103
7467144	106	98	94	96
Blank	108	100	96	94
LCS	105	98	92	96
LCSD	101	94	95	98
Limits:	80-116	77-113	80-113	78-113

Analysis Name: NWTPH-Gx water C7-C12
Batch number: 14141A94A

	Trifluorotoluene-F
7467128	119
7467130	280*
7467132	134
7467136	89
7467138	85
7467140	87
7467142	239*
Blank	86
LCS	96
LCSD	96
Limits:	63-135

Analysis Name: NWTPH-Gx water C7-C12
Batch number: 14142B94A

	Trifluorotoluene-F
7467144	84
Blank	84
LCS	95
MS	98
MSD	98
Limits:	63-135

Analysis Name: NWTPH-Gx water C7-C12
Batch number: 14147A53A

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Atlantic Richfield c/o ARCADIS Group Number: 1475050
Reported: 05/28/14 at 04:50 PM

Surrogate Quality Control

	Trifluorotoluene-F
7467134	86
Blank	74
LCS	80
LCSD	80
Limits:	63-135

Analysis Name: NWTPH-Dx water
Batch number: 141390032A

	Orthoterphenyl
7467128	98
7467130	95
7467132	93
7467134	103
7467136	102
7467138	99
Blank	101
LCS	101
LCSD	103
Limits:	50-150

Analysis Name: NWTPH-Dx water
Batch number: 141390034A

	Orthoterphenyl
7467140	101
7467144	96
Blank	106
LCS	98
LCSD	104
Limits:	50-150

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

acct# 13255 QP# 1475050 sample# 746128-45

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	ARCADIS	Report To:	Samuel Miles	Attention:	Praj Ghatpande
Address:	1100 Olive Way Suite 800	Copy To:	Rory Henneck (rory.henneck@arcadis-us.com)	Company Name:	ARCADIS
	Seattle, WA 98101		Praj Ghatpande (praj.ghatpande@arcadis-us.com)	Address:	1100 Olive Way Ste. 800, Seattle, WA 98101
Email To:	Samuel.Miles@arcadis-us.com	Purchase Order No.		Lancaster Quote Reference:	
Phone:	206-726-4720 Fax: 206-325-8218	Client Project ID:	ARCO 11060	Lancaster Project Manager:	Natalie Luciano
Requested Due Date/TAT:	10 Day (Default)	Project Number:	GP09BPNA.WA48	Lancaster Profile #:	

Regulatory Agency
Washington State Department of Ecology
State / Location
WA

MATRIX: Drinking Water (DW), Water (WT), Waste Water (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Other (OT), TS

ITEM#	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	GRO (NWTPH-Gx)	MTBE/BTEX (8260B)	DRO (NWTPH-Dx)	RRO (NWTPH-Dx)	Dissolved Lead (6010) (FF)	Total Lead (6010)	Residual Chlorine (Y/N)
	mw-1-05132014	WT	G			5/13/14	1015		10			X	X						X	X	X	X	X	X	
	mw-2-05132014	WT	G			5/13/14	1050		10			X	X						X	X	X	X	X	X	
	mw-3-05132014	WT	G			5/13/14	1135		10			X	X						X	X	X	X	X	X	
	mw-5-05132014	WT	G			5/13/14	1210		10			X	X						X	X	X	X	X	X	
	mw-6-05132014	WT	G			5/13/14	1315		10			X	Y						X	X	X	X	X	X	
	mw-9-05132014	WT	G			5/13/14	1445		10			X	Y						X	X	X	X	X	X	
	mw-10-05132014	WT	G			5/13/14	1245		10			X	X						X	X	X	X	X	X	
	SD-11060-05132014	WT	G			5/13/14	1050		6				X						X	X					
	TB-11060-05132014	WT	G			5/13/14	0800		3				X						X	X					ON Hold
	mw-GW-1-05142014	WT	G			5/14/14	0715		10			X	X						X	X	X	X	X	X	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	Justin Blackburn	5-13-14		ARCADIS	5/15/14	08:00
					5/16/14	
					5/15	1615

SAMPLE CONDITIONS			
0.5 2.6	Y	Y	Y
TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Justin Blackburn

SIGNATURE of SAMPLER: Justin Blackburn

DATE Signed: 5-13-14

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 14774

Group Number(s): 1475050

Client: Arcadis

Delivery and Receipt Information

Delivery Method:	SeaTac	Arrival Timestamp:	05/16/2014 16:15
Number of Packages:	4	Number of Projects:	1
State/Province of Origin:	WA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Total Trip Blank Qty:	9
Custody Seal Present:	Yes	Trip Blank Type:	HCl
Custody Seal Intact:	Yes	Air Quality Samples Present:	No
Samples Chilled:	Yes	Air Quality Flow Controllers Present:	N/A
Paperwork Enclosed:	Yes	Flow Controller Quantity:	0
Samples Intact:	Yes	Air Quality Returns:	N/A
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		
Sample IDs on COC match Containers:	Yes		
Sample Date/Times match COC:	Yes		
VOA Vial Headspace ≥ 6mm:	No		
VOA IDs (≥ 6mm):	N/A		

Unpacked by Wesley Miller (2308) at 18:52 on 05/16/2014

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Samples Collected Same Day as Receipt?	Elevated Temp?
1	DT121	2.6	DT	Wet	Y	Bagged	N	N
2	DT121	0.5	DT	Wet	Y	Bagged	N	N
3	DT121	0.5	DT	Wet	Y	Bagged	N	N
4	DT121	1.5	DT	Wet	Y	Bagged	N	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.