



Remediation Management Services Company

4 Centerpointe Drive, Suite 200
La Palma, CA 90623
Room LPR 4-222
Office: (360) 594-7978
wade.melton@bp.com

October 22, 2018

Washington Department of Ecology
Southwest Regional Office
Attn: Mr. Tim Mullin
300 Desmond Drive SE
Lacey, WA 98503

Dear Mr. Mullin:

Please find the enclosed Semi-Annual Status Report – First Half of 2018, that documents the results at OPLC Tacoma Junction located at 2660 Frank Albert Road East, Fife, Washington.

Sincerely yours,

A handwritten signature in blue ink, appearing to read 'Wade Melton', is shown on a light blue background.

Wade Melton
Operations Project Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

cc: Mr. RC Strain, OPLC, Renton, Washington (Electronic Copy)
File, Antea Group

SEMI-ANNUAL STATUS REPORT

First Half of 2018

OPLC Tacoma Junction

2660 Frank Albert Road East

Fife, Washington

*Antea[®] Group Project No. WATJUAA181
October 22, 2018*

Prepared for:

Remediation Management Services Company

An affiliate of Atlantic Richfield Company

4 Centerpointe Drive, Suite 200

Room LPR-4-222

La Palma, CA 90623

And

BP Pipelines and Logistics – Olympic District

600 SW 39th Street, Suite 275

Renton, WA 98057

Prepared by:

Antea Group

4006 148th Avenue NE

Redmond, WA 98052

800 477 7411

REPORTING PERIOD: January - June 2018
AGENCY CONTACT: Tim Mullin, Toxics Cleanup Program (360) 407-6265
Ecology FS ID: 24529
RM CONTACT: Wade Melton, 360-594-7978
OLYMPIC CONTACT: RC Strain, (281) 896-6470
ANTEA GROUP CONTACT: Megan Richard, (425) 498-7711

1.0 SITE HISTORY

- This site is an active OPLC facility that has been operating since 1965.
- In August 2015, OPLC personnel directed an excavation associated with a facility upgrade project. While excavating OPLC personnel noted petroleum odors and soil staining. Soil and water samples indicated concentrations of petroleum hydrocarbons in excess of Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A Cleanup Levels. Upon completing the planned excavation, over-excavating was performed to remove contaminated soil to the maximum extent without comprising onsite structures. A total of 302.49 tons of petroleum impacted soil was removed from the Site for disposal. A total of 1,200 gallons of water was removed from the excavation and transported off-site for disposal. Additional information regarding soil excavation and sampling activities can be found in Antea Group's October 12, 2015 *Site Discovery and Independent Remedial Action Report*.
- The Site was listed on Ecology's *Confirmed and Suspected Contaminated Sites List* on October 15, 2015.
- In June 2016, monitoring wells MW-1 through MW-5 were installed at the Site. Due to the presence of quarry spalls down to groundwater, only one soil sample was collected during well installation. Groundwater analytical results indicated the presence of total petroleum hydrocarbons as gasoline (TPH-G), total petroleum hydrocarbons as diesel (TPH-D), and benzene in MW- 2 in excess of Ecology's MTCA Method A Cleanup Levels at concentrations of 2,300 µg/L, 810 µg/L, and 100 µg/L, respectively. Additional information can be found in Antea Group's November 17, 2016 *Subsurface Investigation Report*.

2.0 WORK PERFORMED DURING THE REPORTING PERIOD

- Quarterly groundwater monitoring and sampling events were conducted on February 13, 2018 and May 2, 2018. Groundwater samples were collected from monitoring wells MW-1 through MW-5.
- This semi-annual groundwater monitoring report was prepared.

3.0 PROJECT STATUS

- Quarterly groundwater sample collection from MW-1 through MW-5.
- Semi-annual reporting.

4.0 DATA REVIEW AND RECOMMENDATIONS

- Groundwater analytical data from the third and fourth quarter sampling events did not indicate concentrations of petroleum hydrocarbons in excess of MTCA Method A Cleanup Levels in monitoring wells MW-1, and MW-3 through MW-5. MW-2 is the only well with concentrations of benzene, TPH-G, and TPH-D in excess of MTCA Method A Cleanup Levels.
- The Groundwater Gauging and Analytical Data tables are presented in Tables 1 and 2, respectively. The first and second quarter Groundwater Elevation Contour Maps are presented as Figures 3 and 4, respectively. The Groundwater Analytical Data Map is presented as Figure 5. Copies of the groundwater laboratory analytical reports are presented in Appendix A.
- Antea Group is scheduled to conduct the next quarterly groundwater sampling and monitoring events in August and November 2018.

7.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

Prepared by:



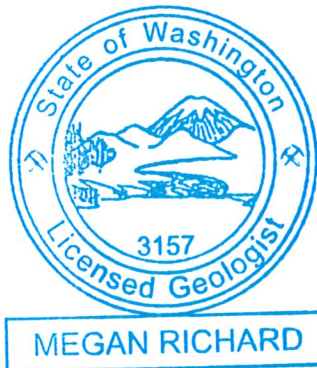
Forrest Shafer
Staff Professional

Date: October 22, 2018

Reviewed by:



Megan Richard
Project Manager



Date: October 22, 2018

cc: Mr. RC Strain, OPLC, Renton, WA (Electronic Copy)
Mr. Tim Mullin, Department of Ecology Southwest Regional Office (Hardcopy, Electronic Copy)
Mr. Wade Melton, Remediation Management Services Company (Electronic Copy - RMO Upload)
File, Antea Group

Enclosures

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Table 1	Groundwater Gauging Data
Table 2	Groundwater Analytical Data

TABLE 1
Groundwater Gauging Data
Tacoma Junction
2660 Frank Albert Road E
Fife, WA

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-1	6/29/2016	100.00	1.82	NP	--	98.18	--
MW-1	9/8/2016	100.00	1.95	NP	--	98.05	--
MW-1	12/1/2016	100.00	0.76	NP	--	99.24	--
MW-1	2/22/2017	100.00	0.90	NP	--	99.10	--
MW-1	5/10/2017	100.00	1.52	NP	--	98.48	--
MW-1	8/16/2017	100.00	2.04	NP	--	97.96	--
MW-1	10/31/2017	100.00	1.22	NP	--	98.78	--
MW-1	2/13/2018	100.00	1.05	NP	--	98.95	--
MW-1	5/2/2018	100.00	1.36	NP	--	98.64	--
MW-2	6/29/2016	99.59	2.49	NP	--	97.10	--
MW-2	9/8/2016	99.59	3.44	3.42	0.02	96.17	--
MW-2	12/1/2016	99.59	1.73	NP	--	97.86	--
MW-2	2/22/2017	99.59	1.13	NP	--	98.46	--
MW-2	5/10/2017	99.59	1.39	NP	--	98.20	--
MW-2	8/16/2017	99.59	2.85	2.82	0.03	96.76	--
MW-2	10/31/2017	99.59	1.79	1.70	0.09	97.87	--
MW-2	2/13/2018	99.59	1.63	NP	--	97.96	--
MW-2	5/2/2018	99.59	1.83	NP	--	97.76	--
MW-3	6/29/2016	99.91	1.98	NP	--	97.93	--
MW-3	9/8/2016	99.91	2.61	NP	--	97.30	--
MW-3	12/1/2016	99.91	1.02	NP	--	98.89	--
MW-3	2/22/2017	99.91	1.11	NP	--	98.80	--
MW-3	5/10/2017	99.91	1.32	NP	--	98.59	--
MW-3	8/16/2017	99.91	2.26	NP	--	97.65	--
MW-3	10/31/2017	99.91	1.51	NP	--	98.40	--
MW-3	2/13/2018	99.91	1.00	NP	--	98.91	--
MW-3	5/2/2018	99.91	1.28	NP	--	98.63	--
MW-4	6/29/2016	99.70	2.20	NP	--	97.50	--
MW-4	9/8/2016	99.70	2.75	NP	--	96.95	--
MW-4	12/1/2016	99.70	1.00	NP	--	98.70	--
MW-4	2/22/2017	99.70	1.05	NP	--	98.65	--
MW-4	5/10/2017	99.70	1.34	NP	--	98.36	--
MW-4	8/16/2017	99.70	2.44	NP	--	97.26	--
MW-4	10/31/2017	99.70	1.35	NP	--	98.35	--

TABLE 1
Groundwater Gauging Data
Tacoma Junction
2660 Frank Albert Road E
Fife, WA

Well I.D.	Date	GROUNDWATER ELEVATION DATA					
		TOC Elevation (ft)	Water Level Depth (ft)	LNAPL Depth (ft)	LNAPL Thickness (ft)	Water Level Elevation* (ft)	Qualifiers
MW-4	2/13/2018	99.70	1.02	NP	--	98.68	--
MW-4	5/2/2018	99.70	1.29	NP	--	98.41	--
MW-5	6/29/2016	99.60	1.49	NP	--	98.11	--
MW-5	9/8/2016	99.60	1.57	NP	--	98.03	--
MW-5	12/1/2016	99.60	0.61	NP	--	98.99	--
MW-5	2/22/2017	99.60	0.77	NP	--	98.83	--
MW-5	5/10/2017	99.60	1.27	NP	--	98.33	--
MW-5	8/16/2017	99.60	1.70	NP	--	97.90	--
MW-5	10/31/2017	99.60	1.02	NP	--	98.58	--
MW-5	2/13/2018	99.60	0.82	NP	--	98.78	--
MW-5	5/2/2018	99.60	1.12	NP	--	98.48	--

Notes:

TOC - Top of Casing

ft - feet

NP - No Product

LNAPL - Light Non-Aqueous Phase Liquid

* - Corrected for LNAPL if present (assumes LNAPL specific gravity = 0.75)

-- No Information Available

Table 2
Groundwater Analytical Data
Tacoma Junction
2660 Frank Albert Road E
Fife, WA

CONSTITUENT		B	T	E	X	TPH-G	TPH-D	TPH-O	Lead
UNIT		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MTCA METHOD A CLEANUP LEVELS		5	1000	700	1000	1000/800 ¹	500	500	15
Well ID	Date								
MW-1	6/29/2016	< 20	< 20	< 30	< 30	< 50	160	< 250	10
MW-1	9/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 50	150	< 250	--
MW-1	12/1/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 50	120	< 250	--
MW-1	2/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 50	< 110	< 250	--
MW-1	5/10/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 500	< 100	< 260	--
MW-1	8/16/2017	< 1.0	< 1.0	< 1.0	< 3.0	< 100	140	330	--
MW-1	10/31/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 250	< 100	< 260	--
MW-1	2/13/2018	< 2.0	< 2.0	< 3.0	< 3.0	< 250	< 110	< 350	--
MW-1	5/2/2018	< 3.0	< 2.0	< 3.0	< 3.0	< 250	< 110	< 350	--
MW-2	6/29/2016	100	6.9	56	92	2300	810	< 250	< 2.0
MW-2	12/1/2016	170	8.7	280	250	7000	1700	< 260	--
MW-2	2/22/2017	90	< 20	120	110	6500	1300	< 250	--
MW-2	5/10/2017	85	6.4	220	150	6000	990	< 250	--
MW-2	2/13/2018	180	8.3	130	150	5000	2100	< 350	--
MW-2	5/2/2018	170 *	6.3 *	130	110	4200	1100	< 360	--
MW-3	6/29/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 50	< 110	< 250	< 2.0
MW-3	9/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 50	< 110	< 250	--
MW-3	12/1/2016	< 2.0	88	< 3.0	< 3.0	100	180	< 260	--
MW-3	2/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 50	< 110	< 260	--
MW-3	5/10/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 500	< 100	< 250	--
MW-3	8/16/2017	< 1.0	< 1.0	< 1.0	< 3.0	< 100	< 100	< 250	--
MW-3	10/31/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 250	< 100	< 260	--
MW-3	2/13/2018	< 2.0	< 2.0	< 3.0	< 3.0	< 250	< 110	< 350	--
MW-3	5/2/2018	< 3.0	< 2.0	< 3.0	< 3.0	< 250	< 110	< 350	--
MW-4	6/29/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 50	110	< 250	< 2.0
MW-4	9/8/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 50	< 110	< 250	--
MW-4	12/1/2016	< 2.0	< 2.0	< 3.0	< 3.0	< 50	140	< 260	--
MW-4	2/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 50	< 110	< 250	--
MW-4	5/10/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 500	120	< 250	--
MW-4	8/16/2017	< 1.0	< 1.0	< 1.0	< 3.0	< 100	< 100	< 250	--
MW-4	10/31/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 250	100	< 250	--
MW-4	2/13/2018	< 2.0	< 2.0	< 3.0	< 3.0	< 250	130	< 350	--
MW-4	5/2/2018	< 3.0	< 2.0	< 3.0	< 3.0	< 250	< 110	< 350	--

Table 2
Groundwater Analytical Data
Tacoma Junction
2660 Frank Albert Road E
Fife, WA

CONSTITUENT		B	T	E	X	TPH-G	TPH-D	TPH-O	Lead
UNIT		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MTCA METHOD A CLEANUP LEVELS		5	1000	700	1000	1000/800 ¹	500	500	15
MW-5	6/29/2016	< 2.0	< 2.0	< 3.0	< 3.0	300	230	< 250	< 2.0
MW-5	d	< 2.0	< 2.0	< 3.0	< 3.0	270	250	< 250	--
MW-5	12/1/2016	< 2.0	< 2.0	< 3.0	< 3.0	89	180	< 250	--
MW-5	2/22/2017	< 2.0	< 2.0	< 3.0	< 3.0	97	< 110	< 250	--
MW-5	5/10/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 500	220	< 250	--
MW-5	8/16/2017	< 1.0	< 1.0	< 1.0	< 3.0	240	150	< 250	--
MW-5	10/31/2017	< 2.0	< 2.0	< 3.0	< 3.0	< 250	120	< 260	--
MW-5	2/13/2018	3.4	< 2.0	7.4	< 3.0	330	250	< 370	--
MW-5	5/2/2018	< 3.0*	< 2.0*	< 3.0	< 3.0	< 250	< 110	< 350	--

Notes:

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes, Total

TPH-G = Total petroleum hydrocarbons as gasoline by Northwest Method NWTPH-Gx

TPH-D = Total petroleum hydrocarbons as diesel by Northwest Method NWTPH-Dx

TPH-O = Total petroleum hydrocarbons as oil by Northwest Method NWTPH-Dx

1,000/800¹ ug/L if no detectable levels of Benzene in the sample - otherwise 800 ug/L

<1.0 = Concentrations were not detected above the laboratory method reporting limit.

ug/L = Micrograms per liter (ppb)

-- = No value given/Not analyzed/Not applicable

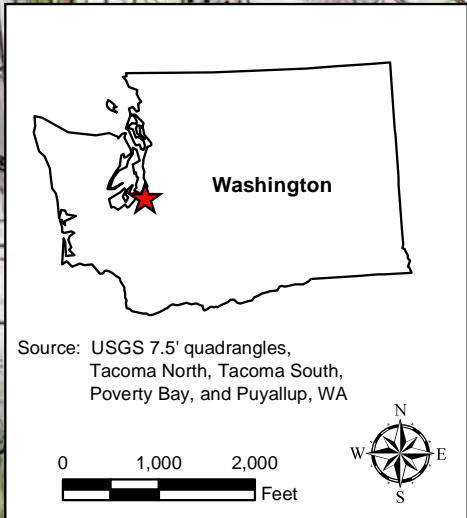
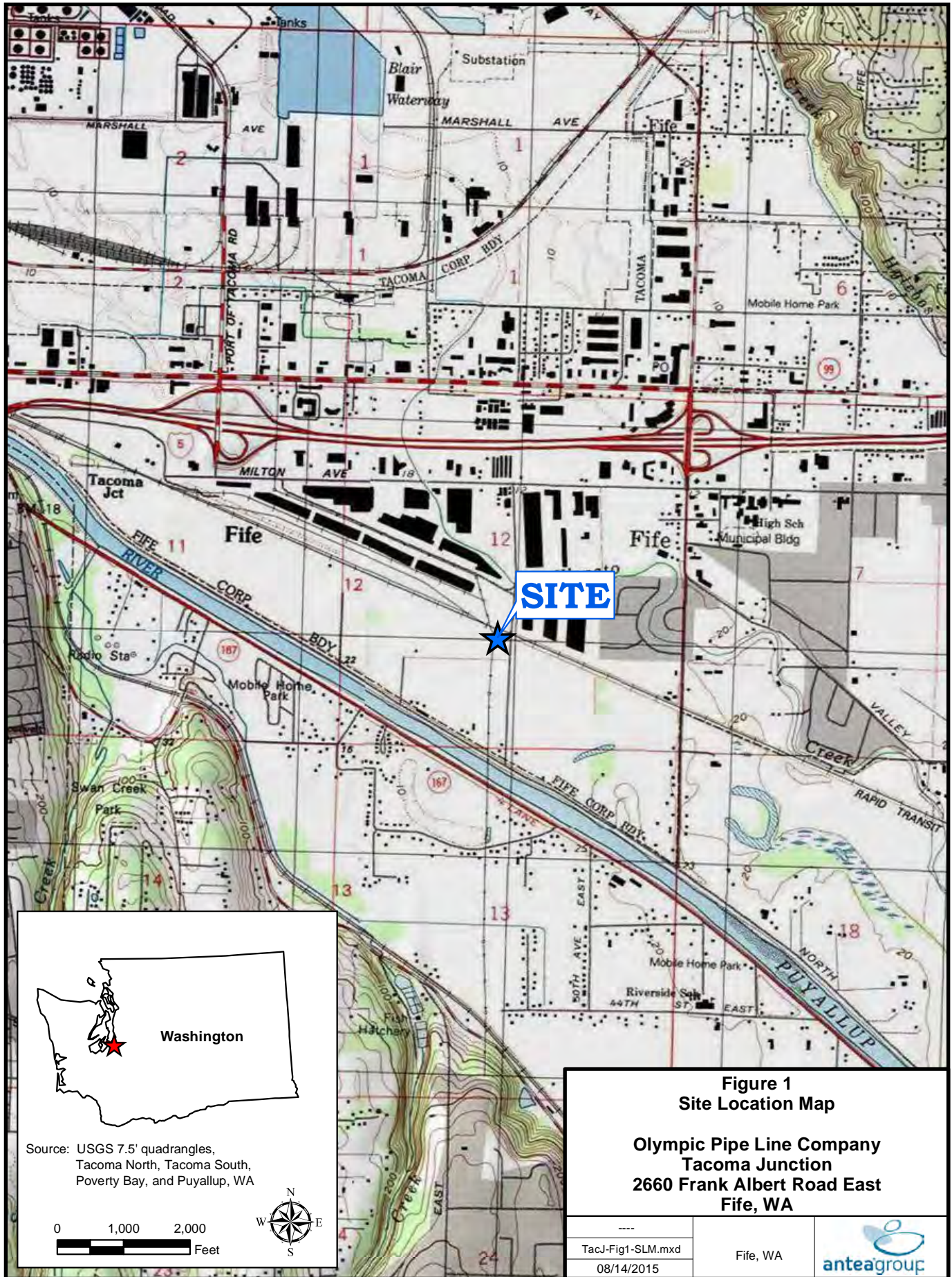
MTCA = Model Toxics Control Act

Results in **bold** indicate concentrations in excess of MTCA Method A Cleanup Levels

* = RPD of the LCS and LCSD exceeds the control limits. LCS or LCSD is outside acceptance limits.

Figures

- | | |
|----------|---|
| Figure 1 | Site Location Map |
| Figure 2 | Site Map |
| Figure 3 | Groundwater Elevation Contour Map – 2/13/2018 |
| Figure 4 | Groundwater Elevation Contour Map – 5/02/2018 |
| Figure 5 | Groundwater Analytical Data Map – 2/13/2018 & 5/02/2018 |



Source: USGS 7.5' quadrangles,
Tacoma North, Tacoma South,
Poverty Bay, and Puyallup, WA

0 1,000 2,000
Feet



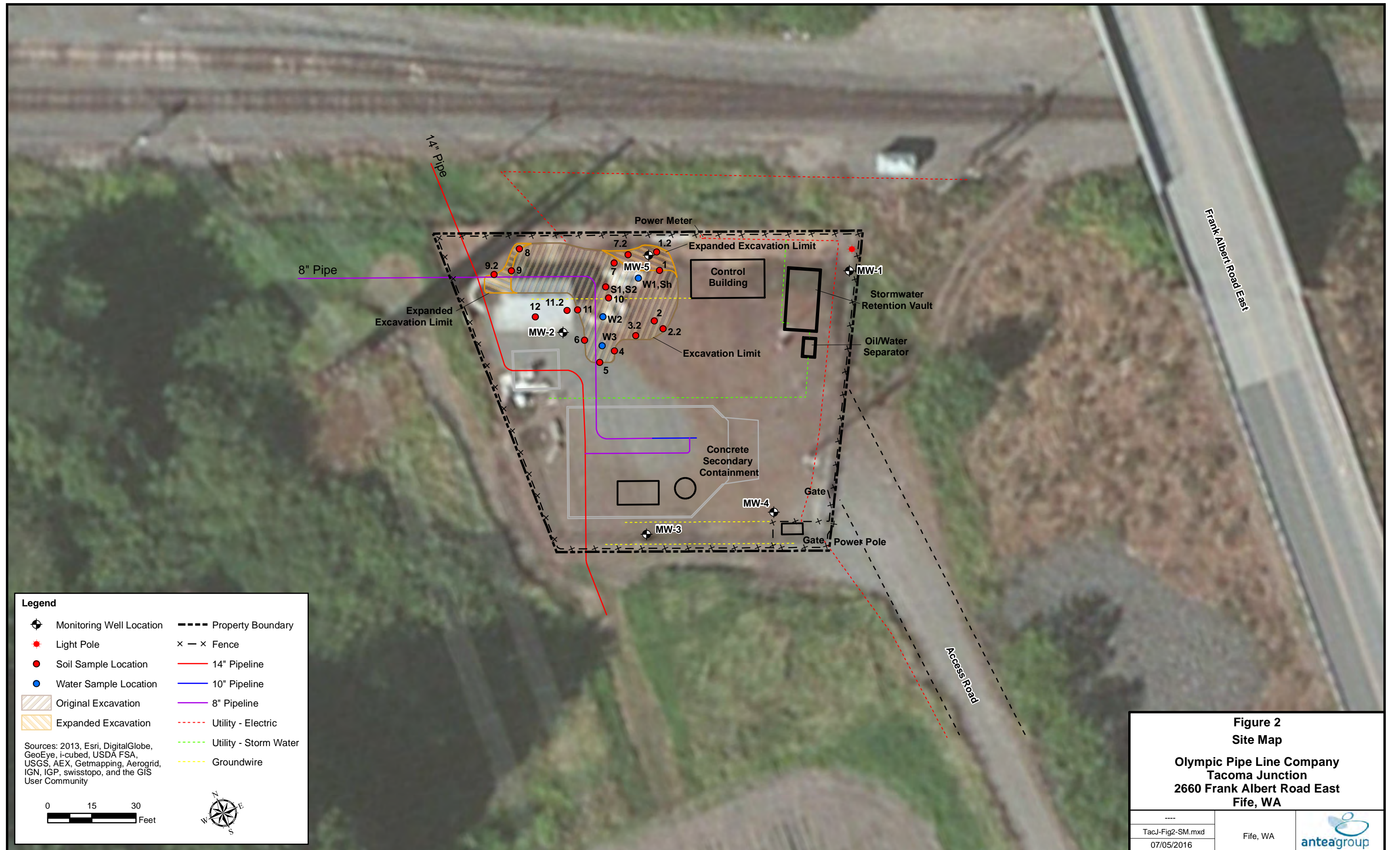
Figure 1
Site Location Map

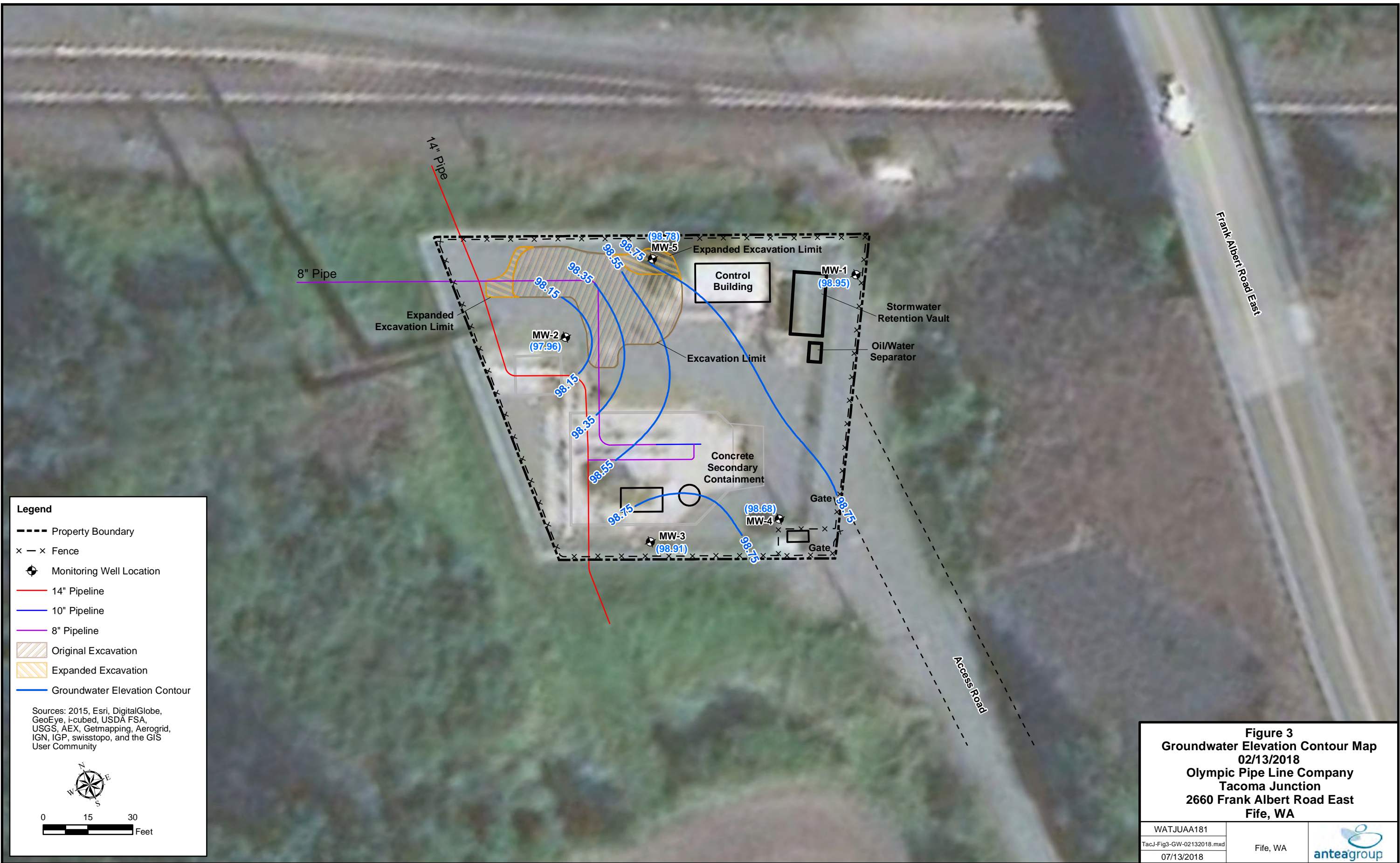
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Tacoma Junction
2660 Frank Albert Road East
Fife, WA

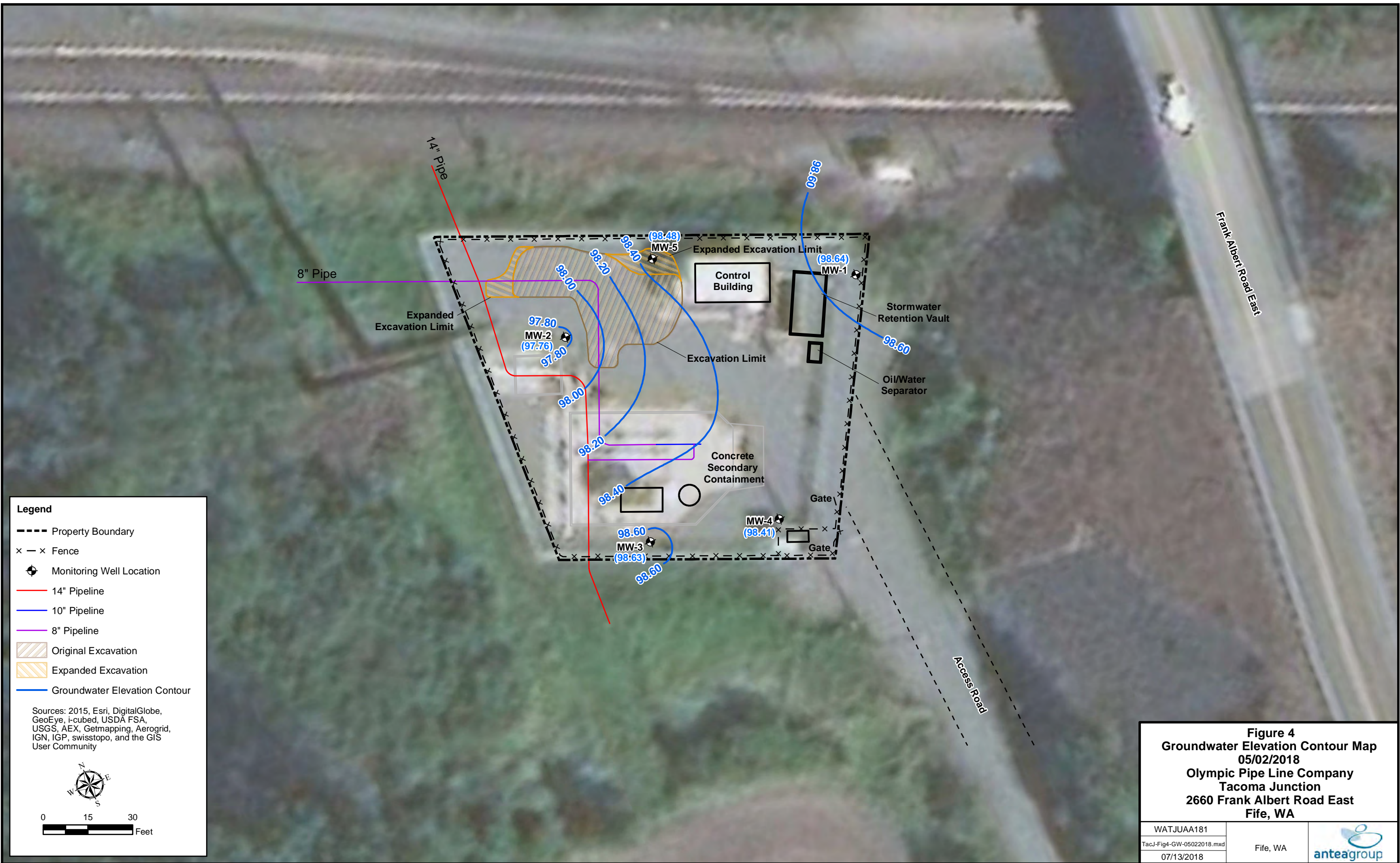
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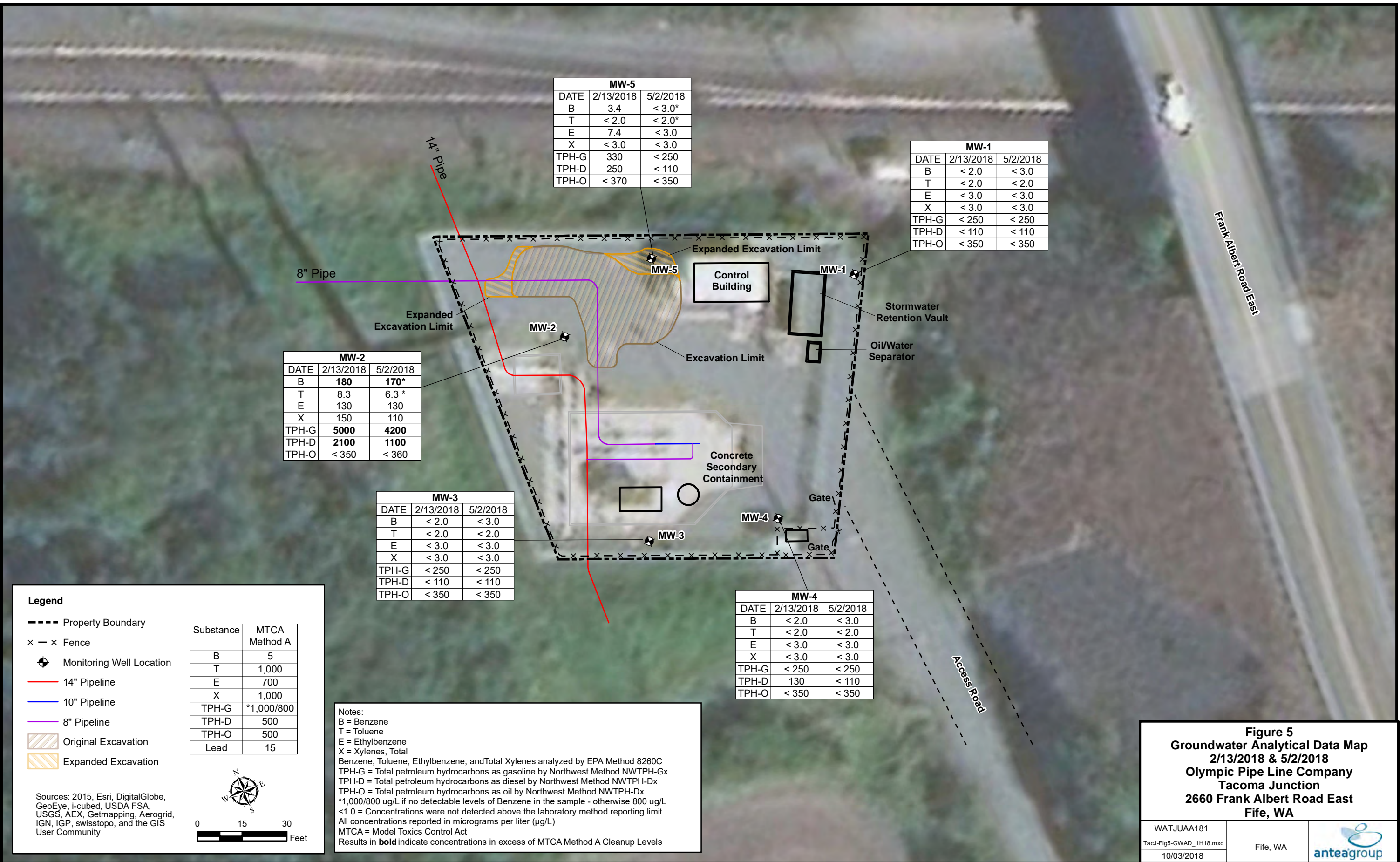
Fife, WA











Appendix A

Analytical Lab Reports and Chain-of-Custody Documentation

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle

5755 8th Street East

Tacoma, WA 98424

Tel: (253)922-2310

TestAmerica Job ID: 580-75069-1

Client Project/Site: BP - OPLC - Tacoma Junction

Sampling Event: OPLC-Tacoma Junction

For:

Antea USA, Inc.

4006 148th Ave NE

Redmond, Washington 98052

Attn: Mackie Stock

M. Elaine Walker

Authorized for release by:

2/19/2018 3:42:23 PM

Elaine Walker, Project Manager II

(253)248-4972

elaine.walker@testamericainc.com

LINKS

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results through

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPLAMP Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPLAMP. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody is included and is an integral part of this report.



Elaine Walker
Project Manager II
2/19/2018 3:42:23 PM

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Case Narrative

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Job ID: 580-75069-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative 580-75069-1

Receipt

Six samples were received on 2/13/2018 12:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.8° C.

Receipt Exceptions

The container labels for the following sample did not match the information listed on the Chain-of-Custody (COC): MW-1_20180213 (580-75069-1). The container labels list the sampling time 10:50, while the COC lists 10:30. The sample is logged in per COC.

GC/MS VOA

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-2_20180213 (580-75069-2). Elevated reporting limits (RLs) are provided.

Method(s) NWTPH-Gx: Surrogate recovery for the following sample was outside control limits: MW-2_20180213 (580-75069-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method(s) NWTPH-Dx: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: MW-4_20180213 (580-75069-4).

Method(s) NWTPH-Dx: The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was earlier than the typical diesel fuel pattern used by the laboratory for quantitative purposes: MW-2_20180213 (580-75069-2) and MW-5_20180213 (580-75069-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Client Sample ID: MW-1_20180213

Date Collected: 02/13/18 10:30

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-1

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			02/14/18 21:06	1
Toluene	ND		2.0		ug/L			02/14/18 21:06	1
Ethylbenzene	ND		3.0		ug/L			02/14/18 21:06	1
Xylenes, Total	ND		3.0		ug/L			02/14/18 21:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	105		80 - 120		02/14/18 21:06	1
Toluene-d8 (Surr)	94		80 - 122		02/14/18 21:06	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 126		02/14/18 21:06	1
4-Bromofluorobenzene (Surr)	101		75 - 125		02/14/18 21:06	1
Dibromofluoromethane (Surr)	109		77 - 120		02/14/18 21:06	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			02/14/18 21:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		58 - 133		02/14/18 21:41	1
Trifluorotoluene (Surr)	121		77 - 128		02/14/18 21:41	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		02/14/18 09:56	02/15/18 00:39	1
Motor Oil (>C24-C36)	ND		350		ug/L		02/14/18 09:56	02/15/18 00:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	83		50 - 150	02/14/18 09:56	02/15/18 00:39	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Client Sample ID: MW-2_20180213

Date Collected: 02/13/18 11:35

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-2

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	8.3		2.0		ug/L			02/14/18 21:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	104		80 - 120					02/14/18 21:33	1
Toluene-d8 (Surr)	96		80 - 122					02/14/18 21:33	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 126					02/14/18 21:33	1
4-Bromofluorobenzene (Surr)	103		75 - 125					02/14/18 21:33	1
Dibromofluoromethane (Surr)	103		77 - 120					02/14/18 21:33	1

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	180		20		ug/L			02/15/18 17:15	10
Ethylbenzene	130		30		ug/L			02/15/18 17:15	10
Xylenes, Total	150		30		ug/L			02/15/18 17:15	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	104		80 - 120					02/15/18 17:15	10
Toluene-d8 (Surr)	98		80 - 122					02/15/18 17:15	10
1,2-Dichloroethane-d4 (Surr)	105		80 - 126					02/15/18 17:15	10
4-Bromofluorobenzene (Surr)	106		75 - 125					02/15/18 17:15	10
Dibromofluoromethane (Surr)	102		77 - 120					02/15/18 17:15	10

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	5000		250		ug/L			02/14/18 22:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	180	X	58 - 133					02/14/18 22:11	1
Trifluorotoluene (Surr)	144	X	77 - 128					02/14/18 22:11	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	2100		110		ug/L		02/14/18 09:56	02/16/18 15:52	1
Motor Oil (>C24-C36)	ND		350		ug/L		02/14/18 09:56	02/16/18 15:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	74		50 - 150				02/14/18 09:56	02/16/18 15:52	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Client Sample ID: MW-3_20180213

Date Collected: 02/13/18 11:50

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-3

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			02/14/18 21:59	1
Toluene	ND		2.0		ug/L			02/14/18 21:59	1
Ethylbenzene	ND		3.0		ug/L			02/14/18 21:59	1
Xylenes, Total	ND		3.0		ug/L			02/14/18 21:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		80 - 120		02/14/18 21:59	1
Toluene-d8 (Surr)	98		80 - 122		02/14/18 21:59	1
1,2-Dichloroethane-d4 (Surr)	108		80 - 126		02/14/18 21:59	1
4-Bromofluorobenzene (Surr)	105		75 - 125		02/14/18 21:59	1
Dibromofluoromethane (Surr)	104		77 - 120		02/14/18 21:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			02/14/18 22:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		58 - 133		02/14/18 22:41	1
Trifluorotoluene (Surr)	121		77 - 128		02/14/18 22:41	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		02/14/18 09:56	02/16/18 16:14	1
Motor Oil (>C24-C36)	ND		350		ug/L		02/14/18 09:56	02/16/18 16:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	66		50 - 150	02/14/18 09:56	02/16/18 16:14	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Client Sample ID: MW-4_20180213

Date Collected: 02/13/18 12:10

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-4

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			02/15/18 17:42	1
Toluene	ND		2.0		ug/L			02/15/18 17:42	1
Ethylbenzene	ND		3.0		ug/L			02/15/18 17:42	1
Xylenes, Total	ND		3.0		ug/L			02/15/18 17:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120		02/15/18 17:42	1
Toluene-d8 (Surr)	96		80 - 122		02/15/18 17:42	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126		02/15/18 17:42	1
4-Bromofluorobenzene (Surr)	103		75 - 125		02/15/18 17:42	1
Dibromofluoromethane (Surr)	103		77 - 120		02/15/18 17:42	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			02/15/18 08:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		58 - 133		02/15/18 08:42	1
Trifluorotoluene (Surr)	119		77 - 128		02/15/18 08:42	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	130		110		ug/L		02/14/18 09:56	02/16/18 16:36	1
Motor Oil (>C24-C36)	ND		350		ug/L		02/14/18 09:56	02/16/18 16:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	63		50 - 150	02/14/18 09:56	02/16/18 16:36	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Client Sample ID: MW-5_20180213

Date Collected: 02/13/18 11:15

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-5

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.4		2.0		ug/L			02/15/18 18:08	1
Toluene	ND		2.0		ug/L			02/15/18 18:08	1
Ethylbenzene	7.4		3.0		ug/L			02/15/18 18:08	1
Xylenes, Total	ND		3.0		ug/L			02/15/18 18:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	105		80 - 120		02/15/18 18:08	1
Toluene-d8 (Surr)	99		80 - 122		02/15/18 18:08	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126		02/15/18 18:08	1
4-Bromofluorobenzene (Surr)	105		75 - 125		02/15/18 18:08	1
Dibromofluoromethane (Surr)	105		77 - 120		02/15/18 18:08	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	330		250		ug/L			02/15/18 09:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		58 - 133		02/15/18 09:12	1
Trifluorotoluene (Surr)	115		77 - 128		02/15/18 09:12	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	250		120		ug/L		02/14/18 09:56	02/16/18 16:58	1
Motor Oil (>C24-C36)	ND		370		ug/L		02/14/18 09:56	02/16/18 16:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	63		50 - 150	02/14/18 09:56	02/16/18 16:58	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Client Sample ID: Trip Blank_20180213

Lab Sample ID: 580-75069-6

Date Collected: 02/13/18 00:01

Matrix: Water

Date Received: 02/13/18 12:25

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			02/15/18 15:01	1
Toluene	ND		2.0		ug/L			02/15/18 15:01	1
Ethylbenzene	ND		3.0		ug/L			02/15/18 15:01	1
Xylenes, Total	ND		3.0		ug/L			02/15/18 15:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	103		80 - 120		02/15/18 15:01	1
Toluene-d8 (Surr)	97		80 - 122		02/15/18 15:01	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126		02/15/18 15:01	1
4-Bromofluorobenzene (Surr)	105		75 - 125		02/15/18 15:01	1
Dibromofluoromethane (Surr)	104		77 - 120		02/15/18 15:01	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			02/14/18 20:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		58 - 133		02/14/18 20:39	1
Trifluorotoluene (Surr)	111		77 - 128		02/14/18 20:39	1

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-267307/5

Matrix: Water

Analysis Batch: 267307

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			02/14/18 14:25	1
Toluene	ND		2.0		ug/L			02/14/18 14:25	1
Ethylbenzene	ND		3.0		ug/L			02/14/18 14:25	1
Xylenes, Total	ND		3.0		ug/L			02/14/18 14:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	105		80 - 120		02/14/18 14:25	1
Toluene-d8 (Surr)	99		80 - 122		02/14/18 14:25	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126		02/14/18 14:25	1
4-Bromofluorobenzene (Surr)	104		75 - 125		02/14/18 14:25	1
Dibromofluoromethane (Surr)	106		77 - 120		02/14/18 14:25	1

Lab Sample ID: LCS 580-267307/6

Matrix: Water

Analysis Batch: 267307

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	11.9		ug/L		119	75 - 120
Toluene	10.0	10.6		ug/L		106	75 - 120
Ethylbenzene	10.0	11.3		ug/L		113	75 - 120
m-Xylene & p-Xylene	10.0	11.0		ug/L		110	75 - 120
o-Xylene	10.0	11.3		ug/L		113	74 - 120
Xylenes, Total	20.0	22.3		ug/L		112	74 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	104		80 - 120
Toluene-d8 (Surr)	95		80 - 122
1,2-Dichloroethane-d4 (Surr)	106		80 - 126
4-Bromofluorobenzene (Surr)	105		75 - 125
Dibromofluoromethane (Surr)	106		77 - 120

Lab Sample ID: LCSD 580-267307/7

Matrix: Water

Analysis Batch: 267307

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	11.4		ug/L		114	75 - 120	4	14
Toluene	10.0	10.1		ug/L		101	75 - 120	5	13
Ethylbenzene	10.0	10.8		ug/L		108	75 - 120	4	14
m-Xylene & p-Xylene	10.0	10.5		ug/L		105	75 - 120	5	14
o-Xylene	10.0	10.7		ug/L		107	74 - 120	6	16
Xylenes, Total	20.0	21.2		ug/L		106	74 - 120	5	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	103		80 - 120
Toluene-d8 (Surr)	96		80 - 122
1,2-Dichloroethane-d4 (Surr)	108		80 - 126

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-267307/7

Matrix: Water

Analysis Batch: 267307

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		75 - 125
Dibromofluoromethane (Surr)	105		77 - 120

Lab Sample ID: MB 580-267374/5

Matrix: Water

Analysis Batch: 267374

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/L			02/15/18 13:41	1
Toluene	ND		2.0		ug/L			02/15/18 13:41	1
Ethylbenzene	ND		3.0		ug/L			02/15/18 13:41	1
Xylenes, Total	ND		3.0		ug/L			02/15/18 13:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	104		80 - 120		02/15/18 13:41	1
Toluene-d8 (Surr)	95		80 - 122		02/15/18 13:41	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 126		02/15/18 13:41	1
4-Bromofluorobenzene (Surr)	101		75 - 125		02/15/18 13:41	1
Dibromofluoromethane (Surr)	105		77 - 120		02/15/18 13:41	1

Lab Sample ID: LCS 580-267374/6

Matrix: Water

Analysis Batch: 267374

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	10.3		ug/L		103	75 - 120
Toluene	10.0	9.28		ug/L		93	75 - 120
Ethylbenzene	10.0	9.78		ug/L		98	75 - 120
m-Xylene & p-Xylene	10.0	9.49		ug/L		95	75 - 120
o-Xylene	10.0	9.64		ug/L		96	74 - 120
Xylenes, Total	20.0	19.1		ug/L		96	74 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	104		80 - 120
Toluene-d8 (Surr)	93		80 - 122
1,2-Dichloroethane-d4 (Surr)	103		80 - 126
4-Bromofluorobenzene (Surr)	100		75 - 125
Dibromofluoromethane (Surr)	103		77 - 120

Lab Sample ID: LCSD 580-267374/7

Matrix: Water

Analysis Batch: 267374

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	10.9		ug/L		109	75 - 120	5	14
Toluene	10.0	9.75		ug/L		97	75 - 120	5	13
Ethylbenzene	10.0	10.2		ug/L		102	75 - 120	5	14

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-267374/7

Matrix: Water

Analysis Batch: 267374

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
m-Xylene & p-Xylene	10.0	9.90		ug/L		99	75 - 120	4	14
o-Xylene	10.0	10.0		ug/L		100	74 - 120	4	16
Xylenes, Total	20.0	19.9		ug/L		100	74 - 120	4	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	104		80 - 120
Toluene-d8 (Surr)	97		80 - 122
1,2-Dichloroethane-d4 (Surr)	102		80 - 126
4-Bromofluorobenzene (Surr)	102		75 - 125
Dibromofluoromethane (Surr)	103		77 - 120

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-267349/6

Matrix: Water

Analysis Batch: 267349

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			02/14/18 19:08	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		58 - 133		02/14/18 19:08	1
Trifluorotoluene (Surr)	113		77 - 128		02/14/18 19:08	1

Lab Sample ID: LCS 580-267349/7

Matrix: Water

Analysis Batch: 267349

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1000	948		ug/L		95	79 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		58 - 133
Trifluorotoluene (Surr)	102		77 - 128

Lab Sample ID: LCSD 580-267349/8

Matrix: Water

Analysis Batch: 267349

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	1000	955		ug/L		96	79 - 110	1	10

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	94		58 - 133
Trifluorotoluene (Surr)	101		77 - 128

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-267287/1-A

Matrix: Water

Analysis Batch: 267336

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 267287

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		02/14/18 09:56	02/14/18 17:41	1
Motor Oil (>C24-C36)	ND		350		ug/L		02/14/18 09:56	02/14/18 17:41	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	102		50 - 150				02/14/18 09:56	02/14/18 17:41	1

Lab Sample ID: MB 580-267287/1-A

Matrix: Water

Analysis Batch: 267460

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 267287

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		02/14/18 09:56	02/16/18 12:35	1
Motor Oil (>C24-C36)	ND		350		ug/L		02/14/18 09:56	02/16/18 12:35	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	68		50 - 150				02/14/18 09:56	02/16/18 12:35	1

Lab Sample ID: LCS 580-267287/2-A

Matrix: Water

Analysis Batch: 267419

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 267287

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
#2 Diesel (C10-C24)	2000	1730		ug/L		86	59 - 112		
Motor Oil (>C24-C36)	2000	1830		ug/L		91	64 - 120		
Surrogate	%Recovery	LCS Qualifier	Limits						
o-Terphenyl	99		50 - 150						

Lab Sample ID: LCSD 580-267287/3-A

Matrix: Water

Analysis Batch: 267419

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 267287

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	2000	1520		ug/L		76	59 - 112	13	16
Motor Oil (>C24-C36)	2000	1620		ug/L		81	64 - 120	12	17
Surrogate	%Recovery	LCSD Qualifier	Limits						
o-Terphenyl	88		50 - 150						

TestAmerica Seattle

Lab Chronicle

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Client Sample ID: MW-1_20180213

Date Collected: 02/13/18 10:30

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267307	02/14/18 21:06	RSB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	267349	02/14/18 21:41	JCV	TAL SEA
Total/NA	Prep	3510C			267287	02/14/18 09:56	NDB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	267336	02/15/18 00:39	T1W	TAL SEA

Client Sample ID: MW-2_20180213

Date Collected: 02/13/18 11:35

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267307	02/14/18 21:33	RSB	TAL SEA
Total/NA	Analysis	8260C	DL	10	267374	02/15/18 17:15	P1P	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	267349	02/14/18 22:11	JCV	TAL SEA
Total/NA	Prep	3510C			267287	02/14/18 09:56	NDB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	267460	02/16/18 15:52	ADB	TAL SEA

Client Sample ID: MW-3_20180213

Date Collected: 02/13/18 11:50

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267307	02/14/18 21:59	RSB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	267349	02/14/18 22:41	JCV	TAL SEA
Total/NA	Prep	3510C			267287	02/14/18 09:56	NDB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	267460	02/16/18 16:14	ADB	TAL SEA

Client Sample ID: MW-4_20180213

Date Collected: 02/13/18 12:10

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267374	02/15/18 17:42	P1P	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	267349	02/15/18 08:42	JCV	TAL SEA
Total/NA	Prep	3510C			267287	02/14/18 09:56	NDB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	267460	02/16/18 16:36	ADB	TAL SEA

Client Sample ID: MW-5_20180213

Date Collected: 02/13/18 11:15

Date Received: 02/13/18 12:25

Lab Sample ID: 580-75069-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267374	02/15/18 18:08	P1P	TAL SEA

TestAmerica Seattle

Lab Chronicle

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	NWTPH-Gx		1	267349	02/15/18 09:12	JCV	TAL SEA
Total/NA	Prep	3510C			267287	02/14/18 09:56	NDB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	267460	02/16/18 16:58	ADB	TAL SEA

Client Sample ID: Trip Blank_20180213

Lab Sample ID: 580-75069-6

Date Collected: 02/13/18 00:01

Matrix: Water

Date Received: 02/13/18 12:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267374	02/15/18 15:01	P1P	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	267349	02/14/18 20:39	JCV	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C553	02-17-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	Xylenes, Total

Sample Summary

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-75069-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-75069-1	MW-1_20180213	Water	02/13/18 10:30	02/13/18 12:25
580-75069-2	MW-2_20180213	Water	02/13/18 11:35	02/13/18 12:25
580-75069-3	MW-3_20180213	Water	02/13/18 11:50	02/13/18 12:25
580-75069-4	MW-4_20180213	Water	02/13/18 12:10	02/13/18 12:25
580-75069-5	MW-5_20180213	Water	02/13/18 11:15	02/13/18 12:25
580-75069-6	Trip Blank_20180213	Water	02/13/18 00:01	02/13/18 12:25



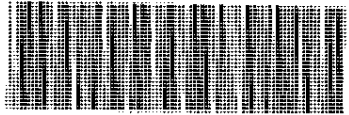
Laboratory Management Program LaMP Chain of Custody Record

Page 1 of 1

BP/ARC Project Name: Olympic Pipe Line CompanyReq Due Date (mm/dd/yy): StandardRush TAT: Yes ☐ No ☒BP/ARC Facility No: Tacoma JunctionLab Work Order Number: 15069

Lab Name: <u>Test America</u>	BP/ARC Facility Address: <u>2660 Frank Albert Road East</u>	Consultant/Contractor: <u>Antea Group</u>
Lab Address: <u>Tacoma, WA</u>	City, State, ZIP Code: <u>Fife WA 98424</u>	Consultant/Contractor Project No: <u>WATJUAA181.10123</u>
Lab PM: <u>Elaine Walker</u>	Lead Regulatory Agency: <u>WA Department of Ecology</u>	Address: <u>4006 148th Avenue NE, Redmond, WA 98052</u>
Lab Phone: <u>253.248.4972</u>	California Global ID No.: <u>NA</u>	Consultant/Contractor PM: <u>Megan Richard</u>
Lab Shipping Acct: <u>NA</u>	Enfos Proposal No: <u>00bpt-0006/pending</u>	Phone: <u>P: 425.498.7711 F: 425.869.1892</u>
Lab Bottle Order No: <u>NA</u>	Accounting Mode: <u>Provision X OOC-BU OOC-RM</u>	Email EDD To: <u>Megan.Richard@anteagroup.com</u>
Other Info: <u>elaine.walker@testamericainc.com</u>	Stage: <u>Appraise (10)</u> Activity: <u>Interim Measures (123)</u>	Invoice To: <u>BP/ARC X Contractor</u>

BP/ARC EBM: <u>Charles Carmel</u>				Matrix		No. Containers / Preservative										Requested Analyses										Report Type & QC Level	
EBM Phone: <u>657-529-4503</u>																										Standard <u>Y</u>	
EBM Email: <u>charles.carmel@bp.com</u>																										Full Data Package <u> </u>	
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	NaOH Zn Acetate	8260BTEX	NWTPH-Gx	NWTPH-DX	Pb Total	Comments									

	MW-1 - 20180213	02/13/2018	1030		X		8				8			X	X	X			 580-75069 Chain of Custody Therm. ID <u>A2</u> Cor <u>4.50</u> Unc <u>5.70</u> Cooler Desc: <u>Ly Red</u> Web/Packs Packing: <u>bub</u> <u>clido</u> Custody Seal: Yes <u>No</u>									
	MW-2 - 20180213	02/13/2018	1135		X		8				8			X	X	X												
	MW-3 - 20180213	02/13/2018	1150		X		8				8			X	X	X												
	MW-4 - 20180213	02/13/2018	1210		X		8				8			X	X	X												
	MW-5 - 20180213	02/13/2018	1115		X		8				8			X	X	X												
	Trip Blank - 20180213	02/13/2018	0000		X		6				6			X	X													

Sampler's Name: <u>Bethany Erickson</u>		Relinquished By / Affiliation: <u>Bethany Erickson</u>		Date: <u>2/13/18</u>	Time: <u>1:26</u>	Accepted By / Affiliation: <u>Tom [Signature] / TA-Sea</u>		Date: <u>2/13/18</u>	Time: <u>1325</u>
Sampler's Company: <u>Antea Group</u>									
Shipment Method: <u>Drop off</u>		Ship Date:							
Shipment Tracking No:									

Special Instructions:					
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No		Temp Blank: Yes / No	Cooler Temp on Receipt: <u> </u> °F/C	Trip Blank: Yes / No	MS/MSD Sample Submitted: Yes / No

Login Sample Receipt Checklist

Client: Antea USA, Inc.

Job Number: 580-75069-1

Login Number: 75069

List Source: TestAmerica Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-77081-1

Client Project/Site: BP - OPLC - Tacoma Junction
Sampling Event: OPLC-Tacoma Junction

For:

Antea USA, Inc.
4006 148th Ave NE
Redmond, Washington 98052

Attn: Mackie Stock

M. Elaine Walker

Authorized for release by:
5/17/2018 3:44:34 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPLAMP Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPLAMP. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody is included and is an integral part of this report.

M. Elaine Walker

Elaine Walker
Project Manager II
5/17/2018 3:44:34 PM

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Case Narrative

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Job ID: 580-77081-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative 580-77081-1

Receipt

Six samples were received on 5/3/2018 10:47 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.

GC/MS VOA

Method(s) 8260C: Surrogate Trifluorotoluene (Surr) recovery for the following samples were outside the upper control limit: MW-1_20180502 (580-77081-1), MW-3_20180502 (580-77081-3) and MW-4_20180502 (580-77081-4). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8260C: The surrogate Trifluorotoluene (Surr) failed high by 3 percent or less affecting the following QC items:(CCVIS 580-273241/3), (LCSD 580-273241/7) and (MB 580-273241/5). The samples associated with the QC were ND for appropriate analytes.

Method(s) 8260C: The laboratory control sample (LCS) for analytical batch 580-273533 recovered outside control limits for the following analytes: Benzene. The analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method(s) 8260C: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for batch analytical batch 580-273533 recovered outside control limits for the following analytes: Benzene, m-Xylene & p-Xylene, and Toluene.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-2_20180502 (580-77081-2). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The laboratory control sample (LCS) laboratory control sample duplicate (LCSD) and CCV for analytical batch 580-273765 recovered outside acceptance limits for Benzene. There was insufficient sample to perform a re-extraction or re-analysis; therefore, the data have been reported. The sample was previously run and recovered with similar results. The original data has been set to secondary.

Method(s) 8260C: Surrogate recovery for the following samples were outside of acceptance limits: MW-2_20180502 (580-77081-2), (CCVIS 580-273765/3), (LCS 580-273765/6), (LCSD 580-273765/7) and (MB 580-273765/5). There was insufficient sample to perform a re-extraction; therefore, the data have been reported.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-2_20180502 (580-77081-2). Elevated reporting limits (RLs) are provided.

Method(s) NWTPH-Gx: Surrogate recovery for the following sample was outside control limits: MW-2_20180502 (580-77081-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method(s) NWTPH-Dx: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was earlier than the typical diesel fuel pattern used by the laboratory for quantitative purposes: MW-2_20180502 (580-77081-2).

Method(s) NWTPH-Dx: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: MW-2_20180502 (580-77081-2).

Method(s) NWTPH-Dx: The following sample contained o-Terphenyl surrogate below acceptance limits at 46% (lower limit: 50%): MW-3_20180502 (580-77081-3). The sample was re-extracted, but the re-extraction also recovered below o-Terphenyl acceptance limits at 44%. However, there is no sample volume remaining for further re-extraction. Both extractions were within hold and original results were confirmed by re-extraction data; therefore the original extraction is qualified and reported due to recoveries closer to acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
*	RPD of the LCS and LCSD exceeds the control limits
*	LCS or LCSD is outside acceptance limits.

GC VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: MW-1_20180502

Date Collected: 05/02/18 10:25

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-1

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			05/08/18 22:02	1
Toluene	ND		2.0		ug/L			05/08/18 22:02	1
Ethylbenzene	ND		3.0		ug/L			05/08/18 22:02	1
Xylenes, Total	ND		3.0		ug/L			05/08/18 22:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	123	X	80 - 120		05/08/18 22:02	1
Toluene-d8 (Surr)	85		80 - 122		05/08/18 22:02	1
1,2-Dichloroethane-d4 (Surr)	108		80 - 126		05/08/18 22:02	1
4-Bromofluorobenzene (Surr)	103		75 - 125		05/08/18 22:02	1
Dibromofluoromethane (Surr)	109		77 - 120		05/08/18 22:02	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			05/09/18 17:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		58 - 133		05/09/18 17:46	1
Trifluorotoluene (Surr)	102		77 - 128		05/09/18 17:46	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		05/08/18 13:17	05/10/18 18:11	1
Motor Oil (>C24-C36)	ND		350		ug/L		05/08/18 13:17	05/10/18 18:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	52		50 - 150	05/08/18 13:17	05/10/18 18:11	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: MW-2_20180502

Date Collected: 05/02/18 10:00

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-2

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	6.3	*	2.0		ug/L			05/11/18 03:41	1
Xylenes, Total	110		3.0		ug/L			05/11/18 03:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	107		80 - 120		05/11/18 03:41	1
Toluene-d8 (Surr)	97		80 - 122		05/11/18 03:41	1
1,2-Dichloroethane-d4 (Surr)	101		80 - 126		05/11/18 03:41	1
4-Bromofluorobenzene (Surr)	107		75 - 125		05/11/18 03:41	1
Dibromofluoromethane (Surr)	100		77 - 120		05/11/18 03:41	1

Method: 8260C - Volatile Organic Compounds by GC/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	130	*	30		ug/L			05/11/18 22:30	10
Ethylbenzene	130		30		ug/L			05/11/18 22:30	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	109		80 - 120		05/11/18 22:30	10
Toluene-d8 (Surr)	96		80 - 122		05/11/18 22:30	10
1,2-Dichloroethane-d4 (Surr)	105		80 - 126		05/11/18 22:30	10
4-Bromofluorobenzene (Surr)	104		75 - 125		05/11/18 22:30	10
Dibromofluoromethane (Surr)	100		77 - 120		05/11/18 22:30	10

Method: 8260C - Volatile Organic Compounds by GC/MS - RADL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	170	*	30		ug/L			05/14/18 20:49	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	124	X	80 - 120		05/14/18 20:49	10
Toluene-d8 (Surr)	85		80 - 122		05/14/18 20:49	10
1,2-Dichloroethane-d4 (Surr)	113		80 - 126		05/14/18 20:49	10
4-Bromofluorobenzene (Surr)	106		75 - 125		05/14/18 20:49	10
Dibromofluoromethane (Surr)	114		77 - 120		05/14/18 20:49	10

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	4200		250		ug/L			05/09/18 09:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	153	X	58 - 133		05/09/18 09:19	1
Trifluorotoluene (Surr)	130	X	77 - 128		05/09/18 09:19	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1100		110		ug/L		05/08/18 13:17	05/10/18 18:39	1
Motor Oil (>C24-C36)	ND		360		ug/L		05/08/18 13:17	05/10/18 18:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	66		50 - 150	05/08/18 13:17	05/10/18 18:39	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: MW-3_20180502

Date Collected: 05/02/18 09:50

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-3

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			05/08/18 22:59	1
Toluene	ND		2.0		ug/L			05/08/18 22:59	1
Ethylbenzene	ND		3.0		ug/L			05/08/18 22:59	1
Xylenes, Total	ND		3.0		ug/L			05/08/18 22:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	122	X	80 - 120		05/08/18 22:59	1
Toluene-d8 (Surr)	86		80 - 122		05/08/18 22:59	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 126		05/08/18 22:59	1
4-Bromofluorobenzene (Surr)	105		75 - 125		05/08/18 22:59	1
Dibromofluoromethane (Surr)	108		77 - 120		05/08/18 22:59	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			05/09/18 08:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		58 - 133		05/09/18 08:48	1
Trifluorotoluene (Surr)	97		77 - 128		05/09/18 08:48	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		05/08/18 13:17	05/10/18 19:07	1
Motor Oil (>C24-C36)	ND		350		ug/L		05/08/18 13:17	05/10/18 19:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	46	X	50 - 150	05/08/18 13:17	05/10/18 19:07	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: MW-4_20180502

Lab Sample ID: 580-77081-4

Date Collected: 05/02/18 09:30

Matrix: Water

Date Received: 05/03/18 10:47

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			05/08/18 23:28	1
Toluene	ND		2.0		ug/L			05/08/18 23:28	1
Ethylbenzene	ND		3.0		ug/L			05/08/18 23:28	1
Xylenes, Total	ND		3.0		ug/L			05/08/18 23:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	124	X	80 - 120		05/08/18 23:28	1
Toluene-d8 (Surr)	86		80 - 122		05/08/18 23:28	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 126		05/08/18 23:28	1
4-Bromofluorobenzene (Surr)	104		75 - 125		05/08/18 23:28	1
Dibromofluoromethane (Surr)	108		77 - 120		05/08/18 23:28	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			05/09/18 08:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		58 - 133		05/09/18 08:16	1
Trifluorotoluene (Surr)	97		77 - 128		05/09/18 08:16	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		05/08/18 13:17	05/10/18 19:35	1
Motor Oil (>C24-C36)	ND		350		ug/L		05/08/18 13:17	05/10/18 19:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	53		50 - 150	05/08/18 13:17	05/10/18 19:35	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: MW-5_20180502

Date Collected: 05/02/18 10:15

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-5

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	*	3.0		ug/L			05/11/18 04:06	1
Toluene	ND	*	2.0		ug/L			05/11/18 04:06	1
Ethylbenzene	ND		3.0		ug/L			05/11/18 04:06	1
Xylenes, Total	ND		3.0		ug/L			05/11/18 04:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	106		80 - 120		05/11/18 04:06	1
Toluene-d8 (Surr)	97		80 - 122		05/11/18 04:06	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126		05/11/18 04:06	1
4-Bromofluorobenzene (Surr)	104		75 - 125		05/11/18 04:06	1
Dibromofluoromethane (Surr)	105		77 - 120		05/11/18 04:06	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			05/09/18 07:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		58 - 133		05/09/18 07:44	1
Trifluorotoluene (Surr)	99		77 - 128		05/09/18 07:44	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		05/08/18 13:17	05/10/18 20:03	1
Motor Oil (>C24-C36)	ND		350		ug/L		05/08/18 13:17	05/10/18 20:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	54		50 - 150	05/08/18 13:17	05/10/18 20:03	1

TestAmerica Seattle

Client Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: Trip Blank

Date Collected: 05/02/18 00:00

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-6

Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	*	3.0		ug/L			05/10/18 21:52	1
Toluene	ND	*	2.0		ug/L			05/10/18 21:52	1
Ethylbenzene	ND		3.0		ug/L			05/10/18 21:52	1
Xylenes, Total	ND		3.0		ug/L			05/10/18 21:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	105		80 - 120		05/10/18 21:52	1
Toluene-d8 (Surr)	98		80 - 122		05/10/18 21:52	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126		05/10/18 21:52	1
4-Bromofluorobenzene (Surr)	103		75 - 125		05/10/18 21:52	1
Dibromofluoromethane (Surr)	104		77 - 120		05/10/18 21:52	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			05/09/18 01:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		58 - 133		05/09/18 01:25	1
Trifluorotoluene (Surr)	91		77 - 128		05/09/18 01:25	1

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-273241/5

Matrix: Water

Analysis Batch: 273241

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			05/08/18 12:58	1
Toluene	ND		2.0		ug/L			05/08/18 12:58	1
Ethylbenzene	ND		3.0		ug/L			05/08/18 12:58	1
Xylenes, Total	ND		3.0		ug/L			05/08/18 12:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	123	X	80 - 120		05/08/18 12:58	1
Toluene-d8 (Surr)	86		80 - 122		05/08/18 12:58	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 126		05/08/18 12:58	1
4-Bromofluorobenzene (Surr)	104		75 - 125		05/08/18 12:58	1
Dibromofluoromethane (Surr)	112		77 - 120		05/08/18 12:58	1

Lab Sample ID: LCS 580-273241/6

Matrix: Water

Analysis Batch: 273241

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	8.89		ug/L		89	75 - 120
Toluene	10.0	8.82		ug/L		88	75 - 120
Ethylbenzene	10.0	8.73		ug/L		87	75 - 120
m-Xylene & p-Xylene	10.0	8.72		ug/L		87	75 - 120
o-Xylene	10.0	8.64		ug/L		86	74 - 120
Xylenes, Total	20.0	17.4		ug/L		87	74 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	120		80 - 120
Toluene-d8 (Surr)	87		80 - 122
1,2-Dichloroethane-d4 (Surr)	109		80 - 126
4-Bromofluorobenzene (Surr)	106		75 - 125
Dibromofluoromethane (Surr)	110		77 - 120

Lab Sample ID: LCSD 580-273241/7

Matrix: Water

Analysis Batch: 273241

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	8.29		ug/L		83	75 - 120	7	14
Toluene	10.0	8.18		ug/L		82	75 - 120	8	13
Ethylbenzene	10.0	8.03		ug/L		80	75 - 120	8	14
m-Xylene & p-Xylene	10.0	7.99		ug/L		80	75 - 120	9	14
o-Xylene	10.0	7.90		ug/L		79	74 - 120	9	16
Xylenes, Total	20.0	15.9		ug/L		79	74 - 120	9	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	121	X	80 - 120
Toluene-d8 (Surr)	87		80 - 122
1,2-Dichloroethane-d4 (Surr)	109		80 - 126

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-273241/7

Matrix: Water

Analysis Batch: 273241

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		75 - 125
Dibromofluoromethane (Surr)	110		77 - 120

Lab Sample ID: MB 580-273533/5

Matrix: Water

Analysis Batch: 273533

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			05/10/18 20:36	1
Toluene	ND		2.0		ug/L			05/10/18 20:36	1
Ethylbenzene	ND		3.0		ug/L			05/10/18 20:36	1
Xylenes, Total	ND		3.0		ug/L			05/10/18 20:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	106		80 - 120		05/10/18 20:36	1
Toluene-d8 (Surr)	97		80 - 122		05/10/18 20:36	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 126		05/10/18 20:36	1
4-Bromofluorobenzene (Surr)	103		75 - 125		05/10/18 20:36	1
Dibromofluoromethane (Surr)	101		77 - 120		05/10/18 20:36	1

Lab Sample ID: LCS 580-273533/6

Matrix: Water

Analysis Batch: 273533

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	12.1	*	ug/L		121	75 - 120
Toluene	10.0	10.0		ug/L		100	75 - 120
Ethylbenzene	10.0	10.1		ug/L		101	75 - 120
m-Xylene & p-Xylene	10.0	10.6		ug/L		106	75 - 120
o-Xylene	10.0	10.7		ug/L		107	74 - 120
Xylenes, Total	20.0	21.3		ug/L		107	74 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	106		80 - 120
Toluene-d8 (Surr)	93		80 - 122
1,2-Dichloroethane-d4 (Surr)	100		80 - 126
4-Bromofluorobenzene (Surr)	100		75 - 125
Dibromofluoromethane (Surr)	101		77 - 120

Lab Sample ID: LCSD 580-273533/7

Matrix: Water

Analysis Batch: 273533

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	10.4	*	ug/L		104	75 - 120	15	14
Toluene	10.0	8.69	*	ug/L		87	75 - 120	14	13
Ethylbenzene	10.0	8.78		ug/L		88	75 - 120	14	14

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-273533/7

Matrix: Water

Analysis Batch: 273533

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
m-Xylene & p-Xylene	10.0	9.12	*	ug/L		91	75 - 120	15	14
o-Xylene	10.0	9.42		ug/L		94	74 - 120	13	16
Xylenes, Total	20.0	18.5		ug/L		93	74 - 120	14	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	106		80 - 120
Toluene-d8 (Surr)	94		80 - 122
1,2-Dichloroethane-d4 (Surr)	103		80 - 126
4-Bromofluorobenzene (Surr)	102		75 - 125
Dibromofluoromethane (Surr)	106		77 - 120

Lab Sample ID: MB 580-273626/5

Matrix: Water

Analysis Batch: 273626

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		2.0		ug/L			05/11/18 15:24	1
Ethylbenzene	ND		3.0		ug/L			05/11/18 15:24	1
Xylenes, Total	ND		3.0		ug/L			05/11/18 15:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	109		80 - 120		05/11/18 15:24	1
Toluene-d8 (Surr)	95		80 - 122		05/11/18 15:24	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 126		05/11/18 15:24	1
4-Bromofluorobenzene (Surr)	105		75 - 125		05/11/18 15:24	1
Dibromofluoromethane (Surr)	108		77 - 120		05/11/18 15:24	1

Lab Sample ID: LCS 580-273626/6

Matrix: Water

Analysis Batch: 273626

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Toluene	10.0	9.99		ug/L		100	75 - 120
Ethylbenzene	10.0	10.2		ug/L		102	75 - 120
m-Xylene & p-Xylene	10.0	10.4		ug/L		104	75 - 120
o-Xylene	10.0	10.8		ug/L		108	74 - 120
Xylenes, Total	20.0	21.2		ug/L		106	74 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	108		80 - 120
Toluene-d8 (Surr)	91		80 - 122
1,2-Dichloroethane-d4 (Surr)	105		80 - 126
4-Bromofluorobenzene (Surr)	100		75 - 125
Dibromofluoromethane (Surr)	107		77 - 120

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-273626/7

Matrix: Water

Analysis Batch: 273626

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toluene	10.0	10.1		ug/L		101	75 - 120	2	13
Ethylbenzene	10.0	10.4		ug/L		104	75 - 120	2	14
m-Xylene & p-Xylene	10.0	10.7		ug/L		107	75 - 120	2	14
o-Xylene	10.0	10.9		ug/L		109	74 - 120	1	16
Xylenes, Total	20.0	21.6		ug/L		108	74 - 120	2	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	109		80 - 120
Toluene-d8 (Surr)	91		80 - 122
1,2-Dichloroethane-d4 (Surr)	105		80 - 126
4-Bromofluorobenzene (Surr)	101		75 - 125
Dibromofluoromethane (Surr)	108		77 - 120

Lab Sample ID: MB 580-273765/5

Matrix: Water

Analysis Batch: 273765

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			05/14/18 15:24	1
Toluene	ND		2.0		ug/L			05/14/18 15:24	1
Ethylbenzene	ND		3.0		ug/L			05/14/18 15:24	1
Xylenes, Total	ND		3.0		ug/L			05/14/18 15:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	123	X	80 - 120		05/14/18 15:24	1
Toluene-d8 (Surr)	86		80 - 122		05/14/18 15:24	1
1,2-Dichloroethane-d4 (Surr)	113		80 - 126		05/14/18 15:24	1
4-Bromofluorobenzene (Surr)	105		75 - 125		05/14/18 15:24	1
Dibromofluoromethane (Surr)	115		77 - 120		05/14/18 15:24	1

Lab Sample ID: LCS 580-273765/6

Matrix: Water

Analysis Batch: 273765

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	10.0	15.3	*	ug/L		153	75 - 120
Toluene	10.0	9.76		ug/L		98	75 - 120
Ethylbenzene	10.0	10.0		ug/L		100	75 - 120
m-Xylene & p-Xylene	10.0	10.3		ug/L		103	75 - 120
o-Xylene	10.0	10.6		ug/L		106	74 - 120
Xylenes, Total	20.0	20.9		ug/L		105	74 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	122	X	80 - 120
Toluene-d8 (Surr)	82		80 - 122
1,2-Dichloroethane-d4 (Surr)	109		80 - 126
4-Bromofluorobenzene (Surr)	104		75 - 125

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-273765/6

Matrix: Water

Analysis Batch: 273765

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	118		77 - 120

Lab Sample ID: LCSD 580-273765/7

Matrix: Water

Analysis Batch: 273765

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	10.0	15.6	*	ug/L		156	75 - 120	1	14
Toluene	10.0	9.81		ug/L		98	75 - 120	0	13
Ethylbenzene	10.0	10.1		ug/L		101	75 - 120	1	14
m-Xylene & p-Xylene	10.0	10.3		ug/L		103	75 - 120	1	14
o-Xylene	10.0	10.8		ug/L		108	74 - 120	2	16
Xylenes, Total	20.0	21.1		ug/L		106	74 - 120	1	15

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	123	X	80 - 120
Toluene-d8 (Surr)	83		80 - 122
1,2-Dichloroethane-d4 (Surr)	109		80 - 126
4-Bromofluorobenzene (Surr)	103		75 - 125
Dibromofluoromethane (Surr)	118		77 - 120

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-273341/5

Matrix: Water

Analysis Batch: 273341

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			05/08/18 23:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		58 - 133		05/08/18 23:51	1
Trifluorotoluene (Surr)	102		77 - 128		05/08/18 23:51	1

Lab Sample ID: LCS 580-273341/6

Matrix: Water

Analysis Batch: 273341

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1000	943		ug/L		94	79 - 110

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	89		58 - 133
Trifluorotoluene (Surr)	101		77 - 128

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCSD 580-273341/7

Matrix: Water

Analysis Batch: 273341

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	1000	975		ug/L		97	79 - 110	3	10
Surrogate	%Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	93		58 - 133						
Trifluorotoluene (Surr)	103		77 - 128						

Lab Sample ID: MB 580-273431/5

Matrix: Water

Analysis Batch: 273431

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		250		ug/L			05/09/18 13:33	1
Surrogate	%Recovery	MB Qualifier	Limits						
4-Bromofluorobenzene (Surr)	91		58 - 133						
Trifluorotoluene (Surr)	99		77 - 128						

Lab Sample ID: LCS 580-273431/6

Matrix: Water

Analysis Batch: 273431

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Gasoline			1000	940		ug/L	-	94	79 - 110		
Surrogate	LCS	LCS									
	%Recovery	Qualifier	Limits								
	4-Bromofluorobenzene (Surr)	89	58 - 133								
	Trifluorotoluene (Surr)	98	77 - 128								

Lab Sample ID: LCSD 580-273431/7

Matrix: Water

Analysis Batch: 273431

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	1000	989		ug/L		99	79 - 110	5	10
Surrogate	%Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	93		58 - 133						
Trifluorotoluene (Surr)	104		77 - 128						

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-273265/1-A

Matrix: Water

Analysis Batch: 273484

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 273265

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		110		ug/L		05/08/18 13:17	05/10/18 16:20	1

TestAmerica Seattle

QC Sample Results

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: MB 580-273265/1-A

Matrix: Water

Analysis Batch: 273484

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 273265

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil (>C24-C36)	ND		350		ug/L		05/08/18 13:17	05/10/18 16:20	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	66		50 - 150				05/08/18 13:17	05/10/18 16:20	1

Lab Sample ID: LCS 580-273265/2-A

Matrix: Water

Analysis Batch: 273484

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 273265

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)	2000	1260		ug/L		63	59 - 112
Motor Oil (>C24-C36)	2000	1690		ug/L		84	64 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
o-Terphenyl	77		50 - 150				

Lab Sample ID: LCSD 580-273265/3-A

Matrix: Water

Analysis Batch: 273484

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 273265

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	2000	1380		ug/L		69	59 - 112	9	16
Motor Oil (>C24-C36)	2000	1790		ug/L		89	64 - 120	6	17
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
o-Terphenyl	81		50 - 150						

TestAmerica Seattle

Lab Chronicle

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: MW-1_20180502

Date Collected: 05/02/18 10:25

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	273241	05/08/18 22:02	P1P	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	273431	05/09/18 17:46	JCV	TAL SEA
Total/NA	Prep	3510C			273265	05/08/18 13:17	JCM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	273484	05/10/18 18:11	W1T	TAL SEA

Client Sample ID: MW-2_20180502

Date Collected: 05/02/18 10:00

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	273533	05/11/18 03:41	RSB	TAL SEA
Total/NA	Analysis	8260C	DL	10	273626	05/11/18 22:30	T1W	TAL SEA
Total/NA	Analysis	8260C	RADL	10	273765	05/14/18 20:49	T1W	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	273341	05/09/18 09:19	JCV	TAL SEA
Total/NA	Prep	3510C			273265	05/08/18 13:17	JCM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	273484	05/10/18 18:39	W1T	TAL SEA

Client Sample ID: MW-3_20180502

Date Collected: 05/02/18 09:50

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	273241	05/08/18 22:59	P1P	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	273341	05/09/18 08:48	JCV	TAL SEA
Total/NA	Prep	3510C			273265	05/08/18 13:17	JCM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	273484	05/10/18 19:07	W1T	TAL SEA

Client Sample ID: MW-4_20180502

Date Collected: 05/02/18 09:30

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	273241	05/08/18 23:28	P1P	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	273341	05/09/18 08:16	JCV	TAL SEA
Total/NA	Prep	3510C			273265	05/08/18 13:17	JCM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	273484	05/10/18 19:35	W1T	TAL SEA

TestAmerica Seattle

Lab Chronicle

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Client Sample ID: MW-5_20180502

Date Collected: 05/02/18 10:15

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	273533	05/11/18 04:06	RSB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	273341	05/09/18 07:44	JCV	TAL SEA
Total/NA	Prep	3510C			273265	05/08/18 13:17	JCM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	273484	05/10/18 20:03	W1T	TAL SEA

Client Sample ID: Trip Blank

Date Collected: 05/02/18 00:00

Date Received: 05/03/18 10:47

Lab Sample ID: 580-77081-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	273533	05/10/18 21:52	RSB	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	273341	05/09/18 01:25	JCV	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C553	02-17-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	Xylenes, Total

Sample Summary

Client: Antea USA, Inc.
Project/Site: BP - OPLC - Tacoma Junction

TestAmerica Job ID: 580-77081-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-77081-1	MW-1_20180502	Water	05/02/18 10:25	05/03/18 10:47
580-77081-2	MW-2_20180502	Water	05/02/18 10:00	05/03/18 10:47
580-77081-3	MW-3_20180502	Water	05/02/18 09:50	05/03/18 10:47
580-77081-4	MW-4_20180502	Water	05/02/18 09:30	05/03/18 10:47
580-77081-5	MW-5_20180502	Water	05/02/18 10:15	05/03/18 10:47
580-77081-6	Trip Blank	Water	05/02/18 00:00	05/03/18 10:47



Laboratory Management Program LaMP Chain of Custody Record

Loc: 580
77081

Page 1 of 1


BP/ARC Project Name: Olympic Pipe Line Company

Req Due Date (mm/dd/yy): Standard

sh TAT: Yes No

BP/ARC Facility No: Tacoma Junction

Lab Work Order Number:

Lab Name: Test America				BP/ARC Facility Address: 2660 Frank Albert Road East				Consultant/Contractor: Antea Group													
Lab Address: Tacoma, WA				City, State, ZIP Code: Fife WA 98424				Consultant/Contractor Project No: WATJUAA181.10123													
Lab PM: Elaine Walker				Lead Regulatory Agency: WA Department of Ecology				Address: 4008 148th Avenue NE, Redmond, WA 98052													
Lab Phone: 253.248.4972				California Global ID No.: NA				Consultant/Contractor PM: Megan Richard													
Lab Shipping Acct: NA				Enfos Proposal No: 00BPT-0006/WR321696				Phone: P: 425.498.7711 F: 425.869.1892													
Lab Bottle Order No: NA				Accounting Mode: Provision <u>X</u> OOC-BU <u> </u> OOC-RM <u> </u>				Email EDD To: <u>Megan.Richard@anteagroup.com</u>													
Other Info: <u>elaine.walker@testamericainc.com</u>				Stage: Appraise (10) Activity: Interim Measures (123)				Invoice To: BP/ARC <u>X</u> Contractor <u> </u>													
BP/ARC EBM: Charles Carmel				Matrix				No. Containers / Preservative				Requested Analyses				Report Type & QC Level					
EBM Phone: 657-529-4503																Standard <u>Y</u>					
EBM Email: <u>charles.carmel@bp.com</u>																Full Data Package <u> </u>					
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	NaOH zn Acetate	8260BTEX	NWTPH-Gx	NWTPH-DX	Pb Total	Comments Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.			
	MW-1 - 20180503	5-2-18	1025	X										X	X	X			 580-77081 Chain of Custody		
	MW-2 - 20180503	5-2-18	1000	X										X	X	X					
	MW-3 - 20180502	5-2-18	0950	X										X	X	X					
	MW-4 - 20180502	5-2-18	0930	X										X	X	X					
	MW-5 - 20180502	5-2-18	1015	X										X	X	X					
	Trip Blank	5-2-18	0000	X										X	X						
Sampler's Name: <u>BE / JR</u>				Relinquished By / Affiliation				Date	Time	Accepted By / Affiliation				Date	Time						
Sampler's Company: Antea Group				<u>Bethany Erickson / Antea</u>				<u>5/2/18</u>	<u>1047</u>	<u>BE / JR</u>				<u>5/3/18</u>	<u>1047</u>						
Shipment Method: <u>PICKUP</u> Ship Date: <u>5-3-18</u>																					
Shipment Tracking No:																					
Special Instructions:																					
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No Temp Blank: Yes / No Cooler Temp on Receipt: <u> </u> °F/C Trip Blank: Yes / No MS/MSD Sample Submitted: Yes / No																					

Login Sample Receipt Checklist

Client: Antea USA, Inc.

Job Number: 580-77081-1

Login Number: 77081

List Number: 1

Creator: Gall, Brandon A

List Source: TestAmerica Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	